

# PC WORLD

LOTUS EDITION

April 1995 \$4.95

PUT YOUR DATA  
ON 1-2-3'S NEW MAPS

**PENTIUM  
POWER  
FOR UNDER  
\$500**

# PENTIUM

# UPGRADES

**They're Finally  
Here—Worth  
the Wait?**

**PLUS:  
Top 20 PCs for  
Home and Office**

**50 Spreadsheet Tips:  
What the Manuals  
Won't Tell You**



---

**INTRODUCING  
THE NEC MULTISYNC<sup>®</sup>  
XE SERIES.**

**THE SHARPEST,  
BRIGHTEST,  
MOST PRECISE  
MONITORS**

**YOU'VE EVER SEEN.**

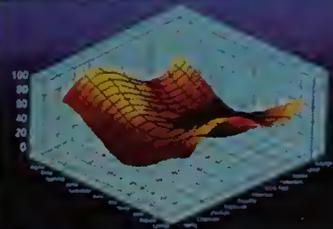
---

SYNTHETEX



Laboratory scientists at SYNTHETEX have developed what they believe is the world's strongest fiber. The fiber gets its strength from a process that structures polyethylene lines. This process is 100 times lighter than possible.

Bilateral Stress - Polymer Reaction



1.005	0.452
1.502	0.517
2.006	0.097
2.507	0.065
3.252	1.344
3.788	1.782
4.013	1.979
4.507	2.036
5.780	2.370
6.905	3.012

100% Polymer Superfibration

NEC



# THE ONLY THING THEY BLUR IS THAT FINE LINE BETWEEN WORK AND PLAY.

**T**hree years ago, we embarked on a mission. To design and build the finest computer monitors in the world. Which is a rather ambitious quest. After all, many industry experts already considered the NEC MultiSync monitor, first introduced just over a decade ago, pretty darn close to perfect.

Now, for a company known the world over for technological achievement, our mission was relatively untechnical: To build a line of computer monitors that were so crystal-clear, so brilliant, so easy to control, people would actually look forward to working with them.



The result? NEC is proud to introduce the MultiSync XE Series of Monitors.

To make things perfectly clear, these monitors feature our unique OptiClear™ surface that virtually eliminates glare, an Invar shadow mask that assures maximum brightness without loss of focus, and a super fine .28 mm dot pitch. In addition, the XE Series features flicker-free, rock-solid refresh rates of up to 120Hz.

Then we packed them with features that make them easier to work with. Our On-Screen Manager, OSM™ for short, offers on-

screen controls with animated icons that visually demonstrate your options. OSM allows you to control everything from screen geometry and screen size to color temperature. (A veritable field day for Type A personalities.)

We're also the first to offer compatibility with the new Microsoft® Plug and Play standard, which virtually eliminates configuration headaches while it automatically optimizes the monitor's performance\*. MonitorManager™ software allows you to switch resolutions (for Macintosh®), utilize power management, and control color. People who spend all day in front of a monitor will be very, very pleased.

Every NEC monitor is backed by a three-year limited warranty. More importantly, it's backed by NEC's reputation for building the finest monitors in the world.

The new MultiSync XE Series from NEC. If you spend a few moments with one, we strongly believe you will never again think that "enjoy work" is a contradiction in terms.

For more information or the name of the nearest dealer

call 1-800-NEC-INFO. For information sent directly to your fax, call 1-800-366-0476. Just ask for our document number 9301.

**MultiSync XE Series**  
 Flat square CRT, Plug and Play, Digital On-Screen Controls, AccuColor®, Energy Star, MPR-II, NUTEK, Compatible with PC and Mac Systems

---

**XE15**  
 15" CRT, 13.8" viewable image size  
 Max Res: 1280 x 1024 non-interlaced

---

**XE17**  
 17" CRT, 15.6" viewable image size  
 Max Res: 1280 x 1024 non-interlaced

---

**XE21**  
 21" CRT, 19.8" viewable image size  
 Max Res: 1280 x 1024 non-interlaced

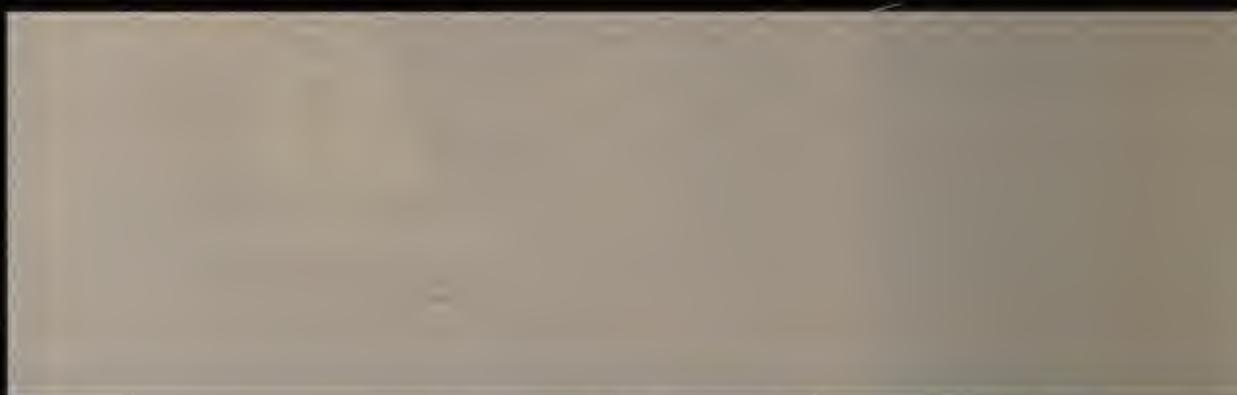
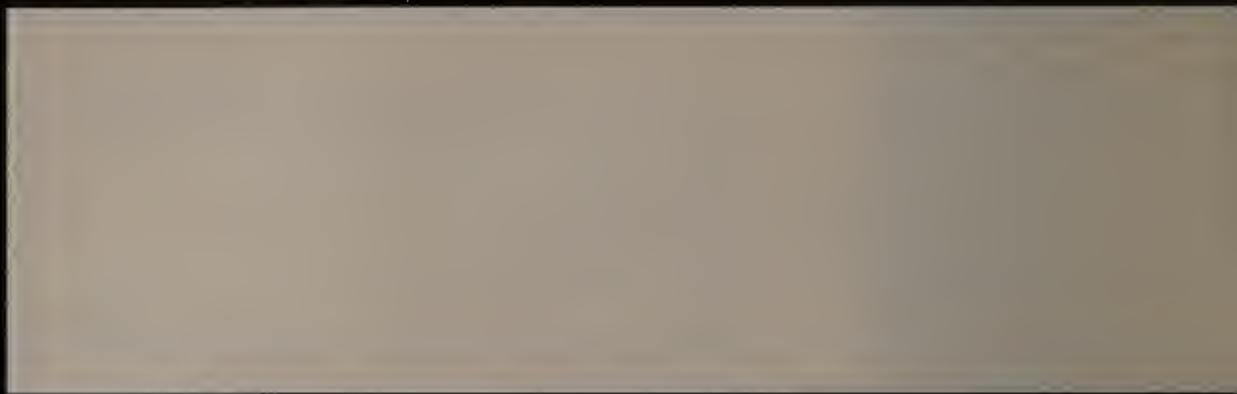
**SEE, HEAR AND FEEL THE DIFFERENCE.™**



\*When used with Plug and Play compatible hardware and Microsoft Windows™ 4.X.

MultiSync and AccuColor are registered trademarks and See, Hear and Feel the Difference, OptiClear, OSM and MonitorManager are trademarks of NEC Technologies, Inc. Other trademarks are property of their respective owners. ©1994 NEC Technologies, Inc.





The Canon® BJC-4000. Its resolution is equal to laser quality. It's less than \$400. Its print speed is 5ppm.

F O R Y O U R N E A R E S T C A N O N

© 1995 Canon Computer Systems, Inc. Canon and BJC are registered trademarks of Canon Inc.



BJC-4000  
color printer.

Plus there's brilliant color. The math couldn't be simpler. **Canon**

D E A L E R C A L L 8 0 0 - 8 4 8 - 4 1 2 3 .

CSI, 2995 Redhill Ave., Costa Mesa, CA 92626. In Canada, call (800) 263-1121. (\*Dealer prices may vary.)

# PC WORLD

LOTUS EDITION



## Lotus: Get the Most From the Lotus Suite

### 100-L4 How Healthy is Your Business?

Common financial ratios let you take your company's pulse. Here's how to build these ratios in 1-2-3 and apply them to your business.

### 100-L15 Put Your Data on the 1-2-3 Map

Release 5.0's mapping tool lets you target your sales efforts, analyze customer needs, and pick the best sites for stores or service centers. Get started with this quick guide.

### 100-L19 Let 1-2-3 Track Time Off

Our worksheet lets you record employee vacations and sick leave.

### 100-L1 Editor's Page

### 100-L2 News

### 100-L22 Improving Your Skills

### 100-L25 1-2-3 Tips

### 100-L28 Q&A

### 100-L33 Macros

### 100-L36 Suite Success: Freelance

## Cover Story

### 50 Pentium Upgrades: Worth the Wait?

Pentium OverDrives have arrived. But in our tests of eleven 486 systems, the chips delivered Pentium-level performance only under optimum conditions. Plus, a sneak peek at Intel's next-generation P6.

## Monitors

### 102 Big Screens

These 17-inch monitors offer two-thirds more Windows work space than the 15-inch players. We test 30 of the latest models and single out three Best Buys.

## Spreadsheets

### 125 50 Spreadsheet Tips: What the Manuals Won't Tell You

Experts reveal secrets for Excel, 1-2-3, and Quattro Pro: macros, undocumented keystrokes, tips for spreadsheet-to-word processor hookups, and more.

## Image Editors

### 144 Change Your Image

We review six Windows image editors, priced as low as \$149, that are revolutionizing the way we create graphics on PCs.

## Top of the News

### 55 IBM Does DOS 7

Why bother with an upgrade? Two good reasons: built-in Stacker 4.0 disk compression and smaller RAM requirements.

### 56 The Sensible Way to Search the Net

SuperHighway Access tames Internet chaos with search-by-subject, drag-and-drop ftp transfer, and multimedia E-mail.

### 61 Lotus Extends Notes to the Rest of Us

Enticements include price cuts, connections to the Internet and voice mail, and a preview of Notes 4.0.

### 62 IBM and Digital: Two for the Road

Notebooks move a step closer to desktops with IBM's new expandable keyboard and Digital's full-powered 4-pounder.

Cover Photography by Marc Simon



## Online Shopping

### 155 The Merchants of Cyberspace

With hundreds of businesses setting up storefronts online, you can shop 'til you drop via modem. Find out when it makes sense—and when it doesn't.

## Reliability & Service Monitor

### 205 Win a Dell OptiPlex XMT 590 PC

Fax in this survey for a chance to win a Dell OptiPlex XMT 590—a Best Buy system from this month's Top 20.

## Graphics Boards

### 207 Top 10 Windows Accelerators

Video comes alive on new boards.

## Workgroup Computing

### 213 Get Your Group Organized

Share key business information with CrossTies for Workgroups.

### 214 Collaborate via Mail

Conference+ adds the power of group discussions to Microsoft Mail.

### 219 Take Your Net With You

These two remote access systems let you get at your office's network.

## Here's How



### 222 Help Line

### 229 Spreadsheets

### 236 Word Processing

### 242 Windows

### 248 Data Management

### 252 Publishing & Presentations

### 256 Online

### 260 Hardware

### 264 Star-Dot-Star

## Departments

### 15 In This Issue

### 19 Letters

### 27 Consumer Watch

### 43 Real Problems, Real Solutions

### 49 Full Disclosure

### 297 Break Time

### 300 Home Office

## Resources

### 12 How to Contact PC World

### 201 PC World Connect Tips by Fax

### 254 Coming Up

### 268 Mail-Order Shopping Guide

### 282 PC World Catalog

### 291 Reader Service Card

### 293 Advertiser Index

### 295 Editorial Product Index

## Systems

### 168 Top 20 PCs: Survival of the Fittest

All four Best Buy PCs from last month fend off the latest challengers. At the top: the Micron P90PCI PowerStation, MIS Slimline 66, Toshiba T4900CT, and WinBook XP DX2/50. Also appearing this month: a new look for the *PC World* Top 20, including recommendations for best home PCs.

## New Products

**71** LaCie Joule Portables, SyQuest SQ3270, Iomega Zip removable storage

**72** Digital Celebris XL PCs

**72** AdvanSCSI ABP-852, AHA series, PNP-1630SVP SCSI adapters

**76** Sharp Zaurus PDA

**76** Pocket Finance organizer

**78** Great Plains Profit 2.0

**78** Info Select Express for Windows PIM

**80** ClarisWorks 3.0

**80** ManagePro 3.0 project management program

**82** Delrina PerForm for Windows forms software

**82** Delphi client-server development system

**84** Monocle+ mutual fund analysis program

**84** StaffWorks 3.0 employee scheduling software

**88** 2Market CD-ROM

**88** Smart Moves CD-ROM

**92** AirAccess 2.0 communications programs

**92** Networth mutual fund Internet service

**94** Airplex Model 2705 cordless PCMCIA fax-modem

**94** MultiMux MMV101, MultiModem MT2834LT communications devices

**98** Quick Takes



PC World™ (ISSN 0737-8939) is published monthly at \$29.90 for one year (12 issues), \$59.80 for two years (24 issues), \$89.70 for three years (36 issues) by PC World Communications, Inc., 501 Second St. #600, San Francisco, CA 94107. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$20 per year for Canada and Mexico; add \$46 per year for airmail for all other countries. Canadian GST Registration #R124669680. Second-class postage paid at San Francisco and additional mailing offices. Canada Post International Publications Mail Product, (Canadian Distribution) Sales Agreement No. 0463566.

POSTMASTER: Send address changes to PC World, Subscription Dept., P.O. Box 55029, Boulder, CO 80322-5029. Editorial and business offices: 501 Second St. #600, San Francisco, CA 94107, 415/243-0500. Copyright © 1995, PC World Communications, Inc. All rights reserved. The trademark PC World is owned by International Data Group and used under license by PC World Communications, Inc. Consumer Watch and Star-Dot-Star are trademarks of PC World Communications, Inc. Printed in the United States.

3B

Big shot executive. 23 offices in 11 countries. On her way back from a new-business pitch. Composed her presentation with Microsoft Office. (Company paid full fare.)



29D

Owner of a growing business. One office, two cats, at home. Won the new-business pitch. Composed her presentation with Microsoft Office. (Ran out of upgrade certificates.)

# IN BUSINESS TODAY IT'S NOT WHERE YOU START, IT'S WHERE YOU FINISH.

## WHAT'S IT ALL ABOUT?

It's about your business. It's about technology leveling the playing field. It's about getting ahead. Business Source from Microsoft® is an information resource dedicated to helping you find plain-English answers to all your software questions. And it's backed by hundreds of people, all on your side. Just call and get detailed information on our complete line of business software. Hear how Microsoft is helping other growing businesses grow and learn how to put the most powerful business software to work for you.

## WHAT DO I GET?

A complete set of tools that will make the move to Microsoft easy

and hassle-free. You get our *Planning The Move* kit, which includes a pre-planning checklist, information on hardware requirements, success stories about businesses that have already switched, and helpful



product information. If you recently purchased Microsoft Office, ask for our detailed *Making The Move* kit. Run across something you can't work out? Call our Conversion Support Line and our product support staff will handle your problems over the phone. What if you need hands-on help? We'll be glad to give you the

name of a professional Conversion Expert right in your neighborhood.

## WHY SHOULD I CALL?

No matter where your business is on the growth curve, we have everything you need to help your business take off. You get access to the information resources that make moving from DOS to Microsoft Windows™ programs easier than ever. You also get

information on Microsoft Word for word processing, Microsoft Excel for spreadsheet analysis, Microsoft PowerPoint® for presenting ideas and Microsoft Access for database management. Results? Every presentation, every report, every spreadsheet, and every letter you write comes out first class. Every time.

[ 1-800-60-SOURCE ]



**Microsoft**

WHERE DO YOU WANT TO GO TODAY?™

# "The ZEOS® Pantera™... Most Bang For The Buck."

— PC Magazine, September 27, 1994

It's true! The ZEOS Pantera is as good as it gets. Leading experts from top industry publications all agree that the ZEOS Pantera is the best PC available. Unparalleled in its field, the Pantera has continuously earned award after award—month after month.

There's no desktop system that comes close to the ZEOS Pantera in performance, reliability, and value. As *PC Magazine* said: "Overall performance leader... the Pantera line has a lot to offer—strong performance at a reasonable price, with excellent documentation."

## Supreme Performance



The ZEOS Pantera, based on Intel's 486 and Pentium processors, is breaking record after record with its supreme power and awesome performance.

"Mark a new high on the performance

They said: "The clear winner is the ZEOS Pantera."

What makes the Pantera blow all others away? Superior engineering—starting with a ZEOS designed motherboard, created specifically to take full advantage of the latest technological advancements. The motherboard is stocked with exceptional features such as an on-board PCI Local Bus IDE Controller and support for up to four IDE devices. For the fastest video performance, we give you a Diamond Stealth 64-bit PCI video card with 1MB DRAM *standard*.

## Valuable Extras

The Pantera is a first-rate example of ZEOS' commitment to provide you with an excellent value on an award-winning machine. With all the extras, options, and 100% compatibility with all major operating systems, you can't go wrong.

Many of our most popular money-saving Pantera packages are ready to ship *the same day you order*. We also give you the option to custom-design a system to your exact computing needs.

Either way, you can buy with confidence because of our on-going dedication to offer you high-quality features and state-of-the-art technology at an affordable price. As *PC/Computing* said: "... this is a deal you simply can't pass up."

And the value doesn't stop with your purchase. Nobody does more to support you after the sale. ZEOS has won seven *PC Magazine* Readers' Choice for Service & Reliability awards.

Unequaled in performance, reliability and value, the ZEOS Pantera "is the ultimate Power Desktop." *PC World* added: "It's lightning fast, beautifully configured, and priced right." To get your best buy, call a ZEOS Systems Consultant today at 800-554-5220.

chart!" *PC World* said the Pentium-66 and Pentium-90 Pantera PCs were "the fastest system(s) ever tested."

The ZEOS Pantera 66MHz and 90MHz also received the highest scores in all benchmark tests run by *Windows Sources*, and earned two Experts' Pick awards.



Pentium-66  
April 12, 1994

DX4-100  
June 28, 1994



Pentium-60  
April 1994

Pentium-90  
August 1994



486DX2-66  
January 1994

February 1994

March 1994

June 1994

December 1994

January 1995

February 1995

DX4-100  
October 1994

November 1994

December 1994

January 1995

Pentium-60  
December 1994

January 1995

February 1995

Pentium-66  
June 1994

July 1994

August 1994

September 1994

Pentium-90  
August 1994

September 1994

October 1994

November 1994

January 1995

February 1995

PC Computing  
BEST  
Pentium-66  
June 1994

Pentium-90  
August 1994

Pentium-66  
June 1994

Pentium-90  
August 1994

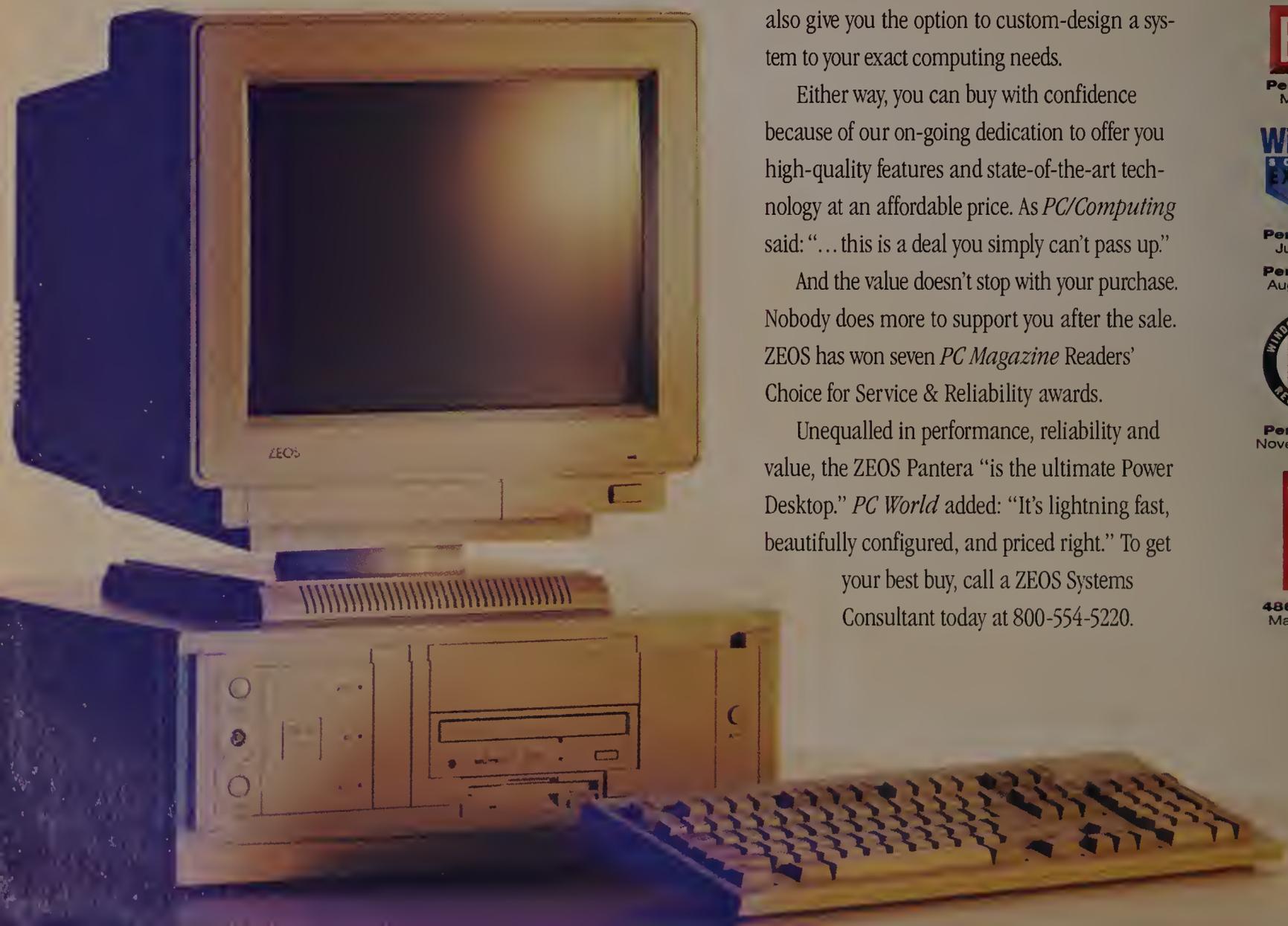
WINDOWS MAGAZINE  
1994  
RECOMMENDED

Pentium-90  
November 1994

Pentium-90  
November 1994

1994  
WIN AWARD  
100  
WINDOWS MAGAZINE

486DX2-66  
March 1994



Package 1		Package 2		Package 3		Package 4	
<b>486DX2-50</b>	<b>\$1345</b>	<b>486DX2-50</b>	<b>\$1645</b>	<b>486DX2-50</b>	<b>\$2145</b>	<b>486DX2-50</b>	<b>\$2545</b>
<b>486DX2-66</b>	<b>\$1395</b>	<b>486DX2-66</b>	<b>\$1695</b>	<b>486DX2-66</b>	<b>\$2195</b>	<b>486DX2-66</b>	<b>\$2595</b>
<b>DX4-100</b>	<b>\$1545</b>	<b>DX4-100</b>	<b>\$1845</b>	<b>DX4-100</b>	<b>\$2345</b>	<b>DX4-100</b>	<b>\$2745</b>
<b>Pentium-60</b>	<b>\$1645</b>	<b>Pentium-60</b>	<b>\$1945</b>	<b>Pentium-60</b>	<b>\$2445</b>	<b>Pentium-60</b>	<b>\$2845</b>
<b>Pentium-75</b>	<b>\$1695</b>	<b>Pentium-75</b>	<b>\$1995</b>	<b>Pentium-75</b>	<b>\$2495</b>	<b>Pentium-75</b>	<b>\$2895</b>
<b>Pentium-90</b>	<b>\$1995</b>	<b>Pentium-90</b>	<b>\$2295</b>	<b>Pentium-90</b>	<b>\$2795</b>	<b>Pentium-90</b>	<b>\$3195</b>
<b>Pentium-100</b>	<b>\$2195</b>	<b>Pentium-100</b>	<b>\$2495</b>	<b>Pentium-100</b>	<b>\$2995</b>	<b>Pentium-100</b>	<b>\$3395</b>
<ul style="list-style-type: none"> <li>➤ 4MB RAM</li> <li>➤ 340MB local bus IDE hard drive with 120K cache</li> <li>➤ 3.5" 1.44MB floppy disk drive</li> <li>➤ <b>Diamond Stealth 64-bit</b> PCI local bus SVGA color graphics card with 1MB DRAM</li> <li>➤ ZEOS 14" 1024 x 768 non-interlaced SVGA color monitor, .28mm dot pitch</li> <li>➤ Six-bay desktop case with two cooling fans</li> <li>➤ Microsoft Mouse</li> <li>➤ MS-DOS 6.2, Windows for Workgroups 3.11</li> </ul>		<ul style="list-style-type: none"> <li>➤ 8MB RAM</li> <li>➤ 528MB local bus IDE hard drive with 120K cache</li> <li>➤ <b>4X CD-ROM</b> drive and 3.5" 1.44MB floppy drive</li> <li>➤ <b>Diamond Stealth 64-bit</b> PCI local bus SVGA color graphics card with 1MB DRAM</li> <li>➤ ZEOS 14" 1024 x 768 non-interlaced SVGA color monitor, .28mm dot pitch</li> <li>➤ Six-bay desktop case with two cooling fans</li> <li>➤ Microsoft Mouse</li> <li>➤ MS-DOS 6.2, Windows for Workgroups 3.11</li> </ul>		<ul style="list-style-type: none"> <li>➤ 16MB RAM</li> <li>➤ <b>850MB</b> local bus IDE hard drive with 256K cache</li> <li>➤ <b>4X CD-ROM</b> drive and 3.5" 1.44MB floppy drive</li> <li>➤ <b>Diamond Stealth 64-bit</b> PCI local bus SVGA color graphics card with 1MB DRAM</li> <li>➤ <b>ZEOS 15"</b> 1024 x 768 non-interlaced SVGA color monitor, .28mm dot pitch</li> <li>➤ Six-bay desktop case with two cooling fans</li> <li>➤ Microsoft Mouse</li> <li>➤ MS-DOS 6.2, Windows for Workgroups 3.11</li> <li>➤ <b>Lotus SmartSuite</b></li> </ul>		<ul style="list-style-type: none"> <li>➤ 24MB RAM</li> <li>➤ 1GB local bus IDE hard drive with 256K cache</li> <li>➤ <b>4X CD-ROM</b> drive and 3.5" 1.44MB floppy drive</li> <li>➤ <b>Diamond Stealth 64-bit</b> PCI local bus SVGA color graphics card with 1MB DRAM</li> <li>➤ <b>ZEOS 15"</b> 1024 x 768 non-interlaced SVGA color monitor, .28mm dot pitch</li> <li>➤ Six-bay desktop case with two cooling fans</li> <li>➤ Microsoft Mouse</li> <li>➤ MS-DOS 6.2, Windows for Workgroups 3.11</li> <li>➤ <b>Lotus SmartSuite</b></li> </ul>	

**4X CD-ROM Standard!**  
(Pkgs. 2, 3 & 4)

**Included With Every ZEOS Pantera:**

- Genuine Intel® Processor. ZIF socket for easy upgrading.
- Diamond Stealth PCI local bus color graphics card with 1MB DRAM, upgradable to 2MB DRAM.
- Two high-speed serial ports and one enhanced parallel port on the motherboard.
- Flash BIOS.
- Slots: Three PCI & 4 ISA (486), 3 PCI & 5 ISA (Pentium).
- 200 watt power supply with built-in surge suppressor. Switchable between 115/230V.
- ZEOS 101-key space-saving keyboard.
- FCC Certified Class B; UL Listed.
- ZEOS Customer Satisfaction Package.

**486 & DX4 Extras:**

- RAM expandable to 128MB.
- EPA Energy Star compliant.

**Pentium™ 60 Extras:**

- RAM expandable to 192MB.
- On-board Fast SCSI-2 option.

**Pentium 75, 90 & 100 Extras:**

- RAM expandable to 192MB.
- On-board PCI local bus Fast SCSI-2 and Ethernet LAN options.
- EPA Energy Star compliant.

*Additional processors available. Call for details.*

**Favorite Options**

- 528MB to 1GB Hard Drive Upgrade** .....\$190
- 1MB to 2MB Video RAM Upgrade**.....\$59
- Diamond Stealth 64/PCI Video Card with 2MB VRAM**  
Fastest 64-bit accelerated video .....\$249
- Upgrade from a 14" to a 15" Monitor**  
ZEOS SVGA NI, 1024 x 768, flat screen .....\$95
- Upgrade from a 15" to a 17" Monitor**  
ZEOS SVGA NI, 1280 x 1024, flat screen .....\$345

- SCSI Controller Chip**  
For on-board SCSI. Includes drivers .....\$49
- Internal 14,400 bps V.32 bis Modem with 14,400 bps Send/Receive Fax** .....\$79
- Internal 28,800 bps V.32 bis Modem with 14,400 bps Send/Receive Fax** .....\$199
- ZNYX EtherAction™ 32**  
32-bit PCI Ethernet LAN adapter. 10Base5, 10Base2 and 10BaseT connections .....\$199

- Front Drive Bay PCMCIA SwapBox**  
Installs into 3.5" drive bay .....\$179
- Internal Tape Backup**  
80 to 250MB includes backup software.....\$149
- 10-Bay Vertical Case**.....\$95
- Multimedia Upgrade**  
Sound card and stereo speakers .....\$128
- Lotus SmartSuite Upgrade**  
Upgrade you existing Lotus application with Lotus SmartSuite (five applications) ....\$299

*Many other affordable upgrades and options available. Call for details!*

**Free Lotus SmartSuite!**



All Pantera packages include Microsoft DOS 6.2 and Windows for Workgroups 3.11. In addition, packages 3 and 4 include Lotus SmartSuite—1-2-3, Ami Pro, Freelance Graphics, Organizer and Approach.

**800-554-5220**

**24 Hours a Day  
365 Days a Year**



Fax Orders: 800-362-1205 or 612-362-1205. Phone Orders: Outside U.S. and Canada: 612-362-1212, Government: 800-245-2449, ZEOS Information Systems, Inc. GSA #GS00K94AGS5176. Purchase Orders, MasterCard, VISA, Am Ex, Discover, Z-Card, COD and affordable leasing programs.

Purchase orders are subject to approval. Business leasing programs available. All prices, specifications and availability are subject to change without notice; call to confirm these and warranty details. Prices do not include shipping. Novell compatibility is Developer Tested Only. Novell makes no warranties with respect to this product. All products and company names are trademarks or registered trademarks of their respective holders. Intel Inside and Pentium Processor Logos are trademarks of Intel Corporation. ZEOS is a registered trademark. Z-Card is a registered service mark. Pantera is a trademark of ZEOS International Ltd. © 1995 ZEOS International Ltd., 1301 Industrial Blvd., Minneapolis, MN 55413 USA. ZEOS is a publicly traded company (NASDAQ symbol: ZEOS). PAN-PCW-9504

# Tips by Fax!

From **PC World's** Editors

Call to order via touch-one phone and receive by fax immediately.

## Top Tips for Windows 3.1, #100

A compilation of expert trouble-shooting advice, performance-boosting tips, and undocumented shortcuts. *Entire Package: \$16.95, #100*

- 80 Windows Tips and a Fax for DOS, 10 pgs, \$9.95 #102
- Solving Windows Error Messages, 5 pgs, \$6.95 #103
- Tips to Supercharge Windows, 7 pgs, \$7.95 #104

## Complete PC Buyer's Guide, #200

Everything you need to know about how to buy your next PC: system reviews, buying tips, company reliability and service ratings. Plus a How to Buy instant reference card.

*Entire Package: \$11.95, #200*

- Brand Name vs. No Name, 5 pgs, \$5.95 #203
- Reliability and Service, 2 pgs, \$3.95 #204
- Buying Locally: Smart Tips, 3 pgs, \$4.95 #206
- Best Products of 1994, 5 pgs, \$5.95 #207
- Smart Buyer Tips, 4 pgs, \$5.95 #208

## Multimedia Hardware Guide, #420

Tips for buying and setting up a multimedia PC with reviews of CD ROM drives and sound boards.

*Entire Package: \$13.95, #420*

- Multimedia, Step by Step, 2 pgs, \$3.95 #402
- How to Avoid a Multimedia Mugging, 2 pgs, \$3.95 #403
- Audio Components for PCs, 4 pgs, \$5.95 #404
- CD ROM Drives and Sound Boards, 12 pgs, \$11.95 #409

## CD ROM Buyer's Guide, #430

Reviews of the newest and hottest CD ROMs for business, entertainment, and education.

*Entire Package: \$16.95, #430*

- Great CD ROMs for Fun and Profit, 5 pgs, \$5.95 #405
- From Shareware to Leisurware, 2 pgs, \$3.95 #406
- Summer Sizzlers: CD ROM Titles, 3 pgs, \$4.95 #407
- DISCoROMa: The Latest CD ROMs, 4 pgs, \$5.95 #408
- Best CDs of '94, 10 pgs, \$9.95 #410

Plus, now you can receive by fax next month's *PC World* Top 20 system reviews and rankings — a month before publication. Call 1-800-434-4495 and choose from the *PC World* Top 20 Power Desktops Flash Report, the Top 20 Budget Desktops Flash Report, or the Top 20 Mobile PCs Flash Report. Each report costs \$9.95 and is delivered to you by fax immediately. (First day of availability for May Flash Reports is March 23.)

# 1-800-434-4495

Payment by VISA or MasterCard. Or call 1-900-903-2972 and applicable charges will appear on your phone bill. Touch-tone phone and fax machine required.

**PC WORLD**  
CONNECT

# PC WORLD

**EDITOR IN CHIEF** Philip Lemmons

**EDITOR** Cathryn Baskin

**EXECUTIVE EDITORS** Christopher Barr, Steve Fox, Russell Glitman

**MANAGING EDITOR** Luis Camus

**ART DIRECTOR** Robert Kaner

**SENIOR EDITORS**

Consumer Issues Roberta Furger

Reviews Owen Linderholm

News Joe Abemathy

**SENIOR TECHNICAL EDITOR** Karl Koessel

**EAST COAST EDITOR** Randy Ross

**EDITORIAL**

Assistant Managing Editor Anne Kandra

Associate Editors Jeff Bertolucci, Michael

Desmond, Rex Farrance, Bryan Hastings,

Michael S. Lasky, Dan Miller, Lincoln Spector,

Christina Wood

Technical Editor Shane Rau

Assistant Editors John Goddard, Anita

Hamilton, Melissa Riofrio

Asst. Editor, East Coast Laurianne McLaughlin

Reader Liaison Peggy Nauts

Editorial Assistant Arden M. Hoffman

Fact Checker Richard Overton

Copy Chief Richard Johnson

Senior Copy Editors Barbara Lewis,

Marla Miyashiro

Copy Editors Stephen Compton, Gail Nelson,

Hon Walker

Editorial Production Associate Henry Pham

Assistant to the Editor in Chief Paula Benton

Administrative Assistants Stephanie Daigre,

Heidi Zinsmeister Wolff

Librarian Stella Chan

Fluegelman Intern Valerie Singer

**ART & DESIGN**

Associate Art Director Greg Silva

Senior Designers Barbara Adamson,

Laura Guerin

Senior Designer, Infographics Jeff Berlin

Designers Tim J Luddy, Carolyn Perot

Assistant Designer, Infographics Jonas Höglund

Production Artist Marlene Tobias

**CONTRIBUTING EDITORS**

Anita Amirrezvani, Steve Bass, George

Campbell, David Coursey, Scott Dunn,

Bronwyn Fryer, Brett Glass, Michael

Goodwin, Judy Heim, Richard Jantz,

Eric Knorr, Celeste Robinson, Richard

Scoville, Scott Spanbauer, Daniel Tynan

**PC WORLD TEST CENTER**

Test Center Director Julian Milenbach

Manager, Performance Testing

Ulrike Diehlmann

Manager, Usability Testing Dean Andrews

Senior Analyst Susan Silvius

Performance Analysts Dave Casini, Kirk Steers

Test Center Coordinator Mike Salayko

**USER GROUP ADVISORY BOARD**

Steve Bass, Pasadena IBM Users Group;

Roger Bender, Microcomputer Managers

Association; Jack Bolton, Atlanta PC User's

Group (APCUG); Brian Camenker, Boston

Computer Society; Rollie Cole, APCUG;

Paul Curtis, APCUG; Mary Dolce, Chicago

Computer Society; Sandy Frunzi, Las Vegas

PC User Group; Al Harrison, Houston Area

League PC Users; David Hoffman, NYPC;

Joseph Rigo, NYPC; Irving Samuels, Capital

PC User Group

Founder David Bunnell

Founding Editor Andrew Fluegelman

**PC WORLD LOTUS EDITION**

Executive Editor Eric Bender

Senior Associate Editors Richard Cranford,

Ann Kremers

Associate Editors Catherine Kenny, Harry

McCracken, Carol White

Assistant Editor Eric Hellweg

**LOTUS EDITION MAILING ADDRESS**

77 Franklin St. #300, Boston, MA 02110

Phone: 617/482-8470 Fax: 617/426-0235

**LOTUS PUBLISHING CORPORATION**

Publisher Craig G. Pierce

Editor in Chief Jennifer J. Smith

Marketing Director Jacqueline L. Migell

Production Manager Andrew Ochrymowych

**PC WORLD ONLINE**

Publisher, Editor in Chief Jim Moody

Executive Director Thomas Gewecke

Director of Operations Dennis Sheridan

Director, Third-Party Areas Pete Decmer

Manager, Marketing and Licensing

Scott Danish

Operations Manager Nancy H. Miller

Content Engineer Nick Van Cleve

Operations Assistant Licia Slimon

Office Manager Carla Lieberman

**PC WORLD COMMUNICATIONS, INC.**

Chief Executive Officer Patrick Kenealy

President, PC World Publishing

Richard J. Marino

President, PC World New Media

Jonathan Epstein

President, PC World Newsletters

Craig Pierce

Senior VP, Circulation, Marketing, Research

Heather Martin Maier

VP, Director of Advertising Jeff Edman

Chief Financial Officer Vicki Peilen

VP, Human Resources Richard Willoughby

VP, Manufacturing Linda Manes Goodwin



# ZEOS Meridian™ Notebooks— Hot Performance At A Light Price.

Finally, desktop power to go! Travel to the ends of the Earth—and beyond with the ZEOS Meridian line of notebooks. The sky's the limit.

With sturdy construction that will go where you go, hot power and performance that soars beyond belief, and more options than a road map, the Meridian is your perfect travel and workmate.

While both the ZEOS Meridian subnotebook and notebook feature power up to 100MHz and large crisp color screens, each has an ideal purpose.

For the lightest travel possible, the Meridian 400, at 3.9 pounds, is your ideal traveling companion and ultimate color subnotebook. At six pounds and change, the Meridian 800 notebook is light enough to travel anywhere yet it's large enough to use for presentations and regular desktop computing.

And the fare is light! With ZEOS Meridian notebooks, you can travel in style at a low price. We offer you the flexibility of several packages, screen choices and options. Choose one that fits your exact needs and budget. (Shown at right is our most popular package with screen choices.) There's no boundary.

For power and performance that'll take you to new heights, call a ZEOS Systems Consultant today at 800-554-5220.

Fax Orders: 800-362-1205 or 612-362-1205. Phone Orders: Outside U.S. and Canada: 612-362-1212, Government: 800-245-2449. Purchase Orders, VISA, MasterCard, Am Ex, Discover, Z-Card, COD and affordable leasing programs.

Purchase orders are subject to approval. Business leasing programs available. All prices, specifications and availability are subject to change without notice; call to confirm these and warranty details. Prices do not include shipping. All products and company names are trademarks or registered trademarks of their respective holders. Intel Inside Logo is a trademark of Intel Corporation. ZEOS is a registered trademark. Z-Card is a registered servicemark. ZEOS Meridian and TruePoint are trademarks of ZEOS International Ltd. © 1995 ZEOS International Ltd., 1301 Industrial Blvd., Minneapolis, MN 55413 USA. ZEOS is a publicly traded company (NASDAQ symbol: ZEOS). MERP3 PCW 9/94

## ZEOS Meridian™

Color	400C	800C
486DX2-50	\$2595	\$2795
DX4-100	\$2995	\$3195
Active Color	400A	800A
486DX2-50	\$3295	\$3595
DX4-100	\$3695	\$3995

- ▶ Genuine Intel® 486DX2-50 or DX4-100 microprocessor
- ▶ 8K (DX4: 16K) internal system cache
- ▶ 8MB RAM, expandable to 20MB
- ▶ 350MB IDE hard drive
- ▶ High-speed local bus video with 1MB video RAM
- ▶ Display: 640x480 VGA backlit LCD, up to 256 colors 400: 7.9" diag. STN or active matrix. 800: 10.3" diag. DSTN or 9.5" diag. active matrix
- ▶ Supports simultaneous display with external monitor
- ▶ 3.5" 1.44MB floppy drive, 400: External, 800: Internal
- ▶ PCMCIA slots: 400: 2 Type II, 800: 2 Type II or 1 Type III
- ▶ 84-key keyboard with embedded numeric keypad, 12 dedicated function keys and inverted "T"; Integrated pointing device
- ▶ Replaceable, rechargeable NiMH battery, and extra battery
- ▶ Serial port, enhanced parallel port, external VGA video port, external keyboard or PS/2 mouse port (800 includes both). 400 also with external floppy drive port
- ▶ Full power management features
- ▶ AC110-240V to DC adapter
- ▶ Custom carrying case
- ▶ MS-DOS 6.2, Microsoft Windows for Workgroups 3.11
- ▶ Lotus Organizer
- ▶ 400: 7.8" x 10.2" x 1.7"; 3.9 lbs. 800: 8.9" x 11.7" x 1.9"; 6.3 lbs.
- ▶ EPA Energy Star compliant
- ▶ 24-hour toll-free support

*Other processors and packages available. Call for details.*

**800-554-5220**  
24 Hours a Day  
365 Days a Year



Circle 193 on reader service card

# Tips by Fax!

From *PC World's* Editors

Call to order via touch-one phone and receive by fax immediately.

## Top Tips for Windows 3.1, #100

A compilation of expert trouble-shooting advice, performance-boosting tips, and undocumented shortcuts. *Entire Package*: \$16.95, #100

- 80 Windows Tips and a Few for DOS, 10 pgs, \$9.95 #102
- Solving Windows Error Messages, 5 pgs, \$6.95 #103
- Tips to Supercharge Windows, 7 pgs, \$7.95 #104

## Complete PC Buyer's Guide, #200

Everything you need to know about how to buy your next PC: system reviews, buying tips, company reliability and service ratings. Plus a How to Buy instant reference card.

*Entire Package*: \$11.95, #200

- Brand Name vs. No Name, 5 pgs, \$5.95 #203
- Reliability and Service, 2 pgs, \$3.95 #204
- Buying Locally: Smart Tips, 3 pgs, \$4.95 #206
- Best Products of 1994, 5 pgs, \$5.95 #207
- Smart Buyer Tips, 4 pgs, \$5.95 #208

## Multimedia Hardware Guide, #420

Tips for buying and setting up a multimedia PC with reviews of CD ROM drives and sound boards.

*Entire Package*: \$13.95, #420

- Multimedia, Step by Step, 2 pgs, \$3.95 #402
- How to Avoid a Multimedia Mugging, 2 pgs, \$3.95 #403
- Audio Components for PCs, 4 pgs, \$5.95 #404
- CD ROM Drives and Sound Boards, 12 pgs, \$11.95 #409

## CD ROM Buyer's Guide, #430

Reviews of the newest and hottest CD ROMs for business, entertainment, and education.

*Entire Package*: \$16.95, #430

- Great CD ROMs for Fun and Profit, 5 pgs, \$5.95 #405
- From Shareware to Leisureware, 2 pgs, \$3.95 #406
- Summer Sizzlers: CD ROM Titles, 3 pgs, \$4.95 #407
- DISCoROMa: The Latest CD ROMs, 4 pgs, \$5.95 #408
- Best CDs of '94, 10 pgs, \$9.95 #410

Plus, now you can receive by fax next month's *PC World* Top 20 system reviews and rankings — a month before publication. Call 1-800-434-4495 and choose from the *PC World* Top 20 Power Desktops Flash Report, the Top 20 Budget Desktops Flash Report, or the Top 20 Mobile PCs Flash Report. Each report costs \$9.95 and is delivered to you by fax immediately. (First day of availability for May Flash Reports is March 23.)

# 1-800-434-4495

Payment by VISA or MasterCard. Or call 1-900-903-2972 and applicable charges will appear on your phone bill. Touch-tone phone and fax machine required.

## PC WORLD CONNECT

# PC WORLD

## HOW TO CONTACT PC WORLD

### MAIL

PC World Editorial, 501 Second St. #600,  
San Francisco, CA 94107  
Phone: 415/243-0500 Fax: 415/442-1891  
America Online: keyword pc world  
CompuServe: go pwo  
MCI Mail: 666-2936 or pcworldletters  
Internet: letters@pcworld.com

### SUBSCRIPTION SERVICES, ADDRESS CHANGES

For *PC World* and *PC World Lotus Edition*: Call toll-free 800/234-3498 (303/604-1465 in Colorado and Canada), or write Subscriber Services, P.O. Box 55029, Boulder, CO 80322-5029. To place new orders, call 800/825-7595.

### PC WORLD ONLINE

You can contact the editors and staff on PC World Online via America Online (keyword **pc world**) and CompuServe (**go pwo**). PC World Online features current and back issues of *PC World* and *PC World Lotus Edition*, a software library, and message boards. To obtain a free America Online kit, call 800/827-6364, and mention Preferred Subscriber #10196. To join PC World Online on CompuServe, set your communications software to 7 data bits, even parity, and 1 stop bit. For your local access number, dial 800/346-3247 (modem) and type **phones** at the Host Name ID prompt. Fill in the requested information. Dial again using the local access number. Once connected, press **<Enter>**. Fill out the screen as follows: Host Name: **cls** User ID: **177000,5605** Password: **compuserve** Agreement#: **pcworld** Serial Number: **<Enter>** If you require further assistance, or if you would like to receive the *PC World* customized interface, call CompuServe customer assistance at 800/848-8990, 800/635-6225 in Canada. Order membership kits after business hours by calling 800/848-8199.

### LETTERS TO THE EDITOR

Send editorial correspondence electronically to the Message Board on PC World Online; Internet, letters@pcworld.com; MCI Mail, 666-2936 or pcworldletters; or mail it to *Letters* at *PC World*. Include your name, city, and state. We reserve the right to edit letters.

### CONSUMER WATCH

Send consumer-related questions and complaints electronically to the Consumer Watch forum on PC World Online; MCI Mail, 666-2936 or pcworldletters; or mail them to *Consumer Watch* at *PC World*.

### REAL PROBLEMS, REAL SOLUTIONS

Send article ideas—including a brief outline of your company, job, problem, and solution as well as your name, address, and phone number—electronically to the Real Problems, Real Solutions forum on PC World Online; CompuServe, 72614,1534; 415/326-4304 (fax); mail them to *Real Problems, Real Solutions* at *PC World*; or call us at 415/978-3212. *PC World* pays \$300 per published column.

### FULL DISCLOSURE

Send editorial correspondence electronically to Internet, smanes@ix.netcom.com; PC World Online; or mail it to *Full Disclosure* at *PC World*.

### HOME OFFICE

Send correspondence electronically to the Home Office forum on PC World Online; CompuServe, 71333,130; or mail it to *Home Office* at *PC World*.

### HERE'S HOW QUESTIONS AND SUBMISSIONS

*PC World* pays \$25 for each published *Power Tip*, \$200 to the user group featured in *User Group Tips*, and \$50 for published *Here's How* questions. Keep submissions brief (*Power Tips* to 100 words or less); accepted submissions will be acknowledged by payment. Send questions electronically to the appropriate forum on PC World Online (for example, send *Help Line* questions to the Help Line forum) or to the online address below, or mail them to *PC World*. Contact editors at the following addresses: **Help Line**: CompuServe, 74055,412; MCI Mail, 179-3813; Internet, scott\_spanbauer@pcworld.com **Spreadsheets**: CompuServe, 72341,2727; MCI Mail, 357-4517; Internet, richard\_scoville@pcworld.com **Word Processing**: CompuServe, 71571,222; MCI Mail, gcampbell; Internet, george\_campbell@pcworld.com **Windows**: CompuServe, 74055,412; Internet, pcwsdunn@aol.com **Data Management**: CompuServe, 74055,412; Internet, celeste\_robinson@pcworld.com **Publishing & Presentations**: MCI Mail, rjantz; Internet, richard\_jantz@pcworld.com. Mail makeover candidates, preferably clean and unfolded, to *Publishing & Presentations, Makeovers*, at *PC World*. **Communications**: CompuServe, 75300,713; MCI Mail, 312-7737; GENie, judy.heim; Internet, 3127737@mcimail.com **Hardware**: MCI Mail, 459-7102; Internet, eric\_knorr@pcworld.com **Star-Dot-Star**: CompuServe, 74055,412; Internet, rogue@well.sf.ca.us

### NEW PRODUCT ANNOUNCEMENTS

Address hardware and software press releases to *New Products* at *PC World* or call 415/978-3212.

### REPRINTS AND PERMISSIONS

You must have permission before reproducing any material from *PC World* and *PC World Lotus Edition*. To quote from or reprint any portion of any article, or to use artwork or photographs from the magazine, write to *PC World*, Reprints and Permissions, 501 Second St. #600, San Francisco, CA 94107; include a phone number for a fast response. To order reprints of your company's editorial coverage in *PC World* or *PC World Lotus Edition*, call 612/582-3810.

### BACK ISSUES

*PC World* and *PC World Lotus Edition* are available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346; 800/521-0600. Issues and article copies are also available from UMI.

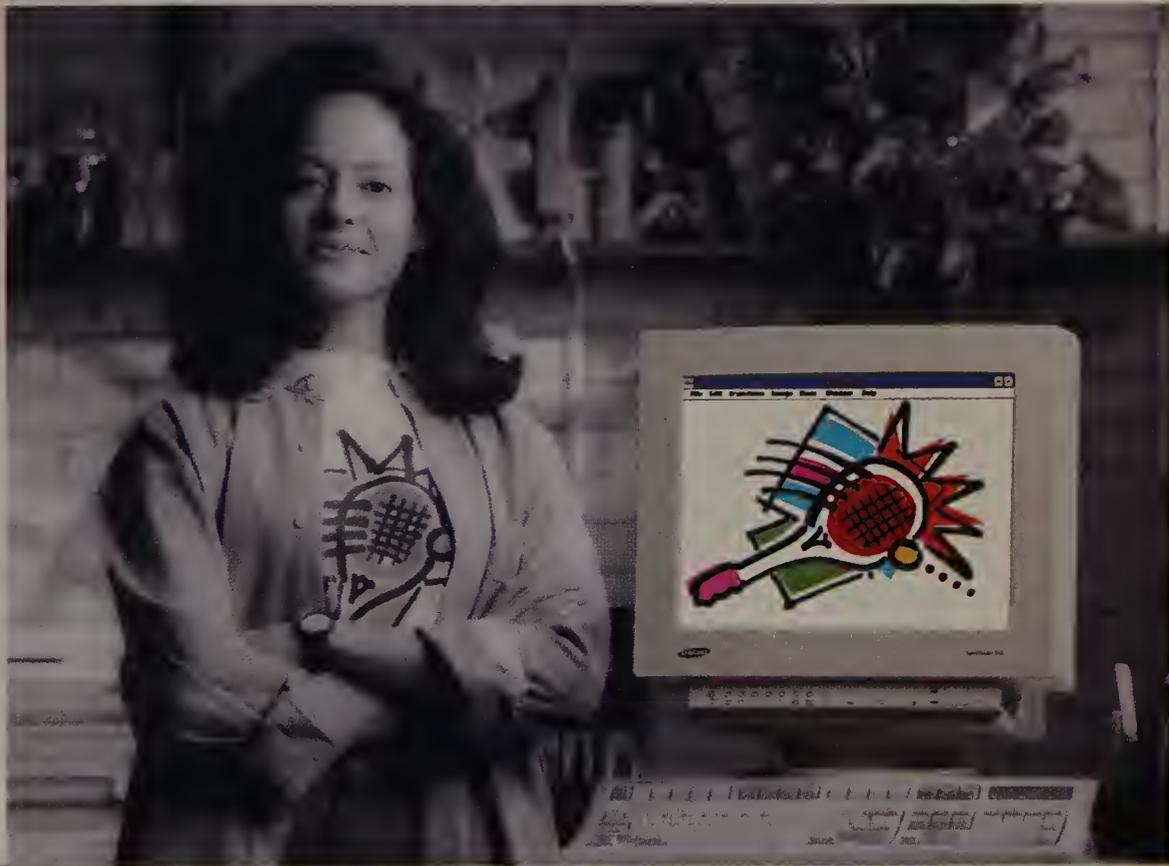
### PC WORLD CONNECT

You can receive by fax additional information about products advertised in *PC World* using the phone number in participating vendors' advertisements. You can order fax copies of product reviews, buyers' guides, and more from PC World Connect Information by Fax, listed in the table of contents.

### MAILING LISTS

Occasionally we make our subscribers' names available to other companies whose products may interest you. Many subscribers find this a valuable service. If you want your name excluded from these mailings, send us your label with a request to remove your name from our promotional file. Write to Subscriber Services, P.O. Box 55029, Boulder, CO 80322.

# Samsung A new point of view.



## SyncMaster 17GL



## SyncMaster 17GLs

It's about how you work...Attitude. Satisfaction. Pride. The 17-inch SyncMaster™ monitors reflect today's changing lifestyles. Hassle-free. Value-oriented.

Samsung took for granted you wanted bright, crisp clear images that don't flicker. You're also concerned about safety and energy conservation, so they're standard on the whole series.

Life should be as simple as possible, so we added innovative new features like On-Screen Display and Real Color Control, and as you would expect, the GL Series comes with a two-year limited warranty.

Think about how you view your work. Samsung did. And came up with a whole new point of view.

TECHNOLOGY  
THAT WORKS  
FOR LIFE



ELECTRONICS

SyncMaster	14GL	15GL	17GL	17GLs
Size	14"	15"	17"	17"
Dot Pitch	.28	.28	.28	.26
Maximum Resolution	1024x768	1024x768	1280x1024	1600x1280
Maximum Refresh Rate at Maximum Res. (Hz)	76	76	60	60
MPR-II (Low Radiation)	•	•	•	•
Power Management	•	•	•	•
Flat Square Screen		•	•	•
On-Screen Programming			•	•
Real Color Control				•
Warranty	2 Years	2 Years	2 Years	2 Years

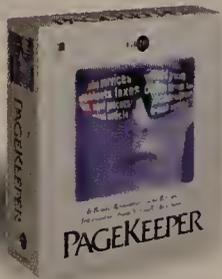
\*1994 Samsung Electronics America Inc. The EPA Energy Star Logo is not to be considered a product endorsement. Images on SyncMaster of Mike Quinn Design. Image on SyncMaster 17GLs courtesy of David Kimble

Circle 198 on reader service card



With the information I've got, I'm gonna kick his ass.

PageKeeper helped me find key info in 6 reports, 67 e-mails, 12 online downloads and dozens of faxes, overnight. So while he's here to ask questions, I've already made all the right decisions. He's got no chance.



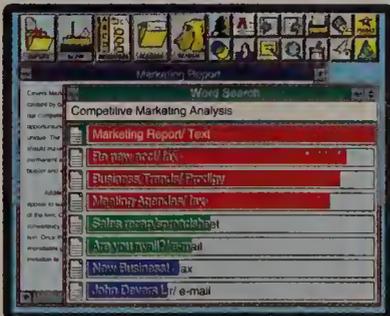
New PageKeeper 2.0 intelligently finds key information hidden in your documents — so you can make critical decisions faster.

\$99\*

To succeed, you've got to be able to make big decisions fast.

Analyze a marketing problem. Find key evidence. Plan your next business move. But with all the information hidden in your hard drive among the hundreds of word-processing files, faxes, e-mails, online downloads, scanned documents and so on, it's hard to get at the key facts fast. ■ PageKeeper makes it easy. It's an information bloodhound for today's intense, decision-

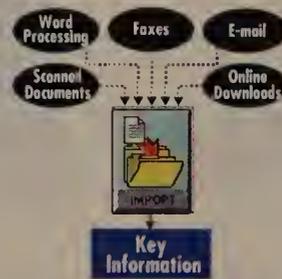
driven world. ■ PageKeeper actually reads and understands the contents of your files. With exclusive SmartFind™ you ask for what you want, in your own words, and PageKeeper makes a lightning-fast, in-depth analysis of your hard drive. It instantly returns with a color-coded list of documents, ranked by the relevance of the information they contain. It's much faster than conducting a painstaking, file-to-file search yourself. ■ PageKeeper works seamlessly with most Windows™ applications.



Get prioritized search results in seconds. PageKeeper even finds related information you never thought to ask for.

So, you can easily perform searches or store information without switching from program to program. And it also has Caere's award-winning

OmniPage® OCR (optical character recognition) technology built in.



SmartFind searches most common file types for relevant information.

Here's a decision that's easy to make. Get PageKeeper at an introductory price of just \$99\*. Call 1-800-224-0660, ext. 625 today for your local software retailer, or for more information.



PageKeeper effortlessly retrieves information from virtually any source.



\*Limited time offer. PageKeeper has Caere's 60-day, money-back guarantee! Caere, the Caere logo, PageKeeper and OmniPage are registered trademarks of Caere Corporation. SmartFind is a trademark of Caere Corporation. All other registered trademarks and trademarks are property of their respective companies. ©1995 Caere Corporation. All rights reserved.

Circle 91 on reader service card

# Microsoft and the End of Choice



*PC World* has received numerous letters during the last year accusing the magazine of favoritism toward Microsoft.

To address concerns about *PC World's* and my own objectivity in this matter, I'd like to state my views on Microsoft, its position in the industry, and the implications for PC users. A statement of views also seems timely because the Department of Justice is reviewing Microsoft's proposed acquisition of Intuit. And at press time, a federal judge rejected the Justice Department's proposed settlement to its antitrust investigation of Microsoft.

I can summarize my views of Microsoft with these three points: First, as it gets bigger the company is getting better and better at software development, turning out products that compare favorably with anything else available. Second, Microsoft's virtual monopoly on system software for desktops gives it overwhelming and unfair competitive advantages over other application developers. Third, Microsoft appears to have the strength and the will to leverage its domination of the desktop into domination of other sectors.

## Overwhelming and Unfair Advantages

Control of Windows' application program interface (API) gives Microsoft a stranglehold over all other application software developers. Applications can be published only in Windows, making Windows, in effect, *the* distribution medium. Every change in the API requires changes in how software is written if it is to work with Windows, and whoever knows first about those alterations enjoys a huge advantage in bringing next-generation applications

to market. Microsoft's developers always get the news first.

To choose an analogy from magazine publishing, it is as though Microsoft were *Time* magazine and Lotus were *Newsweek*. One morning, *Newsweek* discovers it can be published only as an insert in *Time*. Struggling along as a mere insert in an archrival, *Newsweek* gets word from *Time* that the insert can't be published this month, because *Time* has switched to a new trim size and binding method. *Time* passes on the new specs so *Newsweek* can alter its production processes to conform to *Time's*, but until the changes are made, *Newsweek* is out of business.

Control of the PC's de facto standard operating system gives Microsoft this kind of power over its rivals.

Microsoft's contracts with PC makers—due in part to practices since discontinued under the terms of the Justice Department's original settlement—required payment to Microsoft regardless of whether its operating systems were even installed. This made it impossible for other operating-system vendors to compete. Companies that agreed to preload Microsoft operating systems found that they could make extraordinary deals on preloading its business applications. Last spring, I found I could not buy the PC of my choice without bundled Microsoft applications. The sales representative informed me that his company's contract with Microsoft required shipment of either Microsoft Office or Works on every PC, and he said I would save only \$70 by accepting the lesser package. (Would you like Microsoft or Microsoft with your Microsoft?) Microsoft's applications are good, but I resent having no choice in the matter.

Since Microsoft has always offered

excellent value to PC users, consumers have little to complain about. But business users must be concerned about the dwindling number of companies that produce business applications. Software houses in traditionally separate markets find themselves facing a Microsoft that offers software bundles and integration no one else can match—bundles that link desktop and server operating systems, server databases, and desktop applications. If the acquisition of Intuit goes through and the launch of Microsoft Network succeeds, Microsoft can extend this linkage from desktop financial applications

Would you like Microsoft or Microsoft with your Microsoft? Microsoft's applications are good, but I resent having no choice.

to online services, back-end databases, and financial transaction services.

Evidence of Microsoft's growing competence suggests it will be decades before Microsoft loses its monopolistic hold. The preservation of competition in the software industry—and of choice for computer users—requires that Microsoft's applications and system software businesses be truly separate.

Though many, especially in Bellevue, will decry this as government regulation in a perfectly functioning free market, markets aren't free when computer users are compelled to buy a particular company's applications to get the PCs they prefer. Besides, the alternative to government regulation seems to be regulation by Microsoft.

Phil Lemmons, Editor in Chief

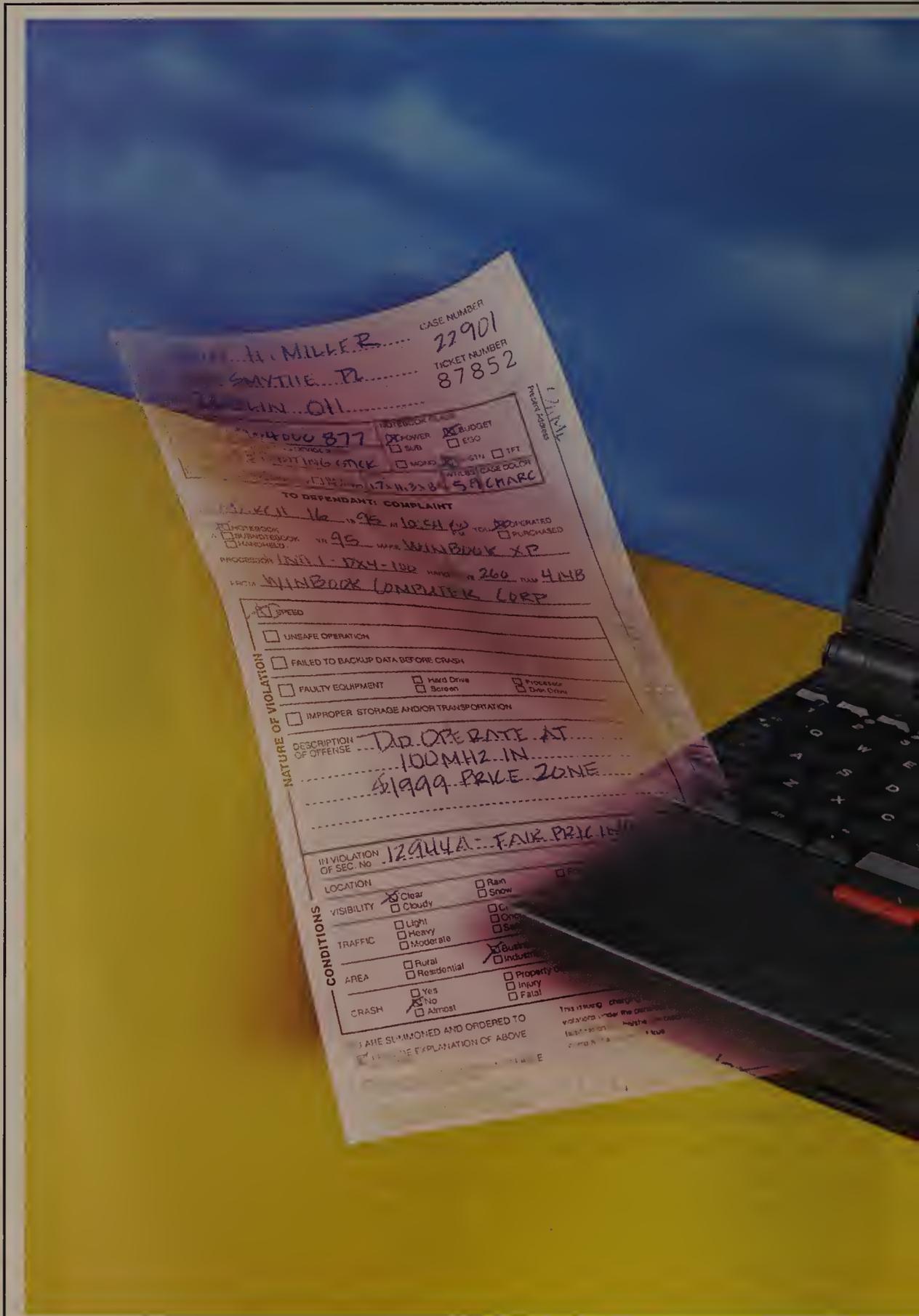
# AT \$1999, IT'S THE TICKET YOU'LL

The WinBook XP breaks another price and quality barrier. For \$1999 you get 100MHz of speed and power in the award-winning, ergonomically-designed notebook that has all of the critics raving.

The 32-bit local bus video Rocketchip accelerator boosts your graphics performance level and a ten-cell NiMH battery pack keeps the power going. Ergonomic features include a sloping wrist rest, full-size keys and your choice of pointing devices—the standard dual-button pointing stick, or an additional trackball or touchpad as an option. An LCD indicator let you monitor functions at a glance.

Components are upgradable—RAM to 32MB and removable hard drives with capacities to 810MB. Plus PCMCIA capabilities give you even more flexibility. Options include a 14.4 send/receive fax/voice/data modem, internal audio and docking station.

The WinBook XP has a configuration to meet your budget and system requirements. Call one of our WinBook representatives toll-free today to order your WinBook XP or to receive your free notebook information buying packet—complete with the latest reviews of our products, pricing and accessories.



We use only genuine Intel microprocessors in our quality computer systems.



August 1994 WinBook XP  
 D12,50 4260 Monochrome



PC Laptop  
 Most Improved Portable  
 January 1995 WinBook XP

# ONLY SPEEDING ENJOY PAYING.



## WinBook XP

**100MHz**  
**\$1999**

### TECHNICAL SPECIFICATIONS

- SL-ENHANCED INTEL 486 DX4-75MHZ OR 486 DX4-100MHZ.
- 5.9 LBS. DUAL-SCAN COLOR OR 6.1 LBS. OPTIONAL ACTIVE MATRIX COLOR
- DIMENSIONS: 11.3" X 8.5" X 1.7"
- 4MB, 8MB OR 16MB RAM (EXPANDABLE UP TO 32MB)
- 3.5" 1.44MB DISKETTE DRIVE
- REMOVABLE 260 TO 810 HDD
- VGA DUAL-SCAN COLOR OR OPTIONAL ACTIVE MATRIX. MONOCHROME UNITS ALSO AVAILABLE
- 10-CELL NIMH BATTERY & AC PACK
- SUSPEND/RESUME FEATURE
- TWO TYPE II OR ONE TYPE III PCMCIA SLOT
- INTEGRATED DUAL-BUTTON POINTING STICK, OPTIONAL DUAL-BUTTON 19MM TRACKBALL OR OPTIONAL DUAL-BUTTON TOUCHPAD
- PARALLEL, SERIAL AND PS/2 PORTS
- 1MB VIDEO MEMORY WITH EXTERNAL VGA PORT
- LCD FUNCTION INDICATOR PANEL
- 14.4 SEND/RECEIVE FAX/VOICE/DATA MODEM OPTIONAL
- INTERNAL AUDIO OPTIONAL
- DOCKING STATION OPTIONAL

**\$1999** ..... Intel 486 DX4-100MHz  
 • 10.3" dual-scan color display  
 • 4MB RAM/260MB HD

**\$4199** ..... Intel 486 DX4-100MHz  
 • Active matrix color display  
 • 16MB RAM/810MB HD  
 • 14.4 Fax Modem  
 • DOS and Windows

**\$\$** Comparable savings on all other WinBook XPs, from our base models to notebooks for the power user. Call for current pricing and configurations.

**Call us today, toll-free**  
**1-800-468-1242**

Monday-Friday, 8am-9pm EST • Saturday, 9am-4pm

Use your VISA, Discover Card, MasterCard, personal check or P.O. with credit approval. U.S. sales only. 30-day unconditional money-back guarantee from date of purchase.



February 1995, WinBook XP  
DX2/50 & 255 Monochrome



February 1995, WinBook XP  
DX4/75 & 125 Dual-scan color

Choose the pointing device that works best for you:



## WinBook

**COMPUTER CORPORATION**  
*a subsidiary of Micro Electronics, Inc.*

©1995 WinBook Computer Corporation. All rights reserved. WinBook is a registered trademark of Micro Electronics, Inc. The Intel Inside logo is a trademark of the Intel Corporation. All other trademarks and trademarks are property of their respective corporations. All prices and specifications are subject to change without notice or obligation. Prices do not include shipping.

Circle 197 on reader service card

# ZEOS<sup>®</sup> Can Ship Today!

Our most popular packages can be shipped the day you call.\* Guaranteed!

It's true. With our special *Computers Now!* program, many of our award-winning and most popular packages can be shipped the day you call.

## It's As Easy As:

**1** Choose the ZEOS system package you want.

(A sampling of our *Computers Now!* packages is shown at right.)

**2** For same-day shipping, call ZEOS today at 800-554-5220 before 1 p.m. Central Time, Monday-Friday.

**3** Upon credit approval, we'll ship your system the same day you order!

## Our Guarantee:

If we accept your order for immediate shipment and fail to ship your system under the conditions outlined, we will ship it *at our expense* as soon as it is ready.\*

## Need A Bigger Monitor?

We can upgrade your *Computers Now!* desktop or vertical system with a larger monitor—and still ship it the same day you order!\*



Pantera™

**486DX2-66 \$1695**  
**Pentium-60 \$1945**  
**Pentium-75 \$1995**

### Package #2:

- 8MB RAM
- 528MB local bus IDE hard drive
- 4X CD-ROM drive, 3.5" 1.44MB FDD
- Diamond Stealth 64-bit PCI local bus graphics card with 1MB DRAM
- 14" SVGA color monitor
- 6-bay desktop case
- MS-DOS, Windows for Workgroups, Microsoft Mouse

**486DX2-66 \$2095**  
**Pentium-75 \$2395**

### Top Gun:

The above system modified to include:

- 128K SRAM cache (486), 256K SRAM cache (Pentium)
- Diamond Stealth 64-bit PCI local bus graphics card with 2MB VRAM upgrade
- 15" SVGA color monitor upgrade
- 14.4/14.4 send/receive fax modem
- Lotus SmartSuite



Ambra™

**486DX2-66 \$1245**

### Package #1:

- 4MB RAM, 128K SRAM cache
- 340MB hard drive
- 3.5" 1.44MB floppy drive
- VESA local bus SVGA color video
- 14" SVGA color monitor
- 4-bay desktop case
- MS-DOS, Windows for Workgroups, Microsoft Mouse



Pantera™

**Pentium-75 \$2595**  
**Pentium-90 \$2895**

### Editors' Choice:

- 16MB RAM, 256K SRAM cache
- 528MB local bus IDE hard drive
- 4X CD-ROM drive, 3.5" 1.44MB FDD
- Diamond Stealth 64-bit PCI local bus graphics card with 2MB VRAM upgrade
- 15" SVGA color monitor
- 6-bay desktop case
- MS-DOS, Windows for Workgroups, Microsoft Mouse
- Lotus SmartSuite

**Pentium-75 \$2745**  
**Pentium-90 \$3095**  
**Pentium-100 \$3295**

### Hottest Pantera:

The above system modified to include:

- 1GB local bus IDE hard drive
- 6-bay desktop case (Pentium-75)
- 10-bay vertical case (Pentium 90 & 100)



Pantera™

**Pentium-75 \$3118**  
**Pentium-90 \$3418**

### Best MM:

- 16MB RAM, 256K SRAM cache
- 528MB local bus IDE hard drive
- 4X CD-ROM drive, 3.5" 1.44MB FDD
- 16-bit sound card, stereo speakers
- Diamond Stealth 64-bit PCI local bus graphics card with 2MB VRAM upgrade
- 17" SVGA color monitor
- 10-bay vertical case
- MS-DOS, Windows for Workgroups, Microsoft Mouse
- Lotus SmartSuite

**Pentium-90 \$3795**  
**Pentium-100 \$3995**

### Best MM Supreme:

The above system modified to include:

- 24MB RAM
- 1GB local bus IDE hard drive
- Altec Lansing high-power speakers



Meridian™ 400C

**DX4-100 \$2995**

### Package #3:

- 8MB RAM
- 350MB IDE hard drive
- External 3.5" 1.44MB floppy drive
- STN color VGA 7.9" display
- Custom carrying case
- Extra battery
- MS-DOS, Windows for Workgroups
- Lotus Organizer
- 7.8" to 10.2" x 1.7"; 3.9 lbs.



Meridian™ 800C

**DX4-100 \$3195**

### Package #3:

- 8MB RAM
- 350MB IDE hard drive
- Internal 3.5" 1.44MB floppy drive
- Dual-scan color VGA 10.3" display
- Custom carrying case
- Extra battery
- MS-DOS, Windows for Workgroups
- Lotus Organizer
- 8.9" to 11.7" x 1.9"; 6.3 lbs.

\*Orders must be for Computers Now! configurations; we've listed just a sampling here. Since we continuously update this list of configurations, please call to confirm these and warranty details. Prices do not include shipping. All products and company names are trademarks or registered trademarks of their respective holders. Intel Inside and Pentium Processor Logos are trademarks of Intel Corporation. ZEOS is a registered trademark. Computers Now! and Z-Card are registered servicemarks. Pantera, Ambra and ZEOS Meridian are trademarks of ZEOS International Ltd. ©1995 ZEOS International Ltd., 1301 Industrial Blvd., Minneapolis, MN 55413 USA. ZEOS is a publicly traded company (NASDAQ symbol: ZEOS). NOW-PCW-9504

**800-554-5220**  
24 Hours a Day • 365 Days a Year

**ZEOS**  
INTERNATIONAL, LTD.

Fax Orders: 800-362-1205 or 612-362-1205. Phone Orders: Outside U.S. and Canada: 612-362-1212, Government: 800-245-2449, ZEOS Information Systems, Inc. GSA #GS00K94AGS176. Purchase Orders, MasterCard, VISA, Am Ex, Discover, Z-Card, COD and leasing programs.

Circle 258 on reader service card

# Entrée to Internet; Taking Warp for a Spin

## Leg Up on the Internet

My sincere thanks for your story on Internet access ["The Internet: How to Get There From Here," January]. I'd wanted to get on the Internet for some time, but traditional online services didn't have good enough access, and my area had no local access numbers. Your comprehensive comparison of the online services, shell account providers, and SLIP/PPP account providers gave me the information I needed to finally get hooked up.

Aaron C. Conley, *Internet*

## This Is Warp Speed?

I'm a computer programmer and technician. When Warp came out, I decided to invest in it. My home system is a 386DX-33 with 4MB of RAM and a 420MB hard drive. Remember IBM's hype about how Warp would run on a 386SX with 4MB of RAM? Yeah, right. Once I'd installed the software that came with Warp, which took about 2 hours, I tried some programs. Some took 30 to 45 seconds to get going—all that lights up is the LED from your hard drive. You might think your machine is in an infernal loop.

Consumers who purchased Warp with 4MB of RAM are going to be very disappointed. If Windows 95 is as slow as Warp, the computer world is in big trouble. Warp does pack some terrific software, but you need the RAM to run it efficiently. I'll stay with Windows 3.11 until I can afford more RAM.

Gerry Lapalme,  
Asbestos, Quebec, Canada

## Health Before Profit

November's *Consumer Watch* on repetitive strain injuries got my mind working—and fuming.

While I don't have RSI, I do suffer back and neck problems from a decade of work in an improperly configured

workstation. Many times I wished I could look out a window to refocus my eyes, or stop typing for 10 minutes, or get up and stretch.

Every company wants everything now, right this minute. But what company will take the time and resources to make a worker's desk more usable? They'd rather use up their workers and hire someone fresh. Few companies let workers pace themselves to avoid RSI.

I had to buy what I needed myself to make my work space more comfortable.

Kurt M. Nehrass,  
Buffalo

## Retooling a Response

In response to letters in your January issue about the editorial "IBM and Apple Fumble Windows Challenge," Phil Lemmons said:

"IBM is trying to win attention by getting OS/2 Warp preloaded along with Windows rather than instead of it. Why? Because buyers overwhelmingly want Windows. Why? Because they want Windows applications." His response is half right: Buyers overwhelmingly want "applications." The reason they overwhelmingly want Windows apps is that they're what's available.

People just want to get their work done. As long as developers produce only Windows apps, that's what people will buy. Yes, it would be suicide for developers to ignore such a market: In that light IBM has wisely chosen to make OS/2 an all-encompassing environment, running more apps than any other environment, including DOS, Windows, and OS/2 apps.

It's time for developers to take notice of OS/2 and break the bonds that tie

them to Microsoft's whims. OS/2 market share is finally reaching critical mass. I am one developer who hopes to see OS/2 succeed, if only to give the marketplace new choices.

David W. Terry, *Internet*

## Local Motion

Regarding "The Local Angle" in December *Letters*: I agree that local stores can offer more in service, reliability,

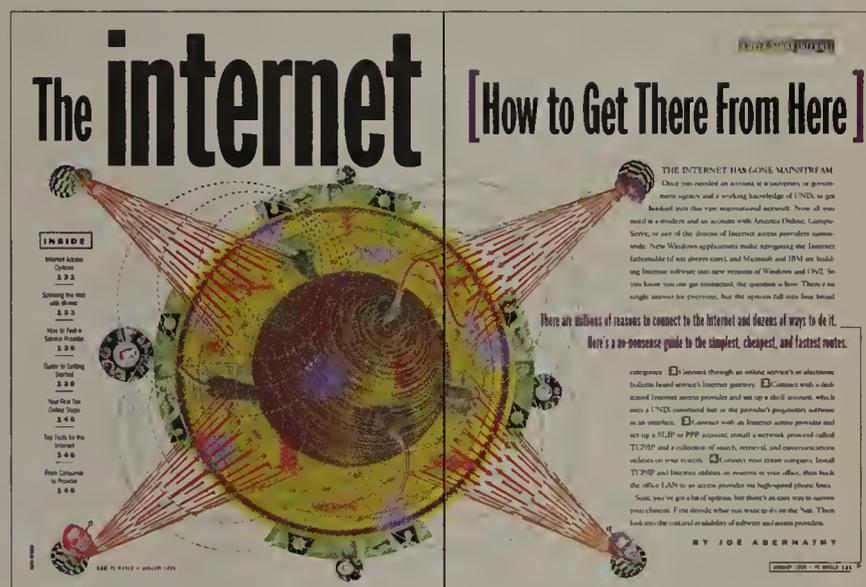
and cost than most direct, computer, or supercomputer stores. I deal with a local store owned and managed by people with great technical knowledge, who believe in helping customers to the point of advising against upgrades when they would be adverse to a customer's interest. They listen well and discuss every aspect of components in the finished product. Will I buy from this store again? You betcha!

Edwin B. Kravat,  
Englewood Cliffs, New Jersey

**Editor's note:** For *PC World's* guided tour through the various avenues to buying a new PC, take a look at our March feature "Let's Make a Deal."

## Trust CD-ROM Protection

Regarding January's *Consumer Watch* on copy protection: The solution to piracy is the distribution of software on

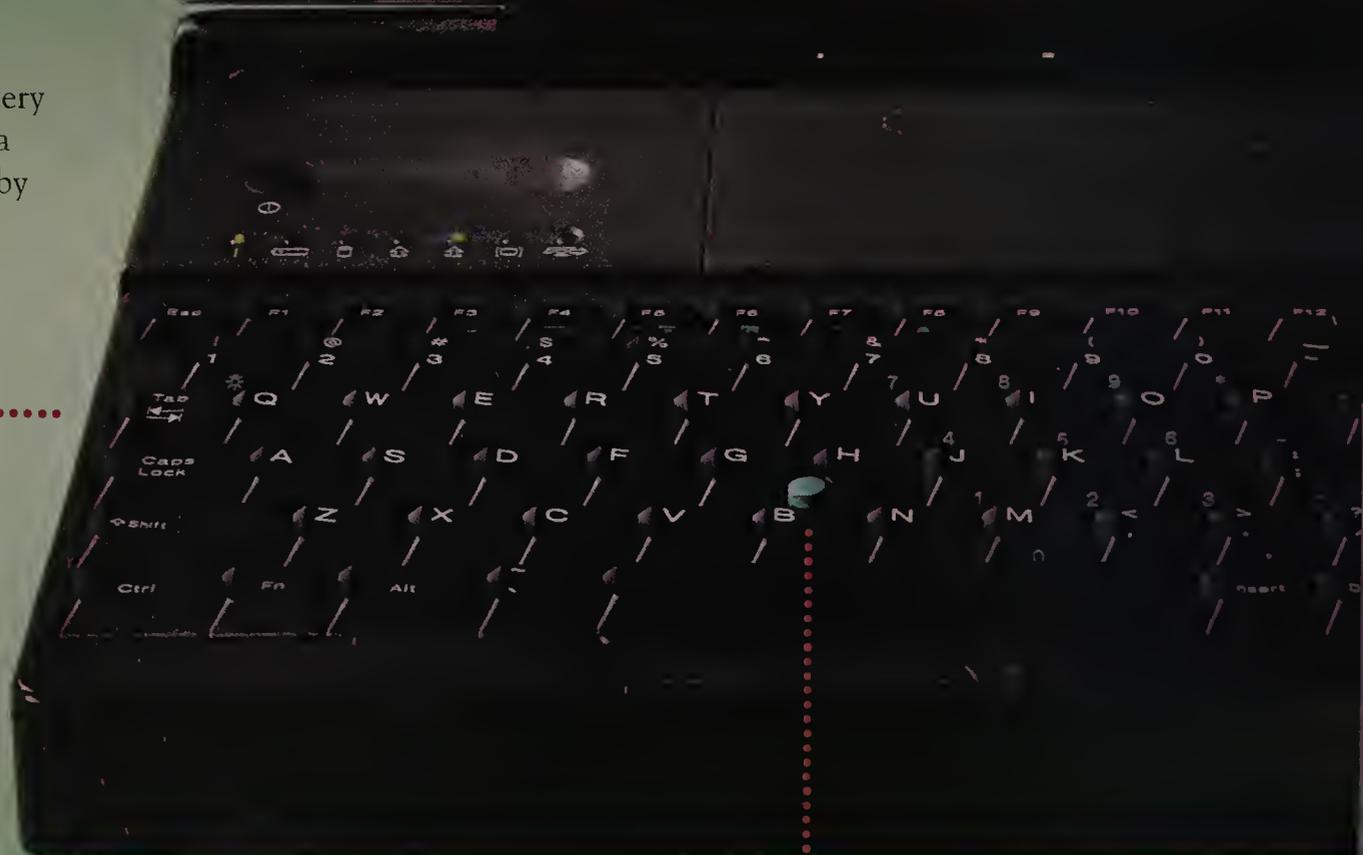


# WHAT TO LOOK FOR IN A TOSHIBA, COMPAQ

See how the screen  
measures up  
against the one in a  
Compaq LTE Elite  
(10.4"TFT vs. 9.5"TFT).

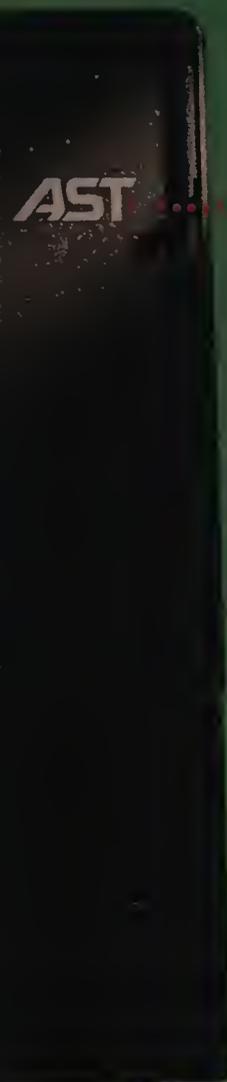


The lithium ion battery  
will easily outlast a  
Toshiba T4850CT by  
over three hours.



With the SmartPoint trackstick your  
hands never have to leave the keyboard. Try that  
with a Toshiba T4850CT external trackball.

# AND IBM NOTEBOOK.



No sticker shock here. The 910N costs less than the IBM ThinkPad 755C.

On the road, even a few ounces can make a big difference. The 910N is over half a pound lighter than a Compaq LTE Elite.



Standard memory, you ask? The 910N features 8MB RAM, compared to the 4MB RAM in the IBM ThinkPad 755C.

With all the choices out there, you're probably asking yourself, "What to buy? What to buy? What to buy?"

Well, maybe this will help. Pictured to your left are a few comparisons to illustrate how the new AST Ascentia 910N stacks up against the field.

The 910N gives you the muscle of the Intel 486DX4/75MHz processor. Just imagine this kind of power and speed to crunch your facts and figures.

To see what's going on, there's a 10.4" TFT active-matrix color screen for crisp graphics. And on a single charge, the lithium ion battery lets you work six to ten hours.

As with every Ascentia notebook, the 910N comes with a 3-year world-wide limited warranty.\* For a little extra reassurance, we provide a 48-hour repair service\*\* and around-the-clock telephone support. It's what you'd expect from one of the world's largest computer makers.

Phone 1-800-876-4AST and we'll tell you where to find the Ascentia 910N. Now that you know what to look for.

**YOU'LL LIKE THE WAY WE WORK™**

## Ascentia 910N

Intel 486DX4/75MHz or DX2/50MHz processors

10.4" diag. TFT active matrix or 10.3" DS-STN color display

340MB, 510MB or 700MB removable hard drive

8MB RAM, upgradable to 32MB

PCMCIA slots - Two Type II or one Type III

Lithium ion battery: 6-10 hours use

Weight: 6.1 lbs.

**AST**  
COMPUTER

CD-ROMs. These discs are reliable, durable, compact, and fast. Most people won't part with their one-and-only CD program disc, so piracy will be stopped at the source. Soon, CD-ROMs will be the default medium for software.

## AND THE WINNER IS...

*PC World* congratulates the following readers, who won prize systems when their returned Reliability and Service Monitor surveys were selected at random:

- James Duncan, February 1994, winner of a Zeos 486DX2-66
- Langley Robertson, March, winner of an Axik 486DX2-66PCI
- Carl Gustafson, April, winner of a Blackship BLK 486/66LB
- Bruce Harget, May, winner of a Inmac 466P
- Floyd Henderson, June, winner of a Micron 4100PCI Magnum

Now if only the vendors would exploit the capabilities of CD-ROMs. All the software I've obtained this way has been nothing more than floppies copied onto a compact disc. If it were compiled into one monolithic clump it would diminish the temptation to make a copy for Uncle Bob.

*Consumer Watch* mentions that some companies send out update discs every six months to registered users. This practice supposedly met with resounding customer approval. Most software companies do the same, except they call these semiannual installments "upgrades" and make us pay dearly for them.

*Lary Harris, Rockville, Maryland*

### Hidden Corruption

Considering the furor over the Intel Pentium flaw and data integrity issues, why isn't there more concern over the potential data corruption of Enhanced IDE drives? The PCI spec strongly recommends parity throughout the whole computer system, and Enhanced IDE (unlike SCSI) is the only part of today's PCI systems that does

not have parity protection. Since we worry about data integrity in today's mission-critical applications, we should worry about all sources of potential data errors. Operating in today's high-speed computing environment without the protection of parity checking is a risk I'm not willing to take.

*Robert Callaghan, CompuServe*

### Who's Zoomin' Who?

When you purchase a car, you don't need to obtain permission from the manufacturer to allow your spouse to drive it. When you buy software, on the other hand, it appears you don't own it; instead, you're given a highly restrictive permanent loan. Software companies have brainwashed their customers into thinking that giving a friend a copy of a program is tantamount to committing piracy. If that isn't bad enough, now we face another form of rip-off: upgrades. Bug-ridden software goes to market, and every six months or so an upgrade is released to fix the bugs, but often the upgrade creates other bugs that must be remedied by other upgrades.



MOVING?  
JUST CALL  
AHEAD

With the amount of money software companies make, they can and do hire battalions of lawyers to keep the consumers subjugated.

Allan Jay Silver, Corvallis, Oregon

### Le Mot Juste

Almost every piece of software on the market now can draw round-cornered rectangles. But that name is a mouthful—we can do better. I suggest the term *obloid* for the following reasons: It's a portmanteau suggestive of *oblong* and *ovoid*; it has the same number of letters as *square* and *circle*; and as far as I know, nobody owns it.

Richard S. Russell, Internet

### Fear of Error Messages

I recently purchased a Pentium-60. As a novice, I felt a little uneasy about messing around with my Windows configurations, but then I read "Tips to Supercharge Windows" [December]. One night, with time to kill and a brew in hand, I put my fears aside. As I defragged my hard disk, ran MemMaker, and turned off the screen

saver, my confidence slowly grew. With every click I felt myself becoming more the master of my computer. My cursor moved deftly across the screen—want me to reduce my program groups? No problem, click, drag, click, drag, done!

However, my confidence was shaken when I tried to enable 32-bit access—all I could see was the word 'error' in the sentence that appeared on screen. I had to assume you would not suggest any actions that might endanger my computer—my companion, my vehicle to the information superhighway.

It's been several days since that incident, and I've recovered somewhat. But I'd like to know, why did changing my disk access setting result in an error message?

Frank Kang, Los Angeles

**Editor's response:** Microsoft's Windows 3.1 manual admits that the 32-bit disk access system's tests may fail to detect incompatible hardware, stating that "you will not know that anything is wrong. You just won't receive the benefit of 32-bit disk access." However, it continues, "If a later

test fails, an error message appears, warning you that something has gone wrong and advising you to reboot." Apparently, this is the error you encountered. To our knowledge, you were nevertheless protected from data loss, and the 32-bit access system improves performance for the vast majority of users. —Shane Rau

### Corrections and Clarifications

The chart in "Buyers' Guide to Printers" [December] failed to note that LaserMaster's WinPrinter 1000 comes with PostScript. It also listed the printer's resolution as 400 by 400 dpi; that's correct for PCL and GDI modes, but it prints 1000 by 1000 dpi in PostScript emulation mode.

In February's "Top 20 PCs: Newcomers Reach New Heights," we listed incorrect contact information for the AT&T Globalyst 600. The correct phone numbers are 800/637-2600 and 513/445-5000.

PC World regrets the errors.

Letters welcomes your responses and ideas. For contact information see page 12. ■

You already know where you want to go, and we can help you get there. With Business Source. Call our software information resource and we'll send you our *Making the Move* kit. It contains our step-by-step guide and an implementation software program. On it you'll find a clever Wizard that creates a detailed map of your move tailored to your specific

## AND WE'LL SEND DIRECTIONS.

software as well as hardware. Which means you can avoid rocky starts and productivity roadblocks. For those of you who are in the early stages of moving, ask for our *Planning The Move* kit to answer your software questions. These are only a few of the ways we've made moving from DOS to Windows™ applications easier than ever. The next move is yours.



[1-800-60-SOURCE]

**Microsoft**

WHERE DO YOU WANT TO GO TODAY?™

# THE NEW NEC VERSA P WITH JUST WHAT YOU'VE WAITED FOR. A NOTE

Now you can slice through those mega spreadsheets, speed through your compute-intensive CAD/CAM applications and

**Now Shipping**

create truly professional, full-motion, multimedia presentations, thanks to

the new NEC Versa™ P. With its 75MHz Pentium™ processor, the Versa P is more than 100% faster than the equivalent Intel 486™ system. And we've fine-tuned the performance with 256K of secondary cache. So it has the horsepower to race through programs that used to crawl on

anything but a desktop system.

But that's just half the story. Because the Versa P has NEC's exclusive

VersaVision™ High-Resolution 800 x 600 TFT color screen\*.

the first screen of its kind on a notebook computer. This breakthrough technology lets you take the equivalent of a desktop SVGA display with you on the road. The VersaVision High-Resolution display lets you see 53% more than other notebooks. That's 53% more spreadsheet columns, 53% more for windows, and 53% more for useful tools and icons. All so you can do more work faster than ever before.

Of course, the Versa P offers the quality, reliability and support you expect from



Why settle for what's inside the dotted lines? See 53% more with the unique NEC VersaVision High-Resolution display.

NEC. That's why we offer an industry-leading 3-year limited warranty and UltraCare™ service program that

puts help as close as the nearest telephone. And it's backed

with our free courier service.

So what are you waiting for? Find out more about the

75MHz Intel Pentium processor, 256K secondary cache

8 MB RAM; expands to 40 MB, Up to 810 MB hard disk

Choice of active-matrix TFT color displays: High-Resolution 800 x 600, Enhanced 640 x 480 with 64K colors

Reversible, removable screen

Indeo™ compression for full-motion video

Built-in 16-bit Sound Blaster® compatible sound system

Audio jacks for headphone/speakers and microphone

Versa Docking Station™ II and Multimedia CD Dock options

2 Type II PCMCIA slots, or 1 Type III slot

VersaBay™ for additional PCMCIA and expansion options

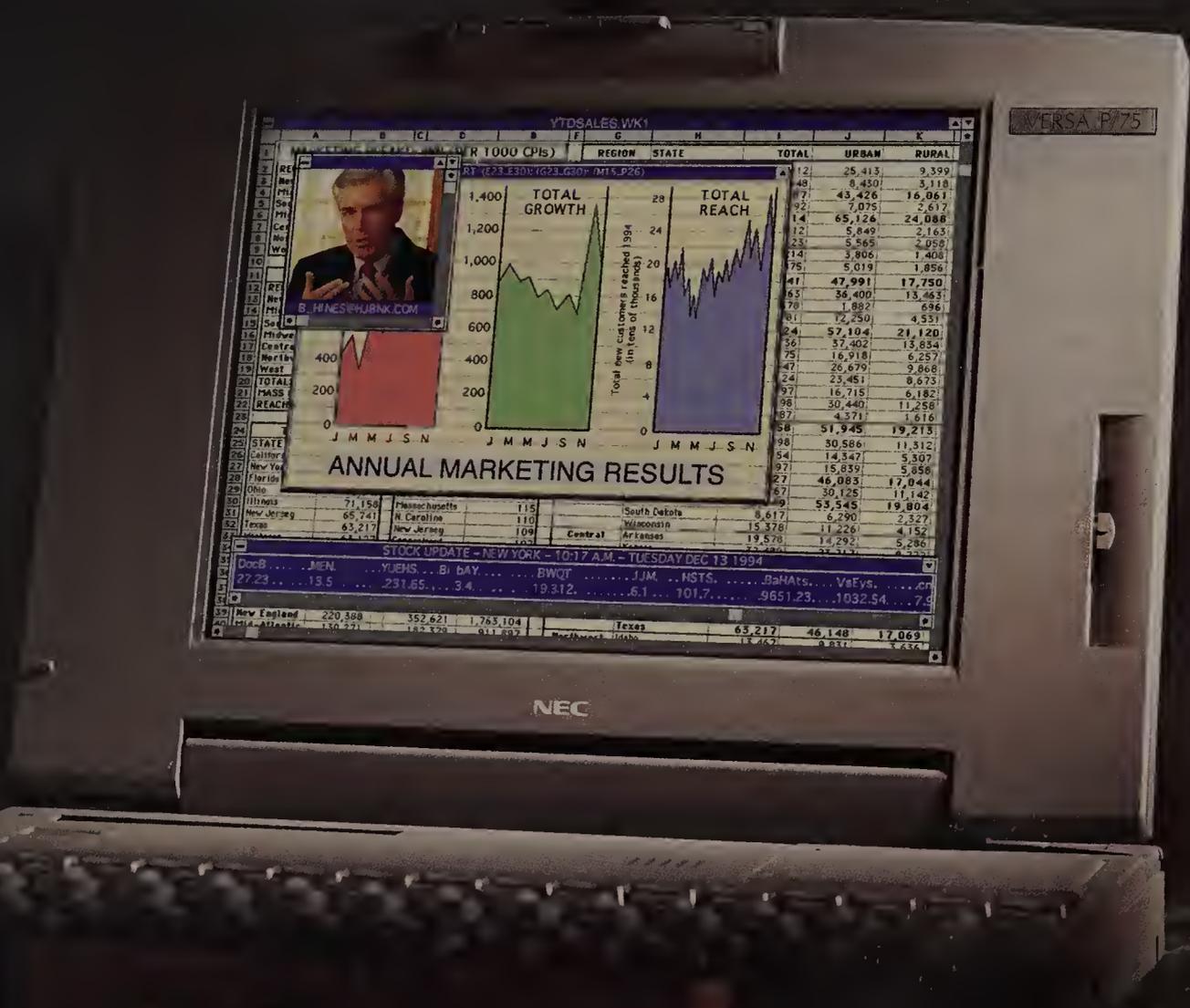
Plug and Play ready for Windows™ 95

new NEC Versa P notebook. Just call us at 1-800-NEC-VERSA. Or see your favorite dealer today.

**SEE, HEAR  
AND FEEL THE  
DIFFERENCE.™**

**NEC**

# PENTIUM PROCESSOR POWER. BOOK YOU DON'T HAVE TO WAIT FOR.

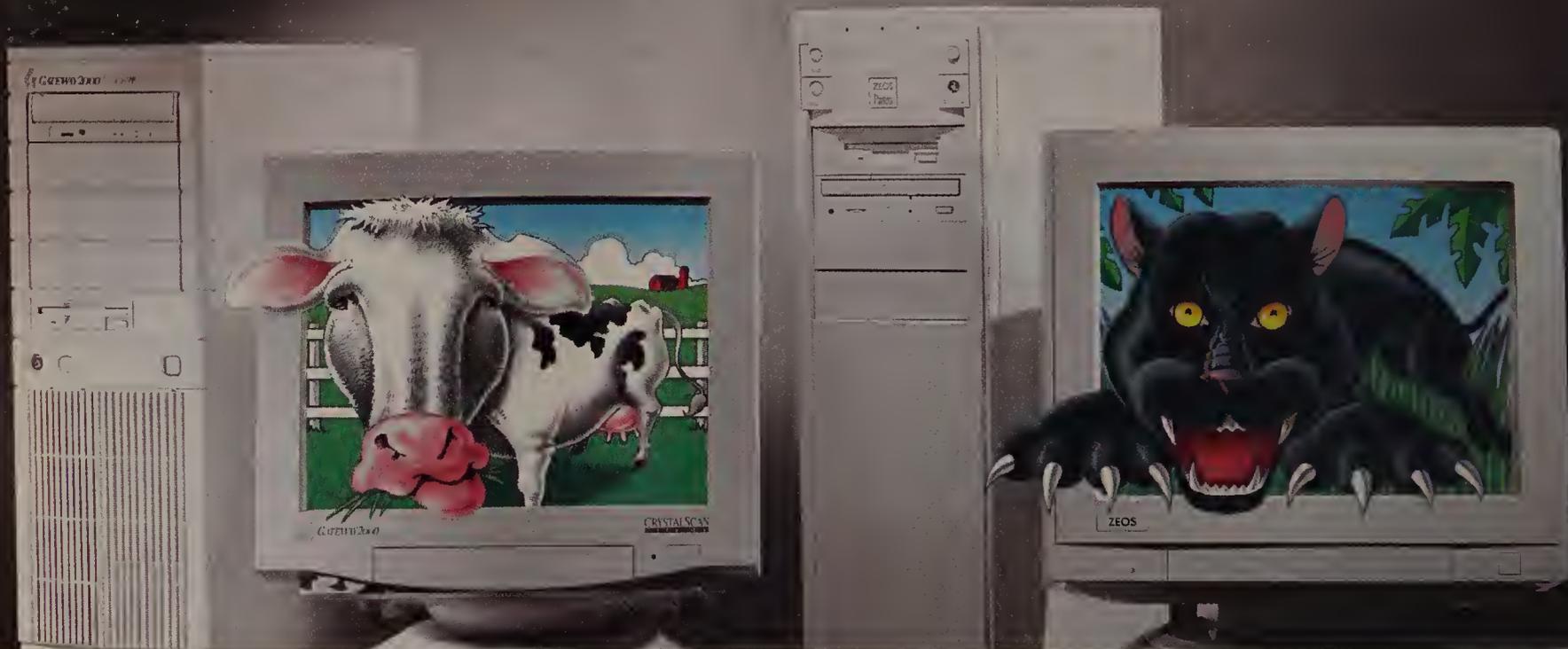


**pentium**  
PROCESSOR

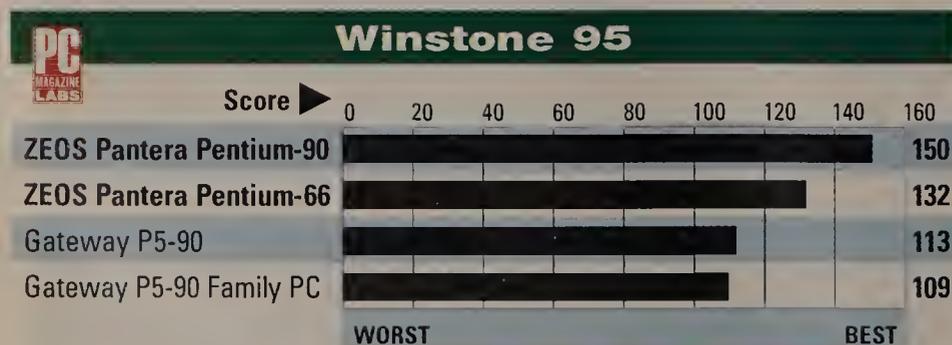
600 display or VersaVision full-color TFT with 64,000 colors. are trademarks and UltraCare is a servicemark of NEC Technologies, Inc. The Intel Inside logo is a registered trademark and Inedo, Pentium and Intel 486 are trademarks of Intel Corp. represent EPA endorsement of any product or service. ©1994 NEC Technologies, Inc. NEC GSA #GS00K94AGS5241.

Circle 201 on reader service card

# One Slow Cow VS. One Fast Cat.



While they're grazing, ZEOS is blazing... and setting new records. In a December 6, 1994 comparison report, *PC Magazine* benchmarked 96 Pentium processor-based systems. The ZEOS Pantera Pentium-90 earned the highest Winstone 95 score of *all* machines tested, and the Pantera Pentium-66 easily passed both of Gateway's Pentium-90 PCs! If you're after performance (and who isn't?), then get a Pentium processor-based system. But, as the benchmarks prove, not all Pentium PCs deliver. The ZEOS Pantera will give you unbeatable performance and the highest quality features—all at an affordable price. And it's ready to ship *today!* For the fastest, hottest Pentium-based PC, call a ZEOS Systems Consultant now at 800-554-5220.



Reprinted from PC Magazine, December 6, 1994

Fax Orders: 800-362-1205 or 612-362-1205. Phone Orders: Outside U.S. and Canada: 612-362-1212. Government: 800-245-2449. ZEOS Information Systems, Inc. GSA # GS00K94AGS5176. Purchase Orders, MasterCard, VISA, Am Ex, Discover, Z-Card, COD and affordable leasing programs.

## Pantera As Tested:

**Pentium-66** **\$2745**  
**Pentium-90** **\$3095**

- ▶ Genuine Intel® Pentium™ 66 and 90 processors
- ▶ 16MB RAM, 256K SRAM cache
- ▶ 1GB local bus IDE hard drive, 256K cache
- ▶ 4X CD-ROM drive and 3.5" 1.44MB floppy drive
- ▶ Diamond Stealth 64-bit PCI local bus SVGA color graphics card with 2MB VRAM upgrade
- ▶ 15" 1024 x 768 NI SVGA color monitor, .28mm dot pitch
- ▶ Two high-speed serial ports, one enhanced parallel port
- ▶ On-board Fast SCSI-2 option (Pentium-66)  
On-board PCI local bus Fast SCSI-2 and Ethernet options (Pentium-90)
- ▶ Six-bay desktop case (Pentium-66)  
Ten-bay vertical case (Pentium-90)
- ▶ 101-key space-saving keyboard
- ▶ Microsoft Mouse
- ▶ Microsoft DOS 6.2 and Windows for Workgroups 3.11
- ▶ Lotus SmartSuite

**800-554-5220**  
**24 Hours a Day**  
**365 Days a Year**



Purchase orders are subject to approval. Business leasing programs available. All prices, specifications and availability are subject to change without notice; call to confirm these and warranty details. Prices do not include shipping. All products and company names are trademarks or registered trademarks of their respective holders. Intel Inside and Pentium Processor Logos are trademarks of Intel Corporation. ZEOS is a registered trademark; Z-Card is a registered servicemark; Pantera is a trademark of ZEOS International Ltd. ©1995 ZEOS International Ltd., 1301 Industrial Blvd., Minneapolis, MN 55413 USA. ZEOS is a publicly traded company (NASDAQ symbol: ZEOS). GVZ-PCW-9504

Circle 216 on reader service card

# The End of 'No Questions Asked' Returns?



You may not know it, but a battle is brewing—and the aftermath could very well change the way you buy your next computer. The war's being waged between

PC hardware manufacturers and retailers. At issue: the liberal return policies that consumers count on when they're buying high-ticket items—and that hardware companies are determined to stop.

Money-back guarantees have become the norm among retailers selling everything from PCs to TVs, and customers love them. Can't get your new PC to work? Not satisfied with the quality of technical support? Find a better deal at the store down the street? No problem! Just take it back, show your receipt, and get a full refund—no questions asked. Sounds wonderful—to consumers, at least.

But PC makers tell a different story. "Every company is getting more returns than they feel are acceptable," says one PC company executive. "It may not be a hot topic at the customer level, but it is in our business." PC makers—along with manufacturers of just about every type of home electronics equipment—are on a mission to cut their losses. Their goal: to reduce the number of returns—or at least make retailers and customers share the cost of providing the service. Right now, the bulk of returned products go back to the manufacturer, who credits the retailer's account. (Though mail-order companies also have liberal return policies, they get to decide what's taken back and so can control costs.)

Just how high are the return rates be-

moaned by PC makers? That's tough to say, since companies are hesitant to disclose any figures. The public got a rare glimpse of the cost of returns several years ago, when Packard Bell made an initial public offering and reported that it took back products worth \$107 million in 1991.

## Many Happy Returns

When was the last time you returned a home electronics item? For me, it was last December. I bought a TV-and-VCR combo, then a couple of weeks later found a better model on sale for less. Without thinking twice, I took the first set back, got my refund, and bought the other unit. And I didn't feel a bit guilty about it. The store advertises its no-questions-asked return policy, and I was simply exercising my rights under that policy.

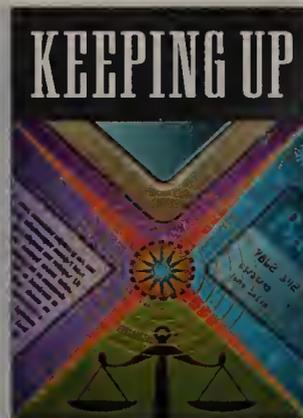
As PCs move into the realm of home appliances, they're showing up in the same stores that sell TVs and stereos—and they're backed by the hotly competitive, and liberal, return policies that have become the hallmark of these retailers. Although 30-day money-back guarantees are the norm, many stores

will accept returns beyond that period in the name of good customer service. Customers are taking advantage of—and some PC makers say they're abusing—this generosity.

The reasons products are returned range from the justifiable (a defect) to the fraudulent (for example, buying a PC to complete an important project, then bringing it back before the 30 days expire). But for most consumers, the reason lies in the gray area between these extremes.

The first-time home PC buyer may be confounded by the idiosyncrasies of multimedia and unable to get answers from tech support. In frustration, the buyer may pack up the PC and take it back to the store—an extreme but understandable step. Other customers discover their new PC can't satisfactorily run all the hot new CD-ROM titles that prompted the purchase in the first place. Back it goes (though it will likely be replaced by another, more capable model). Or a buyer may find a better deal elsewhere. And some may decide they can't afford a new Pentium after all—who hasn't suffered from remorse after an expensive purchase?

**The U.S. Department of Education has funded a three-year project to research how computer technology can help disabled students learn effectively in schools. Project Connect will equip students with Macintosh PowerBooks and groupware from Group Logic; they'll connect to a wireless LAN via Digital Ocean's network adapter, Grouper 100LT. Assistants using the same equipment will help students. Spokesperson Carolyn Knox-Quinn says while the project uses cutting-edge technology, the solu-**



**tion's relatively inexpensive... Has Energy Star changed public opinion about the computer industry's environmental correctness? Not according to *The Environmental Report*, a nationwide survey of 1000 consumers that was recently published by Environmental Research Associates of Princeton, New Jersey. Six out of ten respondents couldn't name a computer company that stands out as environmentally responsible, and more than one out of four said there is no such company in the industry today.**

By Roberta Furger



# AnthroCarts!®

AnthroCarts will knock your socks off! Imagine how great it'll be when you find the perfect furniture for your equipment — just the right size, tough as nails construction and dozens of accessories.

And you'll find our service so real and responsive, you'll get a kick out of ordering direct!

Call for a free catalog!



Lifetime Warranty.



Adjustable for all sizes.



Lots of choices.

**800-325-3841**

6:00 AM to 6:00 PM PST, M-F

e-mail: sales@anthro.com



10450 SW Manhasset Drive  
Tualatin Oregon 97062  
Phone: (503) 691-2556  
Fax: (800) 325-0045

GSA contract no. GS-OOF-5040A. Available for OEM applications. Prices from \$159.00  
Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.

Are these returns justifiable? Who should foot the bill? The answer depends on whether you're buying or selling.

### Getting At the Cause

After a yearlong study, the Electronics Industry Association's (EIA) Consumer Electronics Group released a report last fall that delineated who's responsible for what and recommended steps retailers and manufacturers could take to reduce the chance of returns. The guidelines are voluntary, but they provide a clue to the changes in store. The report suggests manufacturers should:

- Improve the documentation that comes with home electronics equipment.
- Operate—or in the case of PC companies, beef up—phone support centers. The EIA recommends providing toll-free lines and prominently displaying the phone number in all documentation to encourage customers to call with questions, rather than take back the product.

• Improve training and support materials given to retailers. Statistics show that the more knowledgeable the sales staff, the less likely a customer will return a product.

Retailers should:

- Stop returning damaged products.
- Ask customers why they are returning products. There's also a recommendation to train customer service staff in how to refuse "unjustified returns," though the report doesn't spell out what that means.
- Check to see that all documentation, disks, and so on are returned.
- Limit the time period during which returns are accepted.

Some manufacturers have also talked about another possibility that was not mentioned in the report: getting retailers to institute restocking fees, used extensively by mail-order companies. You can still return the product, but you'll be charged anywhere from 5 to 20 percent of its cost.

### A Right or a Privilege?

"The consumer has to take some responsibility," said AT&T vice president Stan St. John at a consumer electronics show. "You would never hear of someone's returning a car because they changed their mind or got a better deal," said another industry executive. "Why should they be

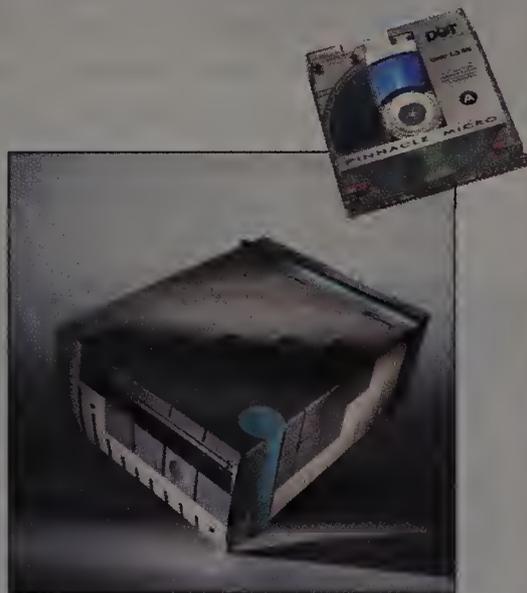
# YOUR NEXT HARD DRIVE IS A PINNACLE OPTICAL.

Have you outgrown your hard drive? Need more storage? Go optical. There is no doubt that optical is the storage solution for the future. And Pinnacle Micro is the optical storage leader. Optical is fast - fast as most hard drives. Optical is removable - fill up a disk... just add another one. Optical is reliable - no data loss. No head crashes. Even better, optical media costs less than 15 cents per megabyte.

Now you can store unlimited amounts of data for endless applications such as graphics, imaging, digital audio, digital video, CAD/CAM, database, network storage and data archiving. You can even transport Megabytes and Gigabytes of large files within seconds just by handing a disk from one person to another. Or place your disk in a Fed-Ex package and ship it for next day delivery.



Tahoe™ 230 MB  
3.5" Portable Optical Drive



Sierra™ 1.3 GB  
5.25" Optical Hard Drive

Pinnacle offers the industry's fastest 3.5" and 5.25" optical drive solutions, the most affordable Recordable CD system, and network optical library systems that range from 20 Gigabytes to over 1 Terabyte for on-line, centralized storage. Pinnacle's award-winning line of optical storage solutions will increase productivity in every environment, from personal computing to the largest global network.

So before you buy your next hard drive... go Pinnacle optical. A storage solution you will never outgrow.

All trademarks and Registered Trademarks of Their Respected Owners.

**TO REACH THE PINNACLE CALL: 800-553-7070**

**PINNACLE MICRO**  
THE OPTICAL STORAGE CO.

Circle 145 on reader service card

able to do so with electronics equipment?"

Clearly, consumers need to make smart, educated choices—to read up on technology and assess their needs before finalizing a purchase. But manufacturers and retailers need to hold up their end of the bargain as well. For starters, that means not making unwarranted claims about products, ensuring that the sales staff is knowledgeable about all products' capabilities and does not recommend inappropriate equipment, and adequately staffing technical support and customer service lines with trained personnel. That's a tall order, but unless it's filled consumers will keep on returning products, and the industry will be left to fight over the bill.

### Shop Talk

#### Still Sitting by the Phone

Last July, Mari Frank had problems with Dell ("The Rumors Didn't Hold True," January 1995), and the editor's note explained how Dell was correcting the problems. Considering my experience, I'd have

to say things have gotten no better at Dell. First it took me several days just to order the computer. It was impossible to reach the salesperson I'd been working with; all I got was an answering machine.

Once you've placed an order, Dell gives you another phone number you call to check the order's status. I waited on hold for over 50 minutes. When I finally got through, I mentioned how long I'd been on hold, and the representative responded, "We know. There's a board that tells us the number of people on hold and how long they have been holding." No apology or concern for my prolonged wait. This convinced me that Dell wasn't very customer oriented, and I canceled my order. After reading Frank's letter, I think I made the right decision.

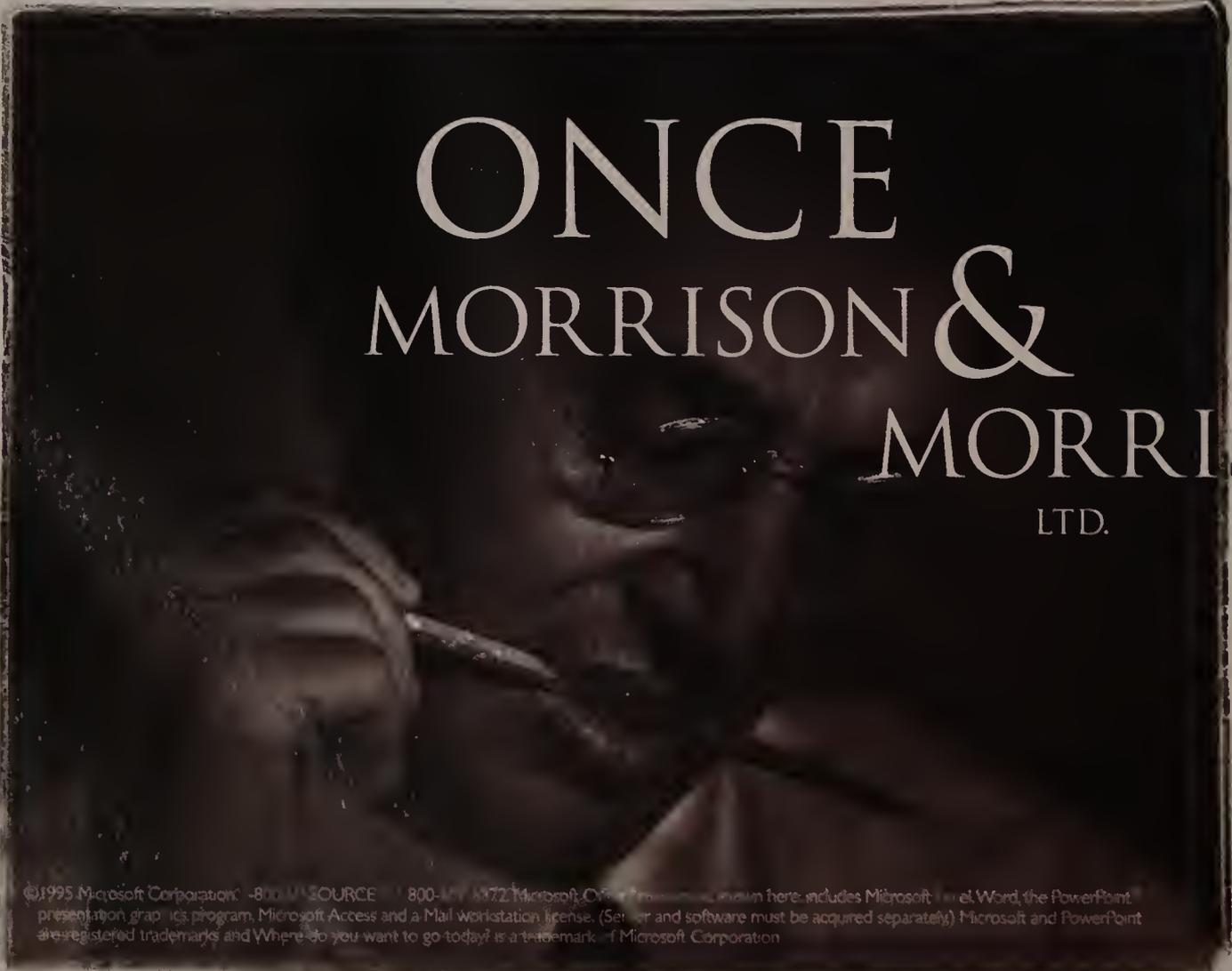
What strikes me as odd is that *PC World* continues to rank Dell extremely high in customer service. In January's Power Top 20 ["Top 20 PCs: Welcome to the 90s"], *PC World* rated the Dell units 79 for service—the second-highest score. Considering my experience, Frank's report, and the

other dissatisfied customers *PC World* has heard from, Dell's reputation for outstanding service and support is simply unwarranted. I based my original decision to buy a Dell partly on the ratings in *PC World*, and I feel misled.

*Andy Krochmalny, Tempe, Arizona*

**Editor's response:** In the January issue, we reported an increase in the number of letters complaining about Dell's poor service. The letters were notable because of the company's long history of no complaints. We also reported Dell's assurances that things were on the mend. But letters like Krochmalny's, complaining about long waits on the sales and technical support lines, keep coming in.

Steve Smith, Dell's director of customer service, says a series of events led to the highest—and least predictable—volume of calls the company has ever experienced. According to Smith, Dell has sold more Pentium computers than any other vendor to date. So when Intel's announcement of the faulty Pentium chips hit the streets, Dell customers hit the phones. And they



ONCE  
MORRISON &  
MORRISON,  
LTD.

called the company that sold them the machine—Dell, not Intel. These calls, compounded by a barrage of postholiday questions from owners of new computers, resulted in one day when it was impossible to get through to the company at all. Smith assured us that these were exceptional circumstances, and that if the company had been able to predict the Pentium calls, it would have been prepared.

As for getting through to a particular salesperson, Smith recommends calling the main sales line and asking whoever answers to give you that salesperson. However, everyone in sales should be able to provide the same level of service.

It's important to note that the *PC World* service ratings are based on reader surveys, not editor evaluations, so it was *PC World* readers who rated the company.

#### And Behind Door A

Although I've used a computer for 25 years, I acquired my first IBM product—OS/2 Warp—last week. I don't want to buy another for at least 25 more years if

the experience is going to be like this one.

When I attempted to load Warp, I couldn't. My PC, like millions of others, designates the 5¼-inch drive as A: and the 3½-inch drive as B:. There was no way for me to load Warp because the operating system has to be loaded from the A: drive. I looked in the user guide but couldn't find one word about my predicament or how to work around it. I checked the README file, but again found no reference. I then phoned technical assistance—a toll call—and waited 35 minutes to be told that IBM, in accordance with current industry standards, designates 3½-inch drives as A:. The technician said the solution was to switch the cables on my two drives.

I was able to make the switch, but I'm wondering what millions of less experienced users will do when they open Warp. *John Coons, Visalia, California*

**Editor's note:** An IBM spokesperson confirmed that the company is shipping Warp only on 3½-inch disks because that is the current industry standard. Customers with 5¼-inch A: drives can get directions for

switching floppy drive cables by calling 800/992-4777 and requesting document 2582. Or go to the IBM OS/2 support forum on CompuServe ([goto ibmos2](#)), and search the library section for **w5crdr.zip** (if you have Warp on CD-ROM) or **w5drdr.zip** (if you have a 5¼-inch A: drive). Once you have downloaded the correct file, you'll need to unzip it using the shareware decompression utility PKUnzip. The file will create 5¼-inch disks you can use to install the operating system.

#### 48 Hours

Every now and then circumstances bring you to appreciate the efforts of others. Over the past few years, I have purchased eight or so computers.

I bought the most recent one, an Ambra T4661/VL 486DX2 M-Tower, in March 1994. At the time, it was one of Ambra's top computers. The system was configured with a CD-ROM drive, a tape backup unit, and an Ambra 15-inch FST monitor. It worked flawlessly—until a recent day when I was working on my computer. ►

We're not saying that the accountants at Chicago's Morrison & Morrison, Ltd. were overworked. It's just that when you handle the financial matters of over a 1,000 clients, an awful lot of numbers get crunched. But thanks to Microsoft® Excel, they now spend less time mulling over software and more time getting important things done. You see, Microsoft Excel uses IntelliSense™ technology, which basically makes for a smarter spreadsheet. Now accountants everywhere

CHANGED SOFTWARE, THEIR  
EATING HABITS CHANGED, TOO.



can have better-balanced books as well as better-balanced meals. To learn how Microsoft can help your growing business, call Business Source. It's an information resource dedicated to helping you find plain-English answers to all your software questions. You can also get either our *Planning The Move* or our *Making The Move* kit to help make switching easy and hassle-free. Call today and see why moving to Microsoft programs is recommended by businesses and nutritionists everywhere.

business  
SOURCE

[1-800-60-SOURCE]

Microsoft

WHERE DO YOU WANT TO GO TODAY?™

# Tips by Fax!

## From PC World's Editors

Call to order via touch-one phone and receive by fax immediately.

### Top Tips for Windows 3.1, #100

A compilation of expert trouble-shooting advice, performance-boosting tips, and undocumented shortcuts. *Entire Package: \$16.95, #100*

- 80 Windows Tips and a Few for DOS, 10 pgs, \$9.95 #102
- Solving Windows Error Messages, 5 pgs, \$6.95 #103
- Tips to Supercharge Windows, 7 pgs, \$7.95 #104

### Complete PC Buyer's Guide, #200

Everything you need to know about how to buy your next PC: system reviews, buying tips, company reliability and service ratings. Plus a How to Buy instant reference card.

*Entire Package: \$11.95, #200*

- Brand Name vs. No Name, 5 pgs, \$5.95 #203
- Reliability and Service, 2 pgs, \$3.95 #204
- Buying Locally: Smart Tips, 3 pgs, \$4.95 #206
- Best Products of 1994, 5 pgs, \$5.95 #207
- Smart Buyer Tips, 4 pgs, \$5.95 #208

### Multimedia Hardware Guide, #420

Tips for buying and setting up a multimedia PC with reviews of CD ROM drives and sound boards. *Entire Package: \$13.95, #420*

- Multimedia, Step by Step, 2 pgs, \$3.95 #402
- How to Avoid a Multimedia Mugging, 2 pgs, \$3.95 #403
- Audio Components for PCs, 4 pgs, \$5.95 #404
- CD ROM Drives and Sound Boards, 12 pgs, \$11.95 #409

### CD ROM Buyer's Guide, #430

Reviews of the newest and hottest CD ROMs for business, entertainment, and education. *Entire Package: \$16.95, #430*

- Great CD ROMs for Fun and Profit, 5 pgs, \$5.95 #405
- From Shareware to Leisureware, 2 pgs, \$3.95 #406
- Summer Sizzlers: CD ROM Titles, 3 pgs, \$4.95 #407
- DISCoROMa: The Latest CD ROMs, 4 pgs, \$5.95 #408
- Best CDs of '94, 10 pgs, \$9.95 #410

Plus, now you can receive by fax next month's PC World Top 20 system reviews and rankings — a month before publication. Call 1-800-434-4495 and choose from the PC World Top 20 Power Desktops Flash Report, the Top 20 Budget Desktops Flash Report, or the Top 20 Mobile PCs Flash Report. Each report costs \$9.95 and is delivered to you by fax immediately. (First day of availability for May Flash Reports is March 23.)

## 1-800-434-4495

Payment by VISA or MasterCard. Or call 1-900-903-2972 and applicable charges will appear on your phone bill. Touch-tone phone and fax machine required.

# PC WORLD

CONNECT

## CONSUMER WATCH

Without warning, my monitor went blank. After several attempts to restart, I decided to call customer service. I was apprehensive about what I'd find on the other end of the line because of IBM's decision to phase out Ambra computers.

I called IBM technical support at approximately 11:30 a.m. The service representative was very friendly. Over the phone, we determined that the monitor had gone bad and would have to be replaced. The service representative took my name and shipping address, and in less than 24 hours a new monitor arrived at my front door! It worked fine. I called the shipper and packed my old monitor up (as per the in-

structions that came with the new monitor), and that very day the shipper arrived to transport the old monitor back to IBM. Incredible!

*Butch McConn,  
Grand Forks, North Dakota*

*Shop Talk is written and researched by PC World Associate Editor Christina Wood, with research assistance from Reader Liaison Peggy Nauts. Think you've gotten a raw deal—or a great one? Consumer Watch wants to hear the details. We'll investigate complaints and publish those letters with the broadest interest. See page 12 for contact information.*



### Windows Calculator

**Bug:** The calculator applet included with Windows and Windows for Workgroups versions 3.1 and 3.11 has a little math problem of its own that results in fairly significant subtraction errors.

**Fix:** Microsoft has uploaded a fix to a number of online services. You can find a revamped version in the self-extracting archive file **ww1138.exe** on CompuServe (**go msl**), GEnie (in the Microsoft Software Library), on the Microsoft Download Service at 206/936-6735, and via the Internet using ftp at **ftp.microsoft.com**.

### Lotus Organizer 2.0

**Bug:** Organizer 2.0 users who downloaded the product from ZiffNet, as well as a few who purchased the early shrink-wrapped copies, have reported numerous problems including conflicts with some super-VGA and XGA video adapter drivers, a File Archive feature that doesn't work, portions of Organizer 1.x data files that aren't converted, difficulty printing, and a File Export feature that creates DBF-format files containing only memo fields.

**Fix:** Lotus has released a two-part update, Organizer 2.0a, that fixes the video driver and File Archive features. The file **org2upd.zip** contains the main portion of the patch. If you use Organizer 2.0's group calendar

and scheduling features, you'll also need **orgadm.zip**. Each file contains instructions. You can find the update files on CompuServe in the Organizer General Library (**go lotusb**) or on Lotus's own BBS in the Organizer file area. For a list of known problems, download the frequently asked questions (FAQ) file **orgfaq.txt** from CompuServe or the Lotus BBS (617/693-7000).

### QEMM 7.5

**Bug:** The initial release of Quarterdeck's QEMM 7.5 (in which the QEMM386.SYS file is dated September 17, 1994, or October 12, 1994) has trouble resizing XMS handles, a glitch that can interfere with XMS-based disk caches (such as SmartDrive) and prevent you from exiting and then reloading Microsoft Windows.

**Fix:** Quarterdeck has released a patch for all the above glitches, as well as for problems that the company attributes to third parties. You can find the patch in a self-extracting archive file named **qpat2.exe**, located on CompuServe in the Quarterdeck forum (**go quarterdeck**).

—Scott Spanbauer

*Scott Spanbauer is a contributing editor for PC World. Have you run into a software bug or hardware incompatibility? Call us at 415/978-3253 with the details. We'll investigate problems and report on those with the broadest interest. Due to the volume of queries, we may not be able to return your call, and we can't provide technical support.*

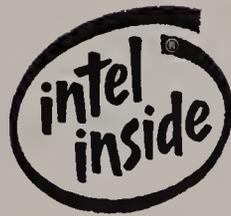
[?]



[FEATURES 100MHz PENTIUM™ PROCESSOR, 1GB HARD DRIVE, 4X CD-ROM, 16MB RAM,

Why do ONE million people tie  
A PIECE OF ELASTIC AROUND THEIR  
ANKLES EACH YEAR AND PLUNGE  
300 FEET TO THE EARTH?

It must be like the adrenaline rush of experiencing the raw  
power of a P5-100 Best Buy from Gateway 2000® as it rips  
through tons of applications simultaneously ... and like  
the heart-pounding excitement of getting the best value  
in the PC industry.



MS® Office Professional, Bookshelf® '94 AND MONEY for \$2,999]



8 0 0 - 8 4 6 - 2 0 6 5



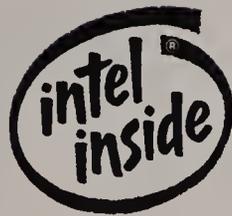
## **LEAP OF FAITH BUNGEE, INC.**

**We guarantee our  
cords won't break or your  
next jump is FREE!**

[FEATURES 60MHz PENTIUM™ PROCESSOR, 730MB HARD DRIVE, 4X CD-ROM, 8MB RAM,

Why do 175 million people  
spend hours cutting along  
dotted lines every Sunday?

It must be like buying a P5-60 from Gateway 2000® — to get a fantastic value. There's no greater satisfaction than getting a good deal on a high-quality product. And you don't need a little piece of paper to get a remarkable value on a Gateway P5-60 — it's as simple as picking up the phone.



MS Office Professional, Bookshelf® '94 AND MONEY for \$1,999]



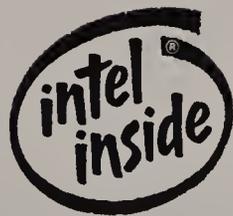
8 0 0 - 8 4 6 - 2 0 6 5



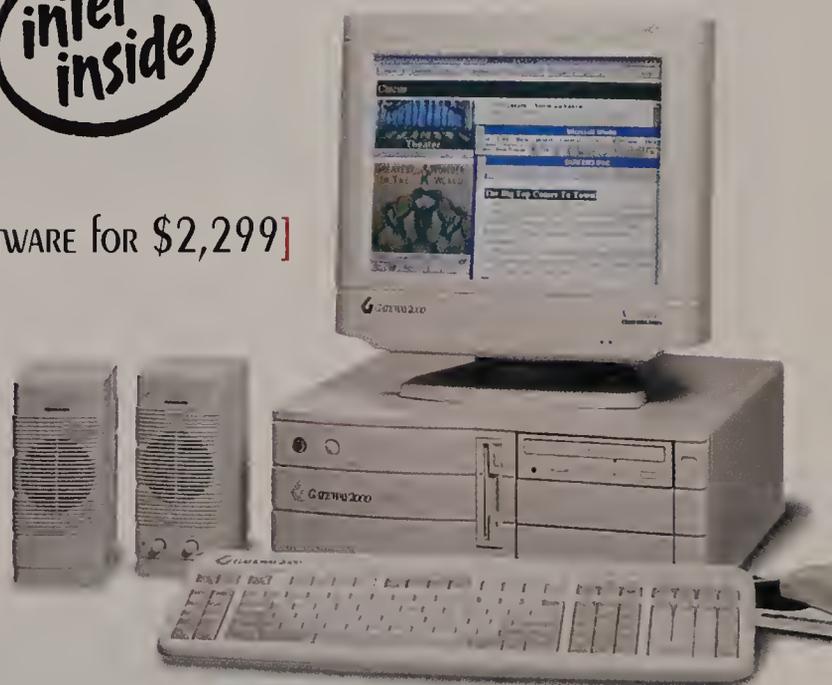
[FEATURES 75MHz PENTIUM™ PROCESSOR, 730MB HARD DRIVE, 8MB RAM, 4X CD-ROM, SOUND CARD, SPEAKERS,

Why is AN EVENT WHERE WOMEN  
HAVE BEARDS AND HOUSE PETS  
IN TUTUS JUMP THROUGH RINGS OF  
FIRE CALLED THE GREATEST SHOW  
ON EARTH?

It's like the Gateway P5-75 Family PC™ multimedia system —  
it has something for everyone! The P5-75 Family PC delivers  
superior performance easily running all the latest software  
applications. For today's family, the Gateway Family PC is the  
greatest show on earth!



TelePath™ IIv fax/modem COMMUNICATION CENTER & Family PC software for \$2,299]



8 0 0 - 8 4 6 - 2 0 6 5

# Gateway 2000® Family PCs™

## 4DX2-66 FAMILY PC

- Intel® 66MHz 486DX2 CPU\* w/ fast write-back cache
- 8MB RAM
- 540MB 11ms IDE Hard Drive
- PCI Enhanced IDE Interface
- PCI Local Bus Graphics with 1MB
- Quad-Speed CD-ROM, 16-Bit Sound Card & Altec ACS-5 Speakers
- TelePath™ IIv 14.4K Fax/Modem Communication Center
- 3.5" Diskette Drive
- 14" Color CrystalScan® Monitor
- Mini Desktop Case
- 101-Key Keyboard & MS Mouse 2.0
- MS-DOS® 6.22 & WFW 3.11
- MS Works 3.0, Encarta™ '95, Money, Cinemania® '95, Fine Artist & Golf
- 3-Year Limited Parts Warranty

**\$1799**

## P5-60 FAMILY PC

- Intel 60MHz Pentium™ Processor\*
- 8MB RAM, 256KB Cache
- 540MB 11ms IDE Hard Drive
- PCI Enhanced IDE Interface
- 32-Bit PCI Graphics Accelerator w/ 1MB DRAM
- Quad-Speed CD-ROM, 16-Bit Sound Card & Altec ACS-5 Speakers
- TelePath IIv 14.4K Fax/Modem Communication Center
- 3.5" Diskette Drive
- 15" Vivitron™ Color Monitor
- 7-Bay Desktop Case
- 101-Key Keyboard & MS Mouse 2.0
- MS-DOS 6.22 & WFW 3.11
- MS Works 3.0, Encarta '95, Money, Cinemania '95, Fine Artist & Golf
- 3-Year Limited Parts Warranty

**\$2099**

## P5-75 FAMILY PC

- Intel 75MHz Pentium Processor\*
- 8MB RAM
- 730MB 10ms IDE Hard Drive
- PCI Enhanced IDE Interface
- 64-Bit PCI Graphics Accelerator w/ 2MB DRAM
- Quad-Speed CD-ROM, 16-Bit Sound Card & Altec ACS-5 Speakers
- TelePath IIv 14.4K Fax/Modem Communication Center
- 3.5" Diskette Drive
- 15" Vivitron Color Monitor
- 7-Bay Desktop Case
- AnyKey® Keyboard & MS Mouse 2.0
- MS-DOS 6.22 & WFW 3.11
- MS Works 3.0, Encarta '95, Money, Cinemania '95, Fine Artist & Golf
- 3-Year Limited Parts Warranty

**\$2299**

## P5-90 FAMILY PC

- Intel 90MHz Pentium Processor\*
- 8MB RAM
- 256KB Cache
- 1GB 10ms IDE Hard Drive
- PCI Enhanced IDE Interface
- 64-Bit PCI Graphics Accelerator w/ 2MB DRAM
- Quad-Speed CD-ROM, 16-Bit Sound Card & Altec ACS-5 Speakers
- TelePath IIv 14.4K Fax/Modem Communication Center
- 3.5" Diskette Drive
- 17" Vivitron Color Monitor
- 9-Bay Tower Case
- AnyKey Keyboard & MS Mouse 2.0
- MS-DOS 6.22 & WFW 3.11
- MS Works 3.0, Encarta '95, Money, Cinemania '95, Fine Artist & Golf
- 3-Year Limited Parts Warranty

**\$2999**

## Professional Systems

### 4DX2-66

- Intel 66MHz 486DX2 CPU\* w/ fast write-back cache
- 4MB RAM
- 340MB 13ms IDE Hard Drive
- PCI Enhanced IDE Interface
- PCI Local Bus Graphics with 1MB
- Quad-Speed CD-ROM
- 3.5" Diskette Drive
- 14" Color CrystalScan Monitor
- Mini Desktop Case
- 101-Key Keyboard & MS Mouse 2.0
- MS-DOS 6.22 & WFW 3.11
- MS Works 3.0 & Money
- 3-Year Limited Parts Warranty

**\$1299**

### P5-60

- Intel 60MHz Pentium Processor\*
- 8MB RAM, 256KB Cache
- 730MB 10ms IDE Hard Drive
- PCI Enhanced IDE Interface
- 32-Bit PCI Graphics Accelerator w/ 1MB DRAM
- Quad-Speed CD-ROM
- 3.5" Diskette Drive
- 15" Vivitron Color Monitor
- 7-Bay Desktop Case
- 101-Key Keyboard & MS Mouse 2.0
- MS-DOS 6.22 & WFW 3.11
- MS Office Professional 4.3,\*\* Bookshelf® '94 & Money
- 3-Year Limited Parts Warranty

**P5-60 \$1999**

**P4D-66 \$1799**

(66MHz 486DX2 CPU w/ 128KB cache)

### P5-75

- Intel 75MHz Pentium Processor\*
- 16MB RAM
- 730MB 10ms IDE Hard Drive
- PCI Enhanced IDE Interface
- 32-Bit PCI Graphics Accelerator w/ 1MB DRAM
- Quad-Speed CD-ROM
- 3.5" Diskette Drive
- 15" Vivitron Color Monitor
- 7-Bay Desktop Case
- AnyKey Keyboard & MS Mouse 2.0
- MS-DOS 6.22 & WFW 3.11
- MS Office Professional 4.3,\*\* Bookshelf '94 & Money
- 3-Year Limited Parts Warranty

**\$2399**

### P5-100 BEST BUY

- Intel 100MHz Pentium Processor\*
- 16MB RAM
- 256KB Cache
- 1GB 10ms IDE Hard Drive
- PCI Enhanced IDE Interface
- 64-Bit PCI Graphics Accelerator w/ 2MB DRAM
- Quad-Speed CD-ROM
- 3.5" Diskette Drive
- 15" Vivitron Color Monitor
- 7-Bay Desktop Case
- AnyKey Keyboard & MS Mouse 2.0
- MS-DOS 6.22 & WFW 3.11
- MS Office Professional 4.3,\*\* Bookshelf '94 and Money
- 3-Year Limited Parts Warranty

**\$2999**

### P5-100XL

- Intel 100MHz Pentium Processor\*
- 16MB RAM
- 256KB Cache
- 1GB 10ms IDE Hard Drive
- PCI Enhanced IDE Interface
- ATI Mach 64 Graphics Accelerator with 2MB VRAM
- Quad-Speed CD-ROM
- 16-Bit Ensoniq® Wavetable & Altec ACS-31 Speakers w/ Subwoofer
- 3.5" Diskette Drive
- TelePath IIv 14.4K Fax/Modem Communication Center
- 17" Vivitron Color Monitor
- 9-Bay Tower Case
- AnyKey Keyboard & MS Mouse 2.0
- MS-DOS 6.22 & WFW 3.11
- MS Office Professional 4.3,\*\* Bookshelf '94 & Money
- 3-Year Limited Parts Warranty

**\$3799**

### SERVICE & SUPPORT

- Toll-Free Technical Support
- 30-Day Money-Back Guarantee
- Three-Year Limited Warranty On Parts For Desktop PCs & Monitors (Call Or Write For A Free Copy)
- On-Site Service Available In Most U.S. & Some International Locations
- Toll-Free Phone Service & Support for Canadian & Puerto Rican Customers
- Non-Resident Importer Plan with Canada

**\*\*MS Office Professional 4.3 includes MS Word, Excel, PowerPoint® presentation graphics program, and Access® database.**

*All systems include Corel Photo CD Sampler Special Edition.*



Printed on recycled paper with soy inks.



Toll free from Canada  
800-846-3609

Toll free from Puerto Rico  
800-846-3613



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

8 0 0 - 8 4 6 - 2 0 6 5

Intel Verified:  
Upgradable





Exciting values from Gateway 2000.<sup>®</sup> Peripherals and software sold only with the purchase of a system.

## Communications & Storage

### **New** TelePath™ IIv Fax/Modem Communication Center

Revolutionize your communication needs with the TelePath IIv Fax/Modem Communication Center. Internal fax/modem, 14,400bps modem, V.32bis, with 14,400bps fax capability. The FaxWorks Communication Center sends and receives both faxes and voice messages. Other features include fax editing, forwarding and scheduling, plus remote access to voice messages and faxes. Includes a CompuServe<sup>®</sup> trial membership. **\$99**

### Colorado Memory Systems<sup>®</sup> TBU

250MB internal tape backup unit copies up to 9.5MB per minute. Comes with MS Windows and DOS<sup>®</sup> software, one tape and cable. **\$149**

## Multimedia

### Audio Multimedia Kit

Here's everything you need to add multimedia to a Gateway PC.

- Gateway 2000 16-bit CD-quality sound card, compatible with Sound Blaster™ cards, with MIDI/game port, mic in, stereo line in/out
- 2 Altec ACS-5 speakers  
**\$99** (with system purchase)

### Wavetable Audio Multimedia Kit

Once you've heard wavetable audio, basic audio will never do!

- Ensoniq<sup>®</sup> Soundscape™ 16-bit wavetable sound card, MT-32 and FM mode compatible. Supports most software for popular sound cards and standards including General MIDI, Sound Blaster, AdLib, Roland MPU 401, MS Windows™ Sound Sytem and MT 32
- New Altec Lansing ACS-31 three-piece speaker system
- Blue Ribbon Sound Works' SuperJAM! jr. software  
**\$209** (with system purchase)  
**\$110** (upgrade from systems with 16-bit sound card and Altec speakers)

### Kid's Backpack Software Bundle

Seven exciting software applications designed specifically for kids. Includes Sesame Street Numbers; My First Incredible, Amazing Dictionary; The Cat Came Back; The Yukon Trail; Keroppi Day Hopper; Math Blaster: In Search of Spot; and Sing-Along Kids. Also includes a 20-disk storage rack and microphone. **\$99**

### Flight Pack Multimedia Software

Seven top-of-the-line flight CDs. Includes TFX: Tactical Fighter Experiment, Aces Over Europe, Comanche, Strike Commander, Privateer, Wing Commander Armada and Warplanes. You also get a joystick and 20-disk storage rack. **\$99**  
Ask about our other software bundles including the Sports Bundle!

Call the Gateway 2000 special component add-ons division at 800-846-2080 for our complete line of extras for Gateway customers.  
Sales hours: 7am-9pm Weekdays.

Gateway accepts most major credit cards and C.O.D. terms, with net 30-day terms and leasing options available to qualified commercial customers. You can also apply for the Gateway 2000 DuoLine™ MasterCard<sup>®</sup> card, issued by Dial National Bank, Des Moines, Iowa.

## Monitors

### Gateway 17-Inch Vivitron™ Color Monitor

Non-interlaced color monitor using Sony<sup>®</sup> Trinitron<sup>®</sup> tube technology, capable of 1280 x 1024 resolution in non-interlaced mode, .26 dot pitch.

Upgrade from a 14-inch CrystalScan<sup>®</sup> 1024NI monitor **\$360**

Upgrade from a 15-inch Vivitron monitor **\$260**

(Upgrade prices good only at the time of system purchase.)

## Printers

### Hewlett<sup>®</sup>-Packard 4L LaserJet Printer

A full-featured 300dpi printer loaded with enhanced PCL 5 and 26 scaleable typefaces with 1MB standard HP Memory Enhancement Technology.

Includes parallel cable. **\$559**

### Epson<sup>®</sup> Stylus™ Color Ink Jet Printer

Features 360dpi high-quality print resolution and 720dpi for more brilliant colors on specially coated paper. Exclusive technology produces a precise dot.

Includes parallel cable. **\$529**

### Hewlett-Packard Deskjet 540 Inkjet Printer

Features clear, sharp 600 x 300dpi black printing on plain paper with a variety of built-in typefaces. Color option also available. Includes parallel cables.

**\$299** (w/ out color) **\$339** (w/ color)

### Epson ActionLaser 1500 Laser Printer

A high-quality personal laser printer for users who require superior outputs! Features 300 x 300dpi, 14 resident fonts, 13 scaleable to any size; 1MB memory expandable to 5MB and a versatile, high-capacity 150-sheet input tray. Includes parallel cable. **\$479**

Call for other printer options, including more *Hewlett-Packard* printers.

## Networking

### 3Com<sup>®</sup> Ethernet Adapters

Ultra high-performance 16-bit Ethernet cards from the world leader in Ethernet technology.

16-bit Triple Media Card supports BNC, AUI and Twisted Pair media **\$109**

16-bit Twisted Pair Card **\$89**

### SMC<sup>®</sup> PCI Ethernet Adapter

Both Twisted Pair and BNC Connectors included **\$149**

### National Semiconductor Ethernet Adapters

Infomover™ brand NE2000plus™ Ethernet cards w/ 25-foot coax cable

Triple Media Card **\$89**

Twisted Pair only Card **\$69**

### Token Ring Adapter

IBM<sup>®</sup> 16-bit Token Ring card **\$429**



8 0 0 - 8 4 6 - 2 0 6 5

# Save Disk Space

# PKZIP®

## PKZIP® version 2.0

PC WORLD



WORLD CLASS  
AWARD

PKWARE® introduces the next generation of its award winning compression utility. PKZIP 2.0 yields greater performance levels than achieved with previous releases of the software. PKZIP compresses and archives files. This saves disk space and reduces file transfer time.

Software developers! You can significantly reduce product duplication costs by decreasing the number of disks required to distribute your applications. Call for

## Put Your Executables on a Diet

Software developers! Save disk space and media costs with smaller executables. You can distribute your software in a compressed form with PKLITE Professional®. PKLITE Professional gives you the ability to compress files so that they cannot be expanded by PKLITE®. This discourages reverse engineering of your programs.



PKLITE increases your valuable disk space by compressing DOS executable (.EXE and .COM) files by an average of 45%. The operation of PKLITE is transparent, all you will notice is more available disk space!

## Compression for YOUR Application



The PKWARE Data Compression Library® products allow you to incorporate data compression technology into your software applications. The application program controls all the input and output of data, allowing data to be compressed or extracted to or from any device or area of memory. Not compatible with files created by PKZIP.

All Purpose Data Compression Algorithm compresses ASCII or binary data quickly. The routines can be used with most popular DOS languages. Separate DOS, Windows, OS/2 32-bit and Win32 versions are available!

# PKWARE® INC.

The Data Compression Experts®

9025 N. Deerwood Drive Brown Deer, WI 53223-2437  
(414) 354-8699 Fax (414) 354-8559

PKZIP - \$47    PKLITE - \$46    PKLITE Professional - \$146  
PKWARE Data Compression Library: for DOS - \$275    for Windows - \$350  
for OS/2 - \$350    for Win32 (specify for Alpha, Intel or PowerPC) - \$350

Please add \$5.00 S&H per package in the US & Canada, \$11.25 per package overseas.  
Wisconsin residents add appropriate state sales tax & county sales tax.  
Check or Money Order in US Funds, drawn on a US bank in the US, the American Express Card, VISA and MasterCard accepted, no COD orders.

PCW4/95

system, since I don't have to listen to instructions or prompts to figure out a feature. Plus, I can dial into it remotely and see on my laptop exactly what I would see on my desktop screen. No more pouring quarters into phone slots in a futile attempt to access voice mail. And for the price of an expensive fax machine—around \$5000—the company can add fax capability, something we plan to do next year. That way, instead of hanging out at the fax machine waiting for a confidential fax to come through, I can access it through Word 6.0.

### Cure for PC Allergy

I'm not the only manager delighted by this product. Even those who were allergic to PCs like it. Many find Visual Mailbox so easy, they've warmed to the PC in general and are doing more with spreadsheets, word processors, and other software.

Best of all, Visual Mailbox came with the VMX 200 system we already were buying—we didn't have to purchase additional equipment or phone lines. (I understand big telecommunications companies are beginning to offer such products to their corporate customers. AT&T's Intuity system, for example, has similar capabilities.)

But not even Visual Mailbox is perfect. It doesn't tie into our E-mail system to give us a central place to look for messages (we hear Octel is working on a upgrade that would integrate the two). More annoying, incoming callers must still toil through the voice-mail maze; they have no access to Visual Mailbox (though the VMX 200 system itself is less complicated than our previous system). But Visual Mailbox does bring callers one immediate benefit: Since it's easier for us to check our voice mail, we respond to calls faster. And that translates into more time we can spend talking to customers, suppliers, and important contacts and less time fiddling with voice mail—a win-win situation for all.

Edited by Bronwyn Fryer

*Bronwyn Fryer is a contributing editor for PC World. If you use PCs to manage people and other resources in a business environment, we want to hear from you—we pay \$300 for published columns. See page 12 for contact information.*

# The Way We Hear It, Our Competitors Just Don't Get the Big Picture.



## At Austin, We've Sized Up the Expanding Universe

When you call Austin, you'll find answers for all the hard questions. After all, it's a big world out there, and we know how tough it is to keep keep your perspective. That's why we design a top-notch product line, maintain a fanatical commitment to customer satisfaction, and offer you a genuine PC value. It's like the light at the end of the tunnel. And, when you take a second look, the light gets brighter.

Low prices on hot systems are just the beginning. As soon as your system arrives, we'll call to make sure the installation was a success, and that you have everything you need.

You can rely on Austin Direct™ technical support for the life of your system. We're ready whenever you are — twenty-four hours a day, seven days a week. **So turn the page and see why Austin is tops in this solar system.**

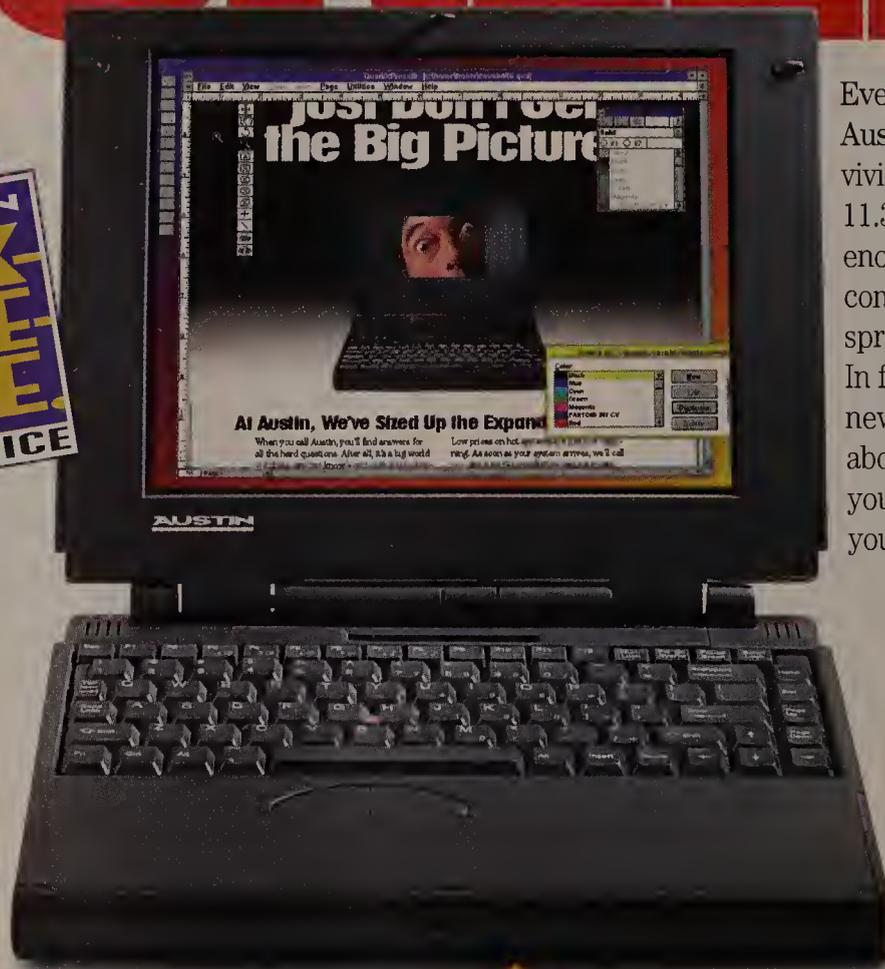
# AUSTIN™

A Division of IPC Technologies, Inc.

**QuickShip**  
Ships Within 48 Hours  
(with approved credit)

# Take a Look at Austin's

# EXTREME SCREEN.



Everyone's wild about this new Austin Vista notebook – with crisp, vivid DSTN color on an amazing 11.3-inch display. Plus, it's got enough processing power to make complex graphics dance and massive spreadsheets quiver in anticipation. In fact, you'll love working with the new Vista so much, you'll forget about the boring specs. But when you do review the Vista's resume, you'll fall in love all over again.



## Austin Notebooks

- Intel® 486 SX, DX2 or DX4 Processors
- 4MB or 8MB RAM Expandable to 32MB
- 262MB to 810MB IDE Drive. User Replaceable
- 3.5" 1.44MB Diskette Drive
- Local Bus IDE
- 2 Type II or 1 Type III PCMCIA Slots
- Integrated Pointing Device
- EPP/ECP Parallel, 16650 High Speed Serial, Keyboard, VGA Ports
- Advanced Power Management
- 16-Bit Business Audio Features: Built-in Microphone and Speaker, External Jacks for Line-In and Line-Out
- Windows Sound System Software, Cylogic Voice User and External Microphone for True Speech Recognition.
- Custom Configurations Available



## Business Audio

### Austin 486DX2-50

**\$1,999**



- 9.5" DSTN Display
- 8MB RAM
- 262MB Hard Drive
- Business Audio, Voice Enabled
- Weight with Battery: 6.3 lbs.
- Lease \$77/mo.

### Austin 486DX4-75

**\$2,489**

- 9.5" DSTN Display
- 8MB RAM
- 524MB Hard Drive
- Business Audio, Voice Enabled
- Weight with Battery: 6.3 lbs.
- Lease \$95/mo.

### Austin 486DX4-100

**\$3,669**

- 9.5" TFT Active Color Display
- 8MB RAM/810MB Hard Drive
- Business Audio, Voice Enabled
- 14.4K Internal Fax/Modem
- Weight with Battery: 6.3 lbs.
- Lease \$131/mo.



Feb 95



## Austin Vista™

### Austin 486DX4-75

**\$2,549**

- 11.3" DSTN Display
- 8MB RAM
- 340MB Hard Drive
- Business Audio, Voice Enabled
- Weight with Battery: 6.5 lbs.
- Lease \$97/mo.

### Austin 486DX4-100

**\$2,809**

- 11.3" DSTN Display
- 8MB RAM
- 524MB Hard Drive
- Business Audio, Voice Enabled
- Weight with Battery: 6.5 lbs.
- Lease \$107/mo.

### Austin 486DX4-100

**\$3,879**

- 10.4" TFT Active Color Display
- 8MB RAM
- 810MB Hard Drive
- Business Audio, Voice Enabled
- Weight with Battery: 6.5 lbs.
- Lease \$139/mo.



## Austin StepLite™

### Austin 486SX-33

**\$1,499**



- 9.5" Monochrome Display
- 4MB RAM Expandable to 20MB
- 262MB Hard Drive
- External FDD
- Weight with Battery: 4.8 lbs.
- Lease \$58/mo.

### Austin 486DX2-50

**\$1,999**

- 9.5" STN Display
- 4MB RAM Expandable to 20MB
- 262MB Hard Drive
- External FDD
- Weight with Battery: 4.8 lbs.
- Lease \$77/mo.

### Austin 486DX4-75

**\$2,149**

- 9.5" STN Display
- 4MB RAM Expandable to 20MB
- 340MB Hard Drive
- External FDD
- Weight with Battery: 4.8 lbs.
- Lease \$82/mo.

Ask your sales representative about other QuickShip configurations!

# Maximize Home & Office PC Performance With These Full-Featured Machines

Choose from Austin's Winning Line-Up of Genesis, MPC and Power Systems



## Genesis DX2-66

### GREAT FOR THE FAMILY!

- Intel® 486DX2/66MHz Processor
- 128KB Cache
- MediaMagic 4x CD ROM Drive
- 16-Bit Sound Card and Speakers
- Local Bus Windows Accelerator with 1MB
- 3.5" 1.44MB Diskette Drive
- 5 16-Bit ISA Slots
- Slimline Chassis
- 101-Key Keyboard & MS Mouse
- MS DOS 6.22, Windows for Workgroups 3.11, MS Works
- CD Titles: Compton's Encyclopedia, World Atlas, US Atlas, Chessmaster 2000, Mavis Beacon Teaches Typing

**\$1,499** Lease \$57/mo.



- 4MB RAM
- 14" .28mm NI SVGA Monitor
- 425MB Hard Drive

**\$1,699** Lease \$65/mo.



- 8MB RAM
- 15" .28mm NI SVGA Monitor
- 540MB Hard Drive

## MPC System-75

### PERFECT FOR SALESPEOPLE!

- Intel 75MHz Pentium™ Processor
- MediaMagic 4x CD ROM Drive
- MediaMagic Telemetry-32 Card: Telephone Answering Machine Caller ID, Speakerphone, 16-Bit Sound Card, Speakers, Microphone, 14.4K Fax/Modem
- 3.5" 1.44MB Diskette Drive
- Diamond Stealth 64 with 1MB
- Desktop or Mini-Tower Chassis
- 101-Key Keyboard & MS Mouse
- MS DOS 6.22, Windows for Workgroups 3.11
- 1st ACT, TripMaker, American Yellow Pages

**\$2,199** Lease \$84/mo.



- 8MB High-Speed EDO RAM
- 14" .28mm NI SVGA Monitor
- 540MB Hard Drive

**\$2,399** Lease \$91/mo.



- 8MB High-Speed EDO RAM
- 15" .28mm NI SVGA Monitor
- 850MB Hard Drive

## Power System-90

### AWARD-WINNING!

- Intel 90MHz Pentium Processor
- 256KB Cache
- MediaMagic 4x CD ROM Drive
- 3.5" 1.44MB Diskette Drive
- Diamond Stealth 64 with 2MB
- 2 PCI, 1 ISA/PCI, and 4 ISA Slots
- Desktop or Mini-Tower Chassis
- 101-Key Keyboard & MS Mouse
- MS DOS 6.22, Windows for Workgroups 3.11, MS Works

**\$2,399** Lease \$91/mo.



Dec 94

- 8MB RAM
- 14" .28mm NI SVGA Monitor
- 730MB Hard Drive



Jan 95

**\$2,899** Lease \$111/mo.



Feb 95

- 16MB RAM
- 15" .28mm NI SVGA Monitor
- 1GB Hard Drive

## Power System-100

### ULTIMATE PERFORMANCE!

- Intel 100MHz Pentium Processor
- 256KB Pipeline Burst Cache
- MediaMagic 4x CD ROM Drive
- 3.5" 1.44MB Diskette Drive
- Diamond Stealth 64 with 2MB
- 2 PCI, 1 ISA/PCI, and 4 ISA Slots
- Desktop or Mini-Tower Chassis
- 101-Key Keyboard & MS Mouse
- MS DOS 6.22, Windows for Workgroups 3.11, MS Works

**\$2,699** Lease \$103/mo.



- 8MB RAM
- 15" .28mm NI SVGA Monitor
- 850MB Hard Drive
- 14.4 Fax/Modem

**\$3,499** Lease \$125/mo.



- 16MB RAM
- 17" .28mm NI SVGA Monitor
- 1GB Hard Drive
- 14.4 Fax/Modem

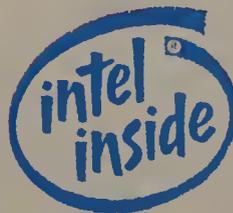
To Place Your Order

# Call Now.

# 800-331-1501



Examples of 1993 Austin  
Awards in Quality Award  
from the City of Austin



# AUSTIN™

A Division of IPC Technologies, Inc.

2121 Energy Drive,  
Austin, Texas 78758  
512-339-3500 • FAX 512-454-1357

Government Sales: 800-833-4472  
Fortune 1000 Sales: 800-622-5506  
Canadian Sales: 800-338-1565  
International Sales: 512-339-3547  
For More Information By Fax: 800-341-7500

Look for Us At Comdex Booth #8616

## MEDIA MAGIC

Quality Multimedia Products

Ad Code: 1501

©1995 Austin Direct. All rights reserved. The Intel Inside logo is a registered trademark of Intel Corp. Intel Pentium, DX4, DX2, DX are trademarks of Intel Corp. Microsoft is a registered trademark and Windows and the Windows logo are trademarks of Microsoft Corp. All other company names and products are trademarks or registered trademarks of their respective owners. The above are special promotional prices. Prices and specifications are subject to change without notice. We are not responsible for errors in typography and photography. Actual configuration shipped may vary from products shown. \*Lease term reflects 36-month contract.

Circle 22 on reader service card

# A Few Extras to Help You Complete the Picture.



## NOTEBOOK UPGRADES

Prices valid with notebook purchase only.

**Docking Station**  
This desktop docking station transforms your Austin notebook into a full-fledged PC system, providing 1 ISA slot, VGA, keyboard and mouse ports.  
Austin Business Audio Docking Station . . . . . **\$259**

**PCMCIA Cards**  
New performance options for your notebook.  
Ethernet Adapter 10 BASE T or 10 BASE 2 . . . . . **\$220**  
PCMCIA SCSI Adapter . . . . . **\$219**

**A Case for Protection**  
Maximize your Austin notebook with this custom-designed carrying case. Room for cables, extra battery, the works.  
Austin Leather Travel Case . . . **\$99**  
Austin Ballistic Nylon w/Leather Trim Travel Case . . **\$99**

**Desktop Bundle**  
The complete desktop/ notebook package: 15-inch digital, non-interlaced monitor, notebook docking station, keyboard, mouse – an \$814 value  
Austin Business Audio Desktop Bundle . . . . . **\$599**

**Total Travel Package**  
Important accessories to maximize your road trips includes carrying case, battery, external charger, 14.4 fax/modem, and car adapter – an \$858 value  
Austin Business Audio Notebook Travel Package . . **\$369**



## DESKTOP UPGRADES

Prices valid with system purchase only.

**A Sound Investment**  
Install a 16-bit sound card, and stereo speakers, and you're ready to take advantage of the new generation of sound-capable software.  
16-Bit Sound Card and Stereo Speakers . . . Add **\$79**

**RAM Turns on the Speed!**  
It's Simple! More RAM means better performance. And if you're running graphics or multimedia applications, call for even more! NOW!  
Additional BMB RAM . add **\$300**

**See More of What You Like**  
In multimedia, bigger is better, particularly when you're upgrading to a 17-inch, non-interlaced SVGA monitor.  
14" to 17" Monitor . . . add **\$465**  
14" to 15" Monitor . . . add **\$90**

**The Floppiest Drive**  
Save an extra drive bay for CD-ROM by combining both 3.5-inch and 5.25-inch drives in one unit.  
Dual floppy Drive . . . . . add **\$49**

**Add Your Voice**  
The Microsoft sound system includes a microphone, ISP-16 audio card, and the software to make the most of your voiceovers and file annotation.  
PC Voice Kit . . . . . add **\$129**

## AUSTIN'S EXTREME SERVICE

- Expect more from Austin Direct, because our customer service and technical support teams set extraordinarily high standards for your satisfaction. Shortly after your system arrives, we'll be on the phone to check and make sure everything is running right. And if you have more questions, we're available all the time — seven by twenty-four — toll-free. For life. And there's the BBS support that's convenient for downloading utility upgrades and tracking technical data.
- All Austin systems are covered by a strong warranty that protects your technology investment. Our desktops are covered by a three-year warranty (comprehensive notebook coverage is one year), and — of course — there's the thirty-day, money-back guarantee.

## THE IPC STORY

Because Austin Direct is one of the IPC Technologies group of companies, you tap into the many benefits of a diversified global organization with interests in multimedia products, desktop PCs, network servers, and point-of-sale systems. As your needs grow and change, you can stay with Austin Direct and IPC Technologies.

To Place Your Order  
**Call Now.**

**800-331-1501**

**AUSTIN™**

A Division of IPC Technologies, Inc.

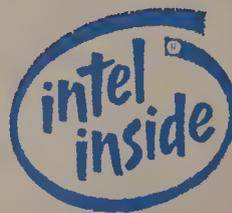
2121 Energy Drive,  
Austin, Texas 78758  
512-339-3500 • FAX 512-454-1357

Government Sales: 800-833-4472  
Fortune 1000 Sales: 800-622-5506  
Canadian Sales: 800-338-1565  
International Sales: 512-339-3547  
For More Information By Fax: 800-341-7500

Look for Us At Comdex Booth #8616



Austin Quality  
Commitment to Quality Award  
From the City of Austin



**MEDIA MAGIC**  
Quality Multimedia Products

Ad Code: 1501

©1995 Austin Direct. All rights reserved. The Intel Inside logo is a registered trademark of Intel Corp. Intel Pentium, DX4, DX2, DX are trademarks of Intel Corp. Microsoft is a registered trademark and Windows and the Windows logo are trademarks of Microsoft Corp. All other company names and products are trademarks or registered trademarks of their respective owners. The above are special promotional prices. Prices and specifications are subject to change without notice. We are not responsible for errors in typography and photography. Actual configuration shipped may vary from products shown. \*Lease term reflects 36-month contract.

# Microsoft Sex: Coming Soon?



I have two exciting words for you: Microsoft Sex.

Sex is hot. It's a three-letter word. It's the logical extension of Microsoft Bob. You heard it here first.

I promise to return to Sex after a few words about the wildly overhyped Bob. Bob is Microsoft's motley agglomeration of function-deprived programs wrapped in something the company calls a "social interface." Citing dimly relevant academic studies purporting to show that "the human-computer relationship is fundamentally social," Microsoft grandly claims this thing is some sort of design breakthrough.

It isn't. If Bob came from anywhere but Microsoft, it would be lucky to attract anything but snide chuckles. The "social interface" is mostly a bunch of cartoon animals that spout dialog balloons. They're not so-called "intelligent agents": Their combined intelligence would not equal Stimpy's. Actually, they're not even agents, because they can't do anything except show you tips and menus.

## Simply Bad, Bob

Lots of programs have reduced features for "simplicity," and it just about never works. My favorite was a word processor called QWERTY: It used an incredibly simple "typewriter" interface that in effect turned your machine into an IBM Selectric.

Bob's "simplicity" does not extend to interface standards. Even in Monty Python's Complete Waste of Time, <F1> gets you at least a proud boast about the lack of help and sometimes an outright insult. Bob only insults

your intelligence; pressing its <F1> key usually does nothing at all.

Maybe Microsoft plans to be the General Motors of software. Every time I rent a GM car I have to waste time figuring out how to turn on the headlights, because no two switches work the same way. Likewise, Bob reverses the long-established left-right conventions for OK and Cancel buttons in simple dialog boxes. A Microsoft spokesperson claims user tests show it doesn't matter. So if it ain't broke, why "fix" it to work differently from every other Windows program?

## Useless Usability

But then, Microsoft's usability lab seems to be able to produce results for all occasions. For months now, we've heard the company boast about how user testing led to the Windows 95 Taskbar, which lets you switch between programs without having to learn the dreaded <Alt>-<Tab> combo. Even current Windows programs offer a Switch To option if you know enough to find it at the close box.

Not the usability-tested Bob. Bob does let you open multiple programs at once, but only if you know how to <Alt>-<Tab> out of them. The only way a newcomer can find out about that—no help, remember?—is to wait until a cute wittle animal gets around to offering a tip balloon.

So which is it? <Alt>-<Tab> is impossible for newcomers, or <Alt>-<Tab> is great? The answer from Microsoft's crack test labs: Yes.

Used this way, usability tests become little more than marketing hype. Who knows, if you really tested carefully, you might discover that the best user interface for novices would have a separately labeled key for every function,

not unlike those giant cash registers for mathless teens at McDonald's.

So Bob's successor has to be Microsoft Sex. I can just hear the rationale: "You know, something clicked when we read this study by three professors at the Wilford Academy of Beauty. According to their pioneering research, the human-computer relationship is fundamentally sexual.

"We've proved it in our usability labs. We studied top programmers. Just as our Bob research showed that computers are too confusing, we discovered that sex is just too doggone difficult. A potential partner is like software. There are so many options most people don't know where to begin."

It's coming, I tell you! Chuck the Chicken or Dilly the Duck will waddle

**Sex is just too doggone difficult. A potential partner is like software. With so many options, most people don't know where to start.**

out and ask you how many partners are available. Then, as in Bob, Sex will step you through umpty-seven menus and clicks' worth of hand-holding.

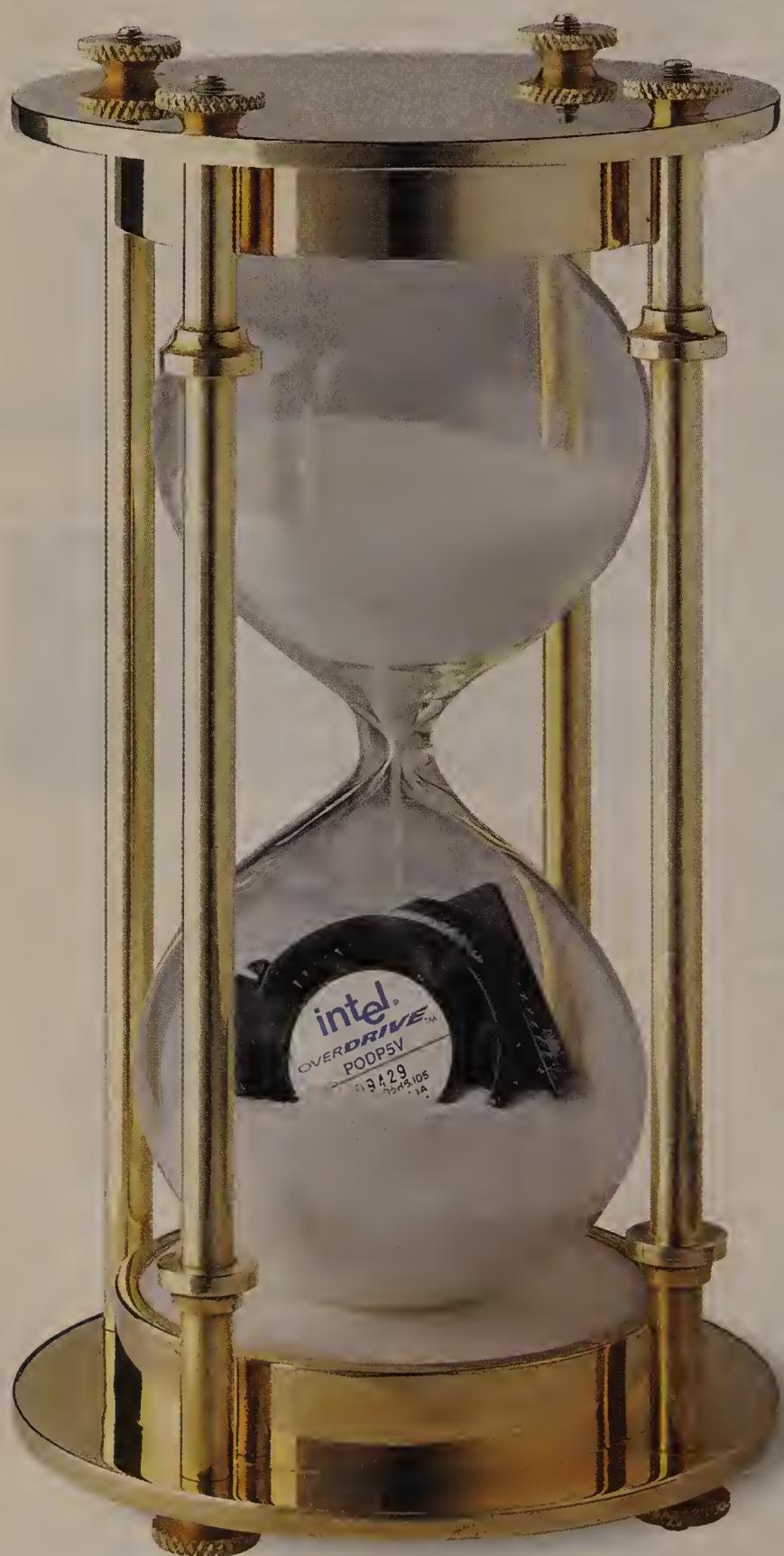
But it may not let you hold hands. Dopey Bob can't do envelopes or page numbers. Likewise, with Microsoft Sex many classic techniques will be unavailable. Even if you master <Alt>-<Tab>, you probably won't be able to kiss and hug at the same time.

The way Microsoft will explain it, such radical full-function multitasking would probably just confuse you.

*Stephen Manes is a columnist for the New York Times and coauthor of Gates: How Microsoft's Mogul Reinvented an Industry (Touchstone/Simon & Schuster, New York, 1994).*

**By Stephen Manes**

# PENTIUM UPGRADES: WERE THEY WORTH THE WAIT?



After a two-year wait, Intel's Pentium upgrade chip for 486 systems finally landed in our test lab. Now we know what "Pentium upgradable" really means.

Edited by Russell Glitman

Think back. If you bought a 486 system in the last two years or so, the ability to upgrade to “Pentium technology” was probably a key selling point. It meant that

one day you could pop a new Pentium chip into your old 486 and give it a new lease on life. Right?

Well, not exactly. Now that Intel’s first Pentium upgrade for 486s has finally arrived—more than two years after it was first announced—we’ve learned the whole story. According to our benchmark tests, Intel’s initial release of its Pentium OverDrive upgrade rarely delivers Pentium performance. Instead, in all but a small minority of 486 PCs, you’re far more likely to experience only 486DX4-75 performance. Moreover, 3 of the 11 systems we tested refused to function when the Pentium OverDrive was installed.

#### Looks Like a Pentium but...

The Pentium OverDrive does have a Pentium core, and like other OverDrive processors, it multiplies the bus speed—in this case by two and a half times. The initial version works in 486 systems with a 25-MHz bus—that is, 486DX2-50, 486DX-25, 486SX2-50, and 486SX-25 systems—for an internal processing speed of 63 MHz (the Pentium OverDrive for 33-MHz-bus systems, which has an 83-MHz core, is due midyear). Under optimum conditions, the 63-MHz Pentium OverDrive’s WinWord, Excel, and Freelance test results are comparable to the average 60-MHz Pentium’s. (The disk-intensive Paradox test results, however, are significantly worse.)

The problem is that optimum conditions for the Pentium OverDrive seldom exist. Plug this upgrade chip into the 238- or 237-pin socket found in the vast majority of 486DX2 systems (and in many 486DX and 486SX systems), and you’re more likely to see an average boost in overall DX2-50 system performance of 22 percent—about 1 percent better than that offered by a DX4-

75 (see the Test Report’s write-through results). Despite the similar performance levels, Intel offers the 63-MHz Pentium OverDrive at a list price of \$449, while the 75-MHz DX4 OverDrive lists for \$299.

#### Stuck in Second Gear

Shoehorning a Pentium into a 486 PC always seemed dicey. For one thing, the Pentium is designed to feed a 64-bit data bus, so a 486 system’s 32-bit data bus is a classic bottleneck. A key part of Intel’s strategy for boosting the Pentium OverDrive’s performance was to enlarge the chip’s internal cache to 32K—twice the size of the cache in an ordinary Pentium chip—so it would spend less time fetching data from the 486 system’s slow memory.

From the beginning, Intel chose to equip the Pentium OverDrive with a high-performance write-back cache instead of the slower write-through cache found in its 486-class chips. However, for compatibility reasons, the Pentium OverDrive also has a write-through mode. Three of the systems we received for testing—an SX-25, an SX2-50, and a DX2-50—could toggle the Pentium OverDrive between caching modes, so we were able to determine that write-back mode made these machines perform on average 15 percent better than did write-through mode. Only in the optimum write-back mode would these PCs yield Pentium performance.

It was only about a year ago that 486 PCs with write-back support began to appear—and few of those have 25-MHz buses. Intel product marketing manager Bob Bennet admits that “somewhere under 10 percent” of 486DX2-50, 486DX-25, 486SX2-50, and 486SX-25 systems support the Pentium OverDrive’s write-back mode. In our search for Pentium OverDrive test sys-



## Breaking News

**JUDGE REJECTS MICROSOFT DEAL:** In an unusual ruling, federal judge Stanley Sporkin has rejected the Department of Justice’s proposed settlement of its antitrust investigation of Microsoft. The Justice Department immediately moved to appeal the decision.

Ruling in February, Sporkin said he was unable to find that the settlement met the minimum legal test of serving the public interest.

“Microsoft should see this as a harbinger of the need to police itself,” said Karl Wong, principal analyst at Dataquest. He said he doubted the ruling would interfere with the release of Windows 95, but it might halt Microsoft’s merger with Intuit.

Microsoft has been under investigation since 1990, when the Federal Trade Commission opened inquiries into claims that Microsoft monopolizes the market for PC operating systems. After deadlocking in 1993, the FTC handed off the case to Justice, which in July 1994 reached a settlement with Microsoft that would require the company to modify its “bundling” agreements with computer hardware vendors.

Sporkin said the settlement addressed only future practices concerning Microsoft operating systems and did nothing to remedy the monopoly the company had already attained.

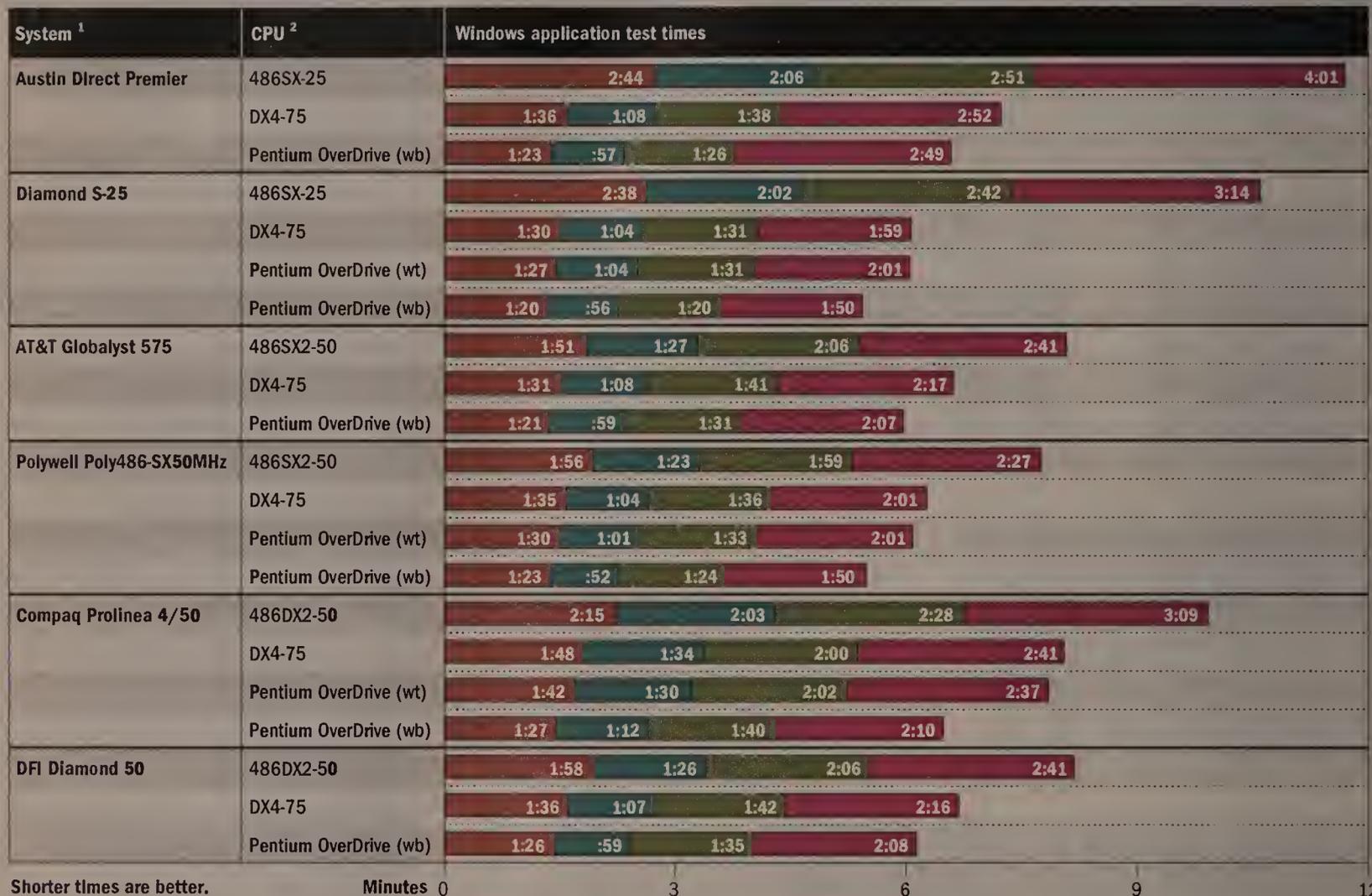
“Simply telling a defendant to go forth and sin no more does little...to address the unfair advantage it has al-

(continued on page 53)

# Top of the News

## TEST REPORT

### Pentium OverDrive Offers Slight Speed Advantage Over DX4-75 Upgrade



<sup>1</sup> All systems tested with 8MB of RAM and a 256K secondary cache.

<sup>2</sup> wb = write-back cache used, wt = write-through cache used.

A representative sample of systems tested. Results from PC World Test Center application benchmark tests.

tems, we found six shipping PCs with 25-MHz buses that support the Pentium OverDrive's write-back mode.

#### The Pentium Retrofit

Although we were unable to obtain other commercially available systems with 25-MHz buses, we received a number of PCs that had been specially configured for us by vendors. Surprisingly, three of these systems bombed completely when we installed the Pentium OverDrive and could not be revived until we swapped the 486 chip back in. A fourth machine required considerable troubleshooting before we finally got it up and running.

Of the systems that failed, all could probably have been resurrected with a BIOS upgrade, although even then none would enable the Pentium OverDrive's write-back cache. Moving jumpers, changing BIOS settings, and even occasionally changing the BIOS will be standard procedure for anyone trying to install a Pentium upgrade. In the words of Steve Tobak, director of corporate marketing for OPTi, a major motherboard chip set vendor: "Anyone who goes with the Pentium OverDrive should be aware that there may be an issue of getting it to work."

If for some reason you think that the Pentium OverDrive is worth a shot, your

best insurance is to call Intel's fax-back service (800/525-3019) first to find out whether Intel has tested and verified your system as being compatible with the Pentium OverDrive. You can also call Intel at 503/629-7000. According to Bennet, however, "Intel does not track whether specific systems support the Pentium OverDrive's write-back mode." If you have trouble getting the Pentium OverDrive to work in a system verified by Intel, the company's technical support will help you, or Intel will refund your money. You should also check with your system vendor to verify that write-back mode is supported.

What if your PC isn't on Intel's list? In

that case, the company may not have tested your system yet, or it may have tested it and gotten unpleasant results—Intel won't reveal which computers fail its tests, only those that pass.

### The Upgrade Shuffle

The saga of the Pentium OverDrive began in late 1992, when Intel supplied specifications for the upgrade chip, including details of the write-back cache, to system manufacturers. Makers of systems, motherboards, and chip sets (those small constellations of chips that support the CPU and control the expansion bus) all committed to supporting the chip, even though no one saw silicon until relatively recently.

Starting in November 1993, Intel's Verifications Labs charged \$5000 per system design to test for compatibility using a simulator that emulates the chip.

"Specs are always open to interpretation," notes Chas Rimpo, a strategic marketing manager for desktop products at

VLSI, another major chip set manufacturer. "Until you have silicon, you never know if it's really going to work." Patrick Lee, president of Prima, a motherboard maker in Fremont, California, agrees. In defense of two of his company's motherboards, neither of which could support the Pentium OverDrive's write-back mode in our tests, Lee protests, "We can't get a Pentium OverDrive from Intel, that's

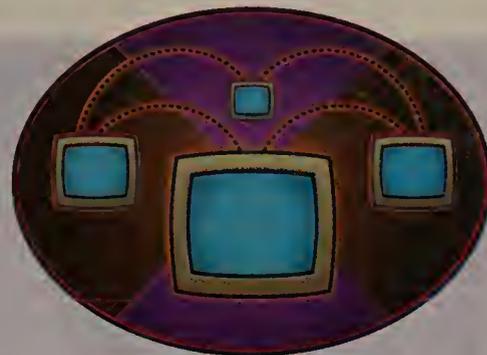
**"Anyone who goes with the Pentium OverDrive should be aware that there may be an issue of getting it to work," says OPTi's Steve Tobak.**

the problem. Until you have a chip, I don't see how you can test the motherboard."

Of course, until the first samples were circulated late last year, no one else had a Pentium OverDrive. What hardware manufacturers did have was a ream of specifications from Intel, an empty OverDrive socket in the systems that they shipped, and a marketing message successfully designed to comfort buyers who were afraid of being bypassed by the onrush of new technology.

So who's to blame for the Pentium upgrade that seldom acts like a Pentium? Certainly Intel, for releasing an upgrade chip that barely kisses Pentium-60 performance, and then only under ideal conditions. But several component suppliers who asked not to be identified said that some chip set and system manufacturers are also culpable: Fully supporting the Pentium OverDrive was a low priority because write-back caching support cost more, they expected few users to upgrade, and there was always the chance that Intel would change the specification.

In the ultimate irony, Intel even admits that the company's own older Saturn 1 and Saturn 2 486 motherboard chip sets lack write-back support for the Pentium upgrade. "Well,



## Breaking News

(continued from page 51)

ready gained," Sporkin wrote. "The decree is too little, too late."

Attorneys for Justice and Microsoft had no immediate comment. Further hearings were set for March 16.

### PENTIUM PROBLEMS MAY PERSIST:

**Thought you dodged the Pentium bullet by getting a replacement chip? Maybe not. Spreadsheet calculations conducted by processors with the division flaw are likely to carry over when you install the new chip. That's because most spreadsheet software assumes that any calculations performed in the past are correct and don't need to be done again. One notable exception is Quattro Pro. To fix such past errors in Excel, open the offending file and press <Ctrl>-<Alt>-<F9>. For 1-2-3 the solution is more roundabout: From the Tools menu, select User Setup • Recalculation. Select By Column and recalculate the spreadsheet. Return to the Recalculation menu, select Normal, and recalculate the spreadsheet again. Voilà.**

### EASIER FAX, PHONE, AND E-MAIL:

**Want to retrieve voice mail, faxes, and E-mail from a single graphical in-box on your PC? New groupware products will deliver this "universal in-box" capability this year. Currently Novell's GroupWise software provides a single in-box for E-mail and faxes. In the fall Novell will ship software that routes**

(continued on page 55)

## Anatomy of a Pentium OverDrive



**THE 63-MHZ PENTIUM OVERDRIVE has a removable fan. If it breaks, the CPU advises you via an on-screen message and powers down to 25 MHz.**

# Top of the News

## Processor Progress: Computing at a Glance



the sockets are there,” jokes VLSI’s Rimpo. “The socket vendors are getting rich.”

### An OverDrive Future

The best news about the Pentium OverDrive is that it has driven down the price of more attractive upgrades. For example, the DX2-66 OverDrive now has a suggested list price of \$249, while the DX2-50

OverDrive lists for a mere \$149. More to the point, if you have a system with a 25-MHz bus that lets you change the clock speed to 33 MHz by moving a jumper, you can install a DX4-100 OverDrive in your system for \$349 and expect the same performance you’d get from the Pentium OverDrive in its elusive write-back mode.

Intel claims that better Pentium Over-

Drives are due next year for Pentium systems. It appears they will be straightforward clock multipliers, in the fine tradition of Intel’s DX2, SX2, and DX4 OverDrives.

In the meantime, DX4-class performance won’t thrill 486 users who banked on upgrading to blazing Pentium speed. Take Michael Brooks, executive director of Local Development Corporation of East New York, who says he feels “seriously duped” by what he calls a “bait and switch.” Brooks bought a Gateway DX2 in late 1993. “Gateway created the impression that the system I bought was upgradable to Pentium performance—and it’s not,” he says. “At this point, I feel I should be able to trade in my old DX2 motherboard and have it count toward the purchase of a new Pentium motherboard.”

—Eric Knorr

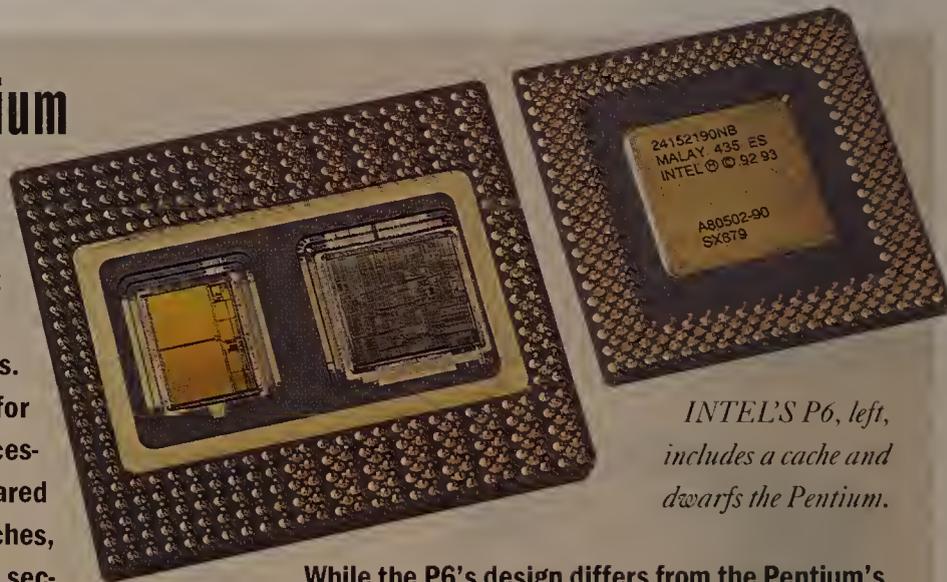
Testing by Ulrike Diehlmann and Kirk Steers

## P6 Is Intel’s Next-Generation Pentium

The real Pentium upgrade will arrive this fall when the first PCs that use the P6 chip, Intel’s successor to its current Pentium line, ship. The P6 will come out of the gate at 133 MHz and with twice the raw power of today’s Pentium-100.

The P6’s design is significantly different from the Pentium’s. The new chip is larger because it includes two cavities, one for the processor and one for a secondary cache. The 32-bit processor is in the right cavity and has 5.5 million transistors (compared with the Pentium’s 3.1 million). The chip contains two 8K caches, one for instructions and one for data. The left cavity houses a secondary 256K cache, which operates at the same speed as the processor. Intel estimates that 90 percent of the time, the P6 will find the data it needs in the primary or secondary cache, greatly enhancing performance. The chip has 387 pins and runs at 2.9 volts. Like the Pentium, the P6 has a 64-bit external bus that can operate at one-half, one-third, or one-quarter the CPU speed.

The P6 crunches instructions using what Intel calls *dynamic execution*: In essence, it simultaneously chops up multiple, long x86 instructions into multiple sets of micro instructions. It processes what it can and holds the rest in a queue until the necessary data is available. Once an entire instruction is processed, the P6 reassembles the instruction and carries out the action. To keep the chip processing, the P6 also uses speculative execution and branch prediction to make a best guess at which instructions and data will be required to perform an operation.



INTEL’S P6, left, includes a cache and dwarfs the Pentium.

While the P6’s design differs from the Pentium’s, its architecture actually resembles that of AMD’s Pentium-compatible K5, slated to appear in systems this fall. According to AMD, initial versions of the K5 will perform 30 percent faster than a Pentium-100, and the chip will be pin compatible with the 90-MHz and 100-MHz Pentiums. Because the K5 uses a technique similar to dynamic execution, it doesn’t have to process instructions in the order in which it receives them. The K5, however, translates instructions into smaller, RISC-based components, which it then reassembles in the x86 instruction set. Intel claims its process is more efficient, because the instructions remain x86 based.

Intel is providing P6 samples to PC makers. It’s also readying a 120-MHz version of the Pentium, due in PCs before summer. And Intel has dropped volume prices on its chips: The Pentium-100, for instance, is now just \$673—down from \$905 in January.

—Russell Glitman

# IBM Does DOS 7

## TEST DRIVE

Perhaps someday DOS users will sit in their rocking chairs, sip herb tea with Metamucil, and recall tales of bravery to their grandchildren about how they survived the horrors of the command-line interface, the arcane backslash, and the dreaded 'Abort, Retry, Fail' error message. Perhaps someday...but not today.

IBM's PC DOS 7 represents the latest advancement in the evolution of DOS, with integrated Stacker 4.0 disk compression, improved help and antivirus utilities, enhanced PC Card (formerly known as PCMCIA) and Plug and Play support, and a smaller conventional-memory requirement. And since Novell has discontinued its DOS development and Microsoft is focusing on Windows 95, PC DOS 7 may be the only upgrade path available to DOS devotees. First-timers will pay \$127; upgrades should cost less than \$60 on the street.

As with most recent DOS upgrades, version 7's best new feature isn't an operating system enhancement but rather a bundled utility: Stacker 4.0. Stac Electronics' well-regarded disk compression tool can double

a hard drive's storage capacity. And IBM integrates the *complete* shrink-wrapped version of the \$99 utility.

Stacker 4.0 is a logical upgrade path for users of older disk compression software, including MS-DOS's DoubleSpace and DriveSpace. For instance, I loaded DOS 7



**THE STACKER 4.0 UTILITY is integrated into IBM PC DOS 7 to make compressing your hard disk easy.**

on my 386SX notebook with a DoubleSpace-compressed 40MB hard drive, and after installing Stacker, I gained 10MB of storage capacity.

Other PC DOS 7 utilities are also useful—but you'll need about 15MB of free disk space to install them all. (You can install them selectively as well.) Options include IBM's AntiVirus for DOS and Windows, which detects over 2000 viruses.

Die-hard gamers may also want to upgrade to PC DOS 7, which has reduced the memory footprint of some of its drivers and TSRs. Many DOS-based computer games need all the conventional RAM you can give them, and DOS 7 provides memory-saving switches that load certain files into upper memory. Keep in mind, however, that you'll still have to use a separate memory manager to tweak the CONFIG.SYS file to get the most conventional RAM. After all, this *is* DOS we're talking about.

—Jeff Bertolucci



## Breaking News

(continued from page 53)

voice mail from PBX systems to Group-Wise In-boxes. No pricing was available. In March Lotus will ship fax server software, which will add faxes to Notes or cc:Mail in-boxes. This will cost \$2499 for the Notes edition and \$1475 for the cc:Mail edition.

### MORE PLUG AND PLAY MONITORS:

Though NEC has been shipping Plug and Play monitors since last fall, other vendors have largely ignored the technology until now. In March Nanao will ship the Plug and Play FlexScan F2 series of monitors. The vendor would not disclose prices. When Windows 95 arrives, the Plug and Play monitors will set the best refresh rate automatically, instead of requiring manual adjustment.

### BUY SOFTWARE ON THE INTERNET:

Software firms are circumventing retail outlets and embracing the Net for commercial software distribution. Database giant Oracle made the first move by announcing a new distribution channel based entirely on the Internet. And CyberSource announced it would distribute titles over the Net, including Symantec's Norton Utilities. In most cases, consumers will download full working copies of the titles, which work for only a month or so unless the consumer calls to register.

Edited by Randy Ross

Contributors: Joe Abernathy, Russell Glitman, and Laurianne McLaughlin

## IBM PC DOS 7

**DOS lives.** IBM's latest version of this old standby offers a variety of worthwhile enhancements for DOS devotees.

**Key Features:** Integrated Stacker 4.0 hard disk compression • Smaller conventional-memory requirement • Detects more than 2000 software viruses • Improved help utility

**Pricing:** Upgrades under \$60

**Availability:** Immediate

IBM, 800/342-6672

# The Sensible Way to Search the Net

**TEST DRIVE** ▶

To surf the Internet productively, you need a variety of search tools and a rapid way to file your discoveries. A comprehensive solution still is not on the market, but a new suite called SuperHighway Access for Windows from Frontier Technologies goes a long way toward solving the disjointed organization common in competing suites such as Internet Chameleon and Internet in a Box.

A suite like SuperHighway Access is convenient for Internet cruisers because

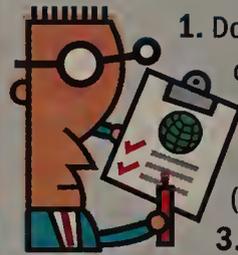
each element of the technology and information mishmash that makes up the Net—E-mail and news groups, databases and search tools, graphical World Wide Web pages and file libraries—usually requires a different type of software to access.

SuperHighway Access's WinTapestry software lets you organize your search by subject, rather than by the type of tool you use to access the information or service. Bookmarks for gopher databases, Wide-Area Information Server (WAIS) databases, Archie and Veronica searches, and World Wide Web pages are gathered into customizable groups in WinTapestry's Internet Organizer. If a bookmark refers to an image, sound, or other executable file, you can associate file viewers with that file type so that you can simply double-click on an item to transfer it across the Net and open it on your desktop.

Other capabilities include telnet, drag-and-drop ftp for file transfers, a serviceable Usenet news reader, and a multimedia-enhanced E-mail tool.

SuperHighway Access has preconfigured more than 100 regional and national service

## How to Pick Your Internet Software



1. Does it automatically configure your desktop communications?
2. Does it run as a VxD (virtual device driver)?
3. Does it include all the Internet services you'll need? It should have a news reader, E-mail tool, World Wide Web browser, telnet, and an ftp client for file transfers.
4. Is there a charge for customer support? Are support lines adequately staffed?
5. Will you need an upgrade path?

providers to take the sting out of setup.

Frontier Technologies also offers SuperTCP Pro for Windows, a corporate-oriented version of SuperHighway Access that includes multisession VT320 and tn3270 terminal emulations, network printing, fax client-server and modem server capabilities, and other tools for coexisting in a UNIX X-Windows environment.

—Joe Abernathy

## SuperHighway Access for Windows

**New suite of Internet access software offers advanced information management.**

**Key Features:** Organize Internet searches by subject • Link bookmarks to viewers • Rich variety of search tools

**Pricing:** \$125

**Availability:** Immediate

**Frontier Technologies Corp.,**  
800/929-3054, 414/241-4555

Reader service no. 829



## Reality Check

## Will You Buy PCs When Intel Is Not Inside?



▶ **Name and rank:** Dan Tannenbaum, MIS director for Helicopter Support and Aviation Components Support, brokers and manufacturers of helicopter parts in Orange, Connecticut.

▶ **1994 computer products budget:** about \$50,000.

▶ **PC vendors:** Compaq for most PCs.

▶ **Will you buy PCs with Pentium-class CPUs not made by Intel?** "Yes, when the big PC companies with top market share

sign on," Tannenbaum says. He'll consider PCs with the NexGen Nx586 chip or the upcoming AMD K5 and Cyrix M1 chips. "My concern now is not who makes [the chip], but what does it do, and how good is its design and construction," Tannenbaum says. The recent controversy over how Intel handled the Pentium math flaw hurt his

perception of the company, he says. He's had mixed success with non-Intel-based systems; 10 percent of his firm's 150 PCs are no-name clones with AMD, Cyrix, or IBM Blue Lightning chips. While the chips perform fine, the problem is that the vendors selling systems with these non-Intel processors generally don't have the reliability and service of the larger brand-name vendors, which mostly rely on Intel chips. His advice: Scrutinize the vendor's warranty and service policies. Tannenbaum is hopeful Compaq will offer some bargain PCs using AMD's upcoming K5 chip.

▶ **Tips on buying systems with non-Intel chips:**

1. Brand names count. Buy only when a big-name PC vendor signs on, Tannenbaum advises.
2. Don't put price first. Poor warranty or service policies can cost you.
3. Examine configuration. A vendor may sweeten the deal with extra hard-drive space and memory.
4. Start smart. Start with a few PCs and test them.



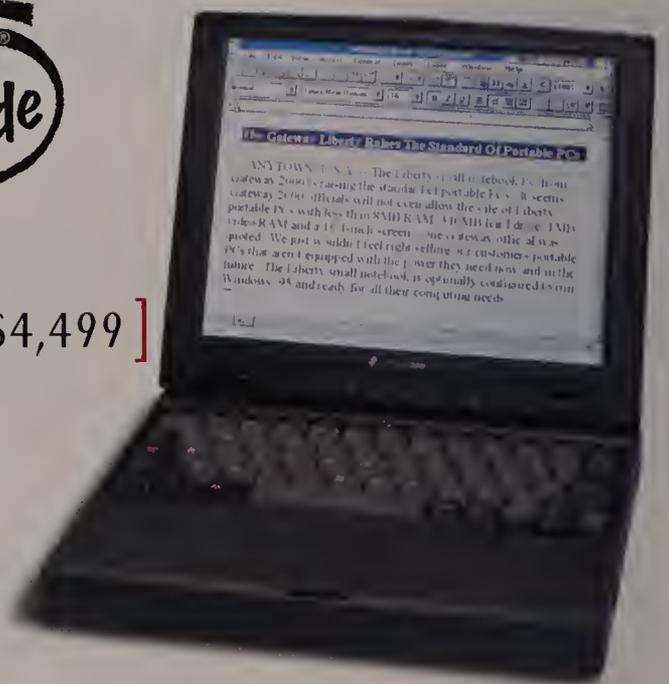
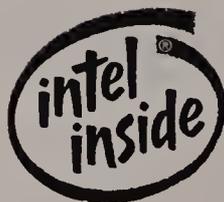




The 4.2-pound Liberty™ DX4-100 Best Buy features an impressive 10.4" screen, 720MB HD, 24MB RAM,

How does this HUMBLE  
ARTHROPOD HAVE THE POWER  
TO CARRY AN OBJECT 50 TIMES  
ITS OWN BODY WEIGHT?

It's like the Liberty small notebook from  
Gateway 2000®. It may be small in size, but  
it packs a powerful punch that squishes the  
competition!



14.4 fax/modem, IR abilities AND MS Office Professional for \$4,499 ]



8 0 0 - 8 4 6 - 4 7 6 9





Gateway 2000's new portable PCs — the Liberty and ColorBook<sup>2</sup>.

### GATEWAY 2000<sup>®</sup> LIBERTY<sup>™</sup>

- 4.2 Lbs., 10" x 8" x 1.6"
- 10.4" DSTN Color Display
- 1MB Video RAM
- Infrared Capability
- Intel<sup>®</sup> 486 DX2 or DX4 Processor
- Instant On
- NiMH Battery & AC Pack
- 2 PCMCIA Type II Slots
- EZ Point<sup>™</sup> Integrated Pointer
- Removable Hard Drive
- 78-Key Keyboard
- Parallel, Serial, VGA & PS/2<sup>®</sup> Ports
- MS-DOS<sup>®</sup> 6.22 & WFW 3.11
- Microsoft<sup>®</sup> Works for Windows<sup>™</sup> 3.0 or MS Office Professional 4.3\*\*

\*\*MS Office Professional 4.3 includes Word, Excel, PowerPoint<sup>®</sup> presentation graphics program, and Access<sup>®</sup> database.

#### LIBERTY DX2-50

10.4" DSTN Color Display, 8MB RAM, 340MB HD, MS Works  
**\$2799**

#### LIBERTY DX4-100

10.4" DSTN Color Display, 8MB RAM, 540MB HD, 256K L2 Cache, MS Works  
**\$3299**

#### LIBERTY DX4-100 *Best Buy*

10.4" DSTN Color Display, 24MB RAM, 720MB HD, 256K L2 Cache, TelePath<sup>™</sup> 14.4 XJACK<sup>®</sup> Fax/Modem, Leather Carrying Case, MS Office Professional 4.3\*\*  
**\$4499**

### COLORBOOK<sup>2</sup><sup>™</sup>

- 5.7 Lbs., 11.65" x 8.5" x 1.77"
- 10.3" DSTN Color Display
- Intel 486 DX2 or DX4 Processor
- 8MB RAM (Expandable to 24MB)
- 1.5MB Video RAM (includes 512KB cache)
- Removable Hard Drive
- 3.5" Diskette Drive
- Integrated 16-Bit Sound and Speaker
- NiMH Battery & AC Pack
- EZ Point Integrated Pointer
- 2 PCMCIA Type II Slots
- 85-Key Keyboard
- Parallel, Serial, VGA & PS/2 Ports
- Padded Carrying Case
- MS-DOS 6.22 & WFW 3.11
- MS Works for Windows 3.0 or MS Office Professional 4.3\*\*

**COLORBOOK<sup>2</sup> DX2-50**  
8MB RAM, 540MB HD, Carrying Case, MS Works 3.0  
**\$2999**

**COLORBOOK<sup>2</sup> DX4-100**  
8MB RAM, 540MB HD, Carrying Case, MS Works 3.0  
**\$3299**

**COLORBOOK<sup>2</sup> DX4-100  
*Best Buy***  
16MB RAM, 720MB HD, TelePath 14.4 Fax/Modem, Carrying Case MS Office Professional 4.3\*\*  
**\$3999**

Call for details on our portable PC options!

### LIBERTY PROFESSIONAL PACK

MS Office Professional 4.3, PCMCIA TelePath XJACK 14.4 Fax/Modem, Extra NiMH Battery, Leather Carrying Case  
**\$449**

### LIBERTY TRAVELER'S PACK

External 3.5" Floppy Drive, PCMCIA TelePath XJACK 14.4 Fax/Modem, Extra NiMH Battery, Leather Carrying Case  
**\$399**

### SERVICE AND WARRANTY

- Lifetime toll-free service and support
- One-year limited parts warranty
- 30-day money-back guarantee
- Special VIP warranty. We'll ship a replacement to you within 24 hours during warranty. Only available at the time of purchase for an additional \$100.

### PAYMENT OPTIONS

- Gateway accepts most major credit cards and C.O.D. terms
- Net 30-day terms and leasing options available to qualified commercial customers
- You can also apply for the Gateway 2000 DuoLine<sup>™</sup> MasterCard<sup>®</sup> card, issued by Dial National Bank, Des Moines, Iowa.



Toll free from Canada  
800-846-3609

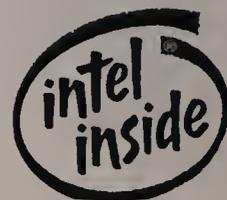


Toll free from Puerto Rico  
800-846-3613



"You've got a friend in the business."<sup>®</sup>

8 0 0 - 8 4 6 - 4 7 6 9



610 Gateway Drive • P.O. Box 2000 • N. Sioux City, SD 57049-2000 • Phone 605-232-2000 • TDD 800-846-1778 • Fax 605-232-2023 • FaxBack 800-846-4526  
Component Add-On Sales 800-846-2080 • Sales Hours: 7am-10pm Weekdays, 9am-4pm Saturdays (CDT)

© 1995 Gateway 2000, Inc. Gateway 2000, black-and-white spot design, "G" logo and "You've got a friend in the business" slogan are registered trademarks, and ColorBook2, Liberty, EZ Point, and TelePath are trademarks of Gateway 2000, Inc. The Intel Inside Logo and Intel are trademarks or registered trademarks of Intel Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies. All prices and configurations are subject to change without notice or obligation. Prices do not include shipping or applicable sales tax

# Lotus Extends Notes to the Rest of Us

**L**otus is cutting Notes prices, introducing a new version, and developing new products that expand the power of Notes, connecting it to voice mail and the Internet.

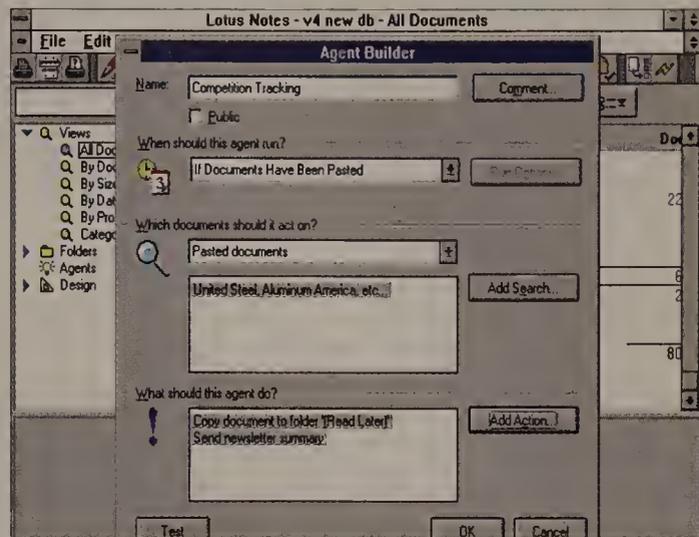
Lotus Notes, which helps companies manage internal information and work collaboratively, has 1.3 million users. But at \$330 per user, it's been expensive to de-

ploy. Now Lotus has cut the price to \$275 and introduced Notes Desktop, a \$155 client version that runs Notes applications but has neither administrative nor development tools. And Lotus will still sell Notes Express, a poorly received \$99 introductory package that works with a limited number of Notes applications and lacks database design capabilities.

## Impressive Notes 4.0 Preview

Lotus Notes 4.0, due in the second half of this year, will have an improved interface with simplified menus, easier table formatting, and a three-pane window that expands to show details. OLE 2.0 capabilities will allow in-place editing of objects, such as charts, created in other applications. Agents will help with work flow, delegating tasks in reaction to triggers.

Replication improvements should save time and money. Notes 4.0 will support field-level replication, meaning that only



**NOTES 4.0 will have a simplified interface, OLE 2.0 support, and customizable work-flow agents.**

changed fields are transmitted. Also, you'll be able to customize replication schemes.

Notes 4.0 will help companies manage communication over the Internet. The Notes client will include a browser for the World Wide Web.

Lotus is also developing InterNotes Web Publisher, which converts Notes database information into HTML format; it ships this summer for \$7500.

—Laurianne McLaughlin

## New Deals for Notes

- ▶ Notes Desktop, a \$155 Notes client, is available now.
- ▶ Lotus Notes 4.0 is due to ship in the second half of 1995.
- ▶ InterNotes Web Publisher, due this summer, will provide access to Notes databases via the World Wide Web.
- ▶ IBM will bundle Notes Express (a \$99 introductory version of Notes) with its OS/2 Warp operating system.
- ▶ Apple will bundle Notes Express with PowerBooks and Power Macs.
- ▶ AT&T and Lotus will integrate Notes and voice-mail systems.

## USA Flex First With AMD DX4-100 Clone:

The USA Flex 486 Multimedia Value System with Advanced Micro Devices' AmDX4-100 was so much fun to review, I'd consider buying one. With all its goodies, it's a great value at \$2289.

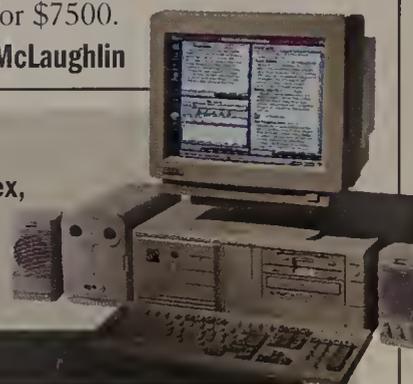
Call me superficial, but I was very taken with the sound system. The Flex includes Altec Lansing's three-piece ACS31 system, consisting of two desktop speakers and a toaster-size subwoofer. The subwoofer provides 25 watts of power for throbbing bass. A 16-bit Creative Labs Sound Blaster 16 MultiCD audio card sports a Turtle Beach add-on module, which adds wave-table-synthesis technology for the best musical sound.

The Flex has an 850MB hard disk, 16MB of RAM on 72-pin SIMMs (upgradable to 64MB), 256K of secondary cache, a 15-inch monitor, and a 14.4-kbps fax-modem.

The system is one of the first powered by AMD's 100-MHz DX4 clone. In *PC World* tests, it performed about as well as the average PC with Intel's DX4-100. There's a lot more in this package: A 32-bit VL bus provides high-speed communications with components, such as the included Paradise Bahamas 64-bit video card and the

Plus Data IDE drive adapter. USA Flex, 800/568-3539. Reader service no. 826

—Randy Ross



## TEST REPORT

### AMD's DX4-100: Acceptable Intel Alternative

System	Price	RAM (MB)	Cache (K)
USA Flex 486 Multimedia Value System	\$2289	16	256
<div style="display: flex; justify-content: space-around;"> <span>1:27</span> <span>:55</span> <span>1:24</span> <span>1:30</span> </div>			
Average of eight Intel DX4-100 PCs	\$3332	16	256
<div style="display: flex; justify-content: space-around;"> <span>1:22</span> <span>:55</span> <span>1:20</span> <span>1:28</span> </div>			

Windows application test times in minutes. Shorter times are better.

Word 2.0 Excel 4.0 Freelance 1.0 Paradox 1.0

Results from PC World Test Center application benchmark tests.

# IBM and Digital: Two Cool Ones for the Road

## TEST DRIVE

Two new notebook lines from companies that once defined big iron—IBM and DEC—offer revolutionary designs that pack power and features into compact, lightweight packages.

When most people first open IBM's ThinkPad 701C notebook, they're left speechless. Then slowly they smile and say, "Coooool." Meanwhile they

the notebook—hence the machine's code name, Butterfly. As you close the notebook, the TrackWrite splits in two to fit snugly into the unit's 7.9-by-9.7-inch frame.

The system's overhanging keyboard does have one slight drawback: It makes it hard to reach the notebook's power switch and access the 14.4-kbps modem and audio jacks located on the unit's side.

The IBM 701C delivers a 10.4-inch active-matrix screen that hardly leaves room for a frame and delivers 640 by 480 VGA resolution with more than 4000 colors (a 10.4-inch dual-scan version is also available). *PC World's* tests clocked the 701C's battery at a respectable

4 hours and 43 minutes, and toting this slim, 4.3-pound machine is no sweat. Processor options, however, are limited to either a DX2-50 (which is what we tested) or a DX4-75; both systems use a 25-MHz motherboard.

The 701C comes with either a 360MB or 540MB removable hard drive and 4MB to 16MB of RAM. The 75-MHz version will come with 8MB of RAM and both Windows and OS/2 Warp. we recommend at least 8MB of

## TEST REPORT

### More Power per Pound

System	RAM (MB)
IBM ThinkPad 701C	4
2:30 2:43 3:11	10:55
Average of two DX2-50 notebooks	4
3:12 3:34 4:40	8:01
Digital HiNote Ultra CT 450	8
2:01 1:30 1:56 2:35	
Average of six DX2-50 notebooks	8
2:34 1:58 2:24 3:20	

Windows application test times in minutes. Shorter times are better.

Word 2.0 Excel 4.0 Freelance 1.0 Paradox 1.0

Results from PC World Test Center application benchmark tests.

memory. The unit we tested had only 4MB, which contributed to the system's horrible Paradox test results. This score marred the system's otherwise above-average performance in Windows applications.

Price was still not set by IBM at press time but should range from \$3800 to \$5800.

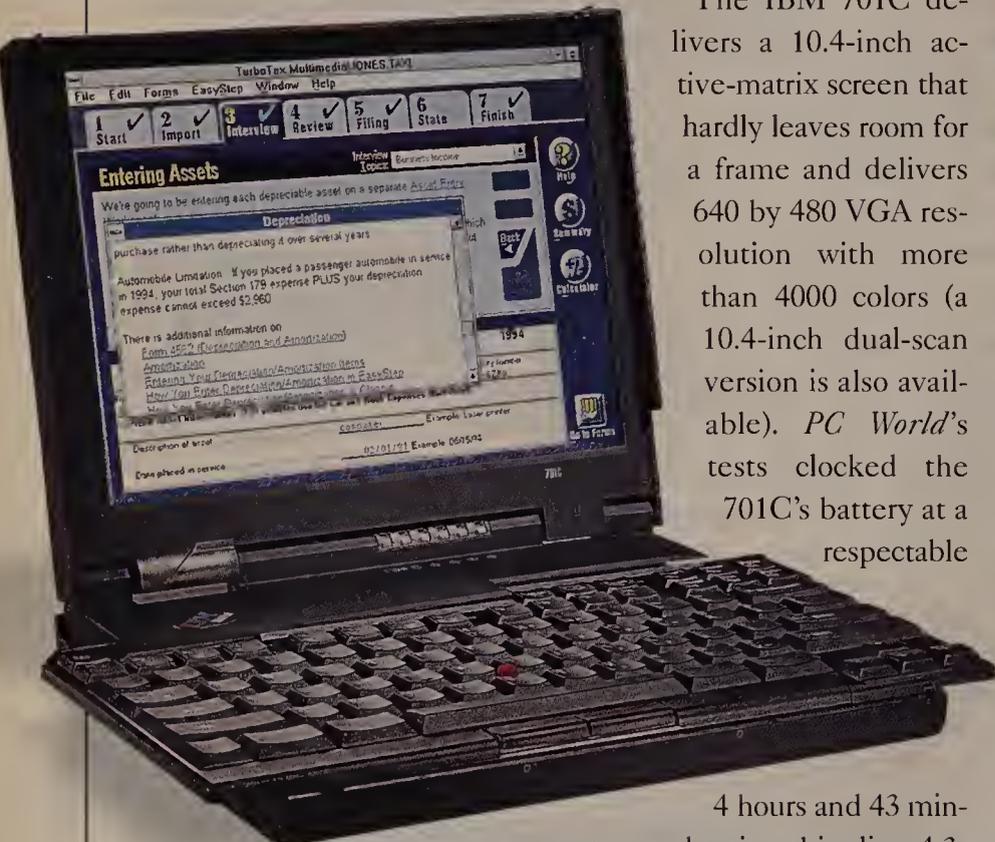
IBM throws in other goodies to sweeten the deal: You get answering machine functions and Sound Blaster-compatible audio. The notebook comes with two PC Card (formerly PCMCIA) Type II slots, which can

accommodate a single Type III card. An infrared port at the rear of the unit (also on IBM's ThinkPad 755) provides point-to-point data transfers at up to 1150 kbps and works with both Hewlett-Packard and Sharp infrared devices.

An unusual bonus is the MultiPort II port replicator that comes with the IBM ThinkPad 701C. The MultiPort II includes serial, enhanced parallel, mouse, keyboard, and monitor ports as well as microphone, line-in, and line-out audio connections. An external floppy drive and a

**IBM'S THINKPAD 701C has a unique keyboard that expands when you open the notebook.**

JOHN GREENLEIGH



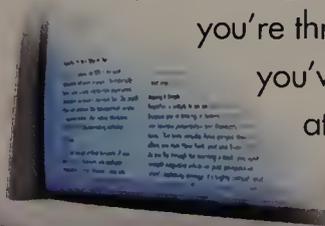


# PaperPort.™ The fastest way to get paper into your computer.

Okay, so you have no trouble getting paper out of your PC. But what do you do with the articles, letters, receipts, and business cards—the important papers—that cross your desk every day? You use PaperPort, that's what! The first truly simple, super-small input device that converts your paper documents into electronic ones. **Always ready to go.** Just plug PaperPort into your PC's serial port (there's no card required) and then feed in a piece of paper. PaperPort grabs the paper, scans it and launches the software automatically—there isn't even an ON button! **Instantly useful.** At six seconds per page,

PaperPort begins to display your documents on the screen even before you're through entering them! Store documents in folders and you've got permanent electronic copies that you can retrieve at any time using PaperPort's easy-to-use search tools.

Fitting comfortably between your keyboard and monitor, PaperPort becomes an integral part of your desktop.



**Streamline your work.** With PaperPort's direct links to word processors, OCR software (included!), printers and fax modems, you can file, edit, annotate, print and send your documents directly to others. All for under \$400. Want to find out more?

Call us at 800-787-7007, division PC.  
**PaperPort. It's the in thing for your PC.**

If it's an paper,  
it's PaperPart-able!



File your documents in folders using long file names. Then one click will print it, another will fax it, and a third will convert it to editable text. What could be easier?



V I S I O N E E R

Circle 187 on reader service card



Upgraded version. Formerly called PaperMax™

# Top of the News

very thin AC power adapter round out the hardware.

Lightweight and powerful, with a great screen and a full-size keyboard, the 701C will make any executive dance like a butterfly and sting like a bee.

## IBM ThinkPad 701C, Digital HiNote Ultra

Exceptional designs set these notebooks apart from the competition.

**IBM Key Features:** Expandable keyboard • 10.4-inch color display • 4.3 pounds

**Pricing:** Not set

**Availability:** Spring

IBM, 800/772-2227

**Digital Key Features:** 1.2 inches thick • 4 pounds

**Pricing:** \$2899 to \$4999

**Availability:** Immediate

Digital Equipment Corp., 800/722-9332

Reader service no. 827

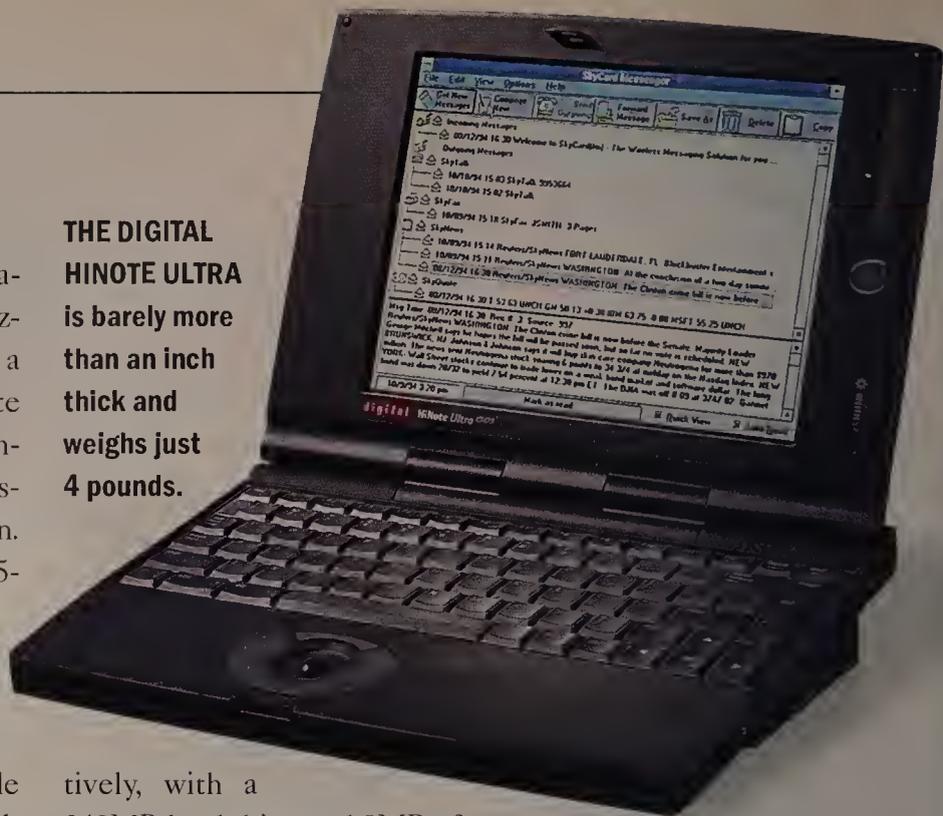
## Digital's Ultra Thins

Digital Equipment Corporation's notebooks pack an amazing amount of features into a tiny space. Digital's HiNote Ultra line includes 1.2-inch-thick active-matrix color systems, the slimmest we've seen. These cleverly designed 8.5-by-11-inch notebooks weigh just 4 pounds and include a 9.5-inch screen and a full-size keyboard.

The Ultra's hot-swappable lithium-ion battery at the back of the note tilts down to place the system at a slight angle, creating space for a slim snap-on 1.44MB floppy drive.

We liked the quality of the active-matrix displays on the HiNote Ultra CT 475 DX4-75 and CT 450 DX2-50. Well suited for presentations, they provide 16-bit audio, 32-bit local bus video, and 1MB of video memory. These two notebooks cost \$4999 and \$4599, respec-

**THE DIGITAL HINOTE ULTRA is barely more than an inch thick and weighs just 4 pounds.**



tively, with a 340MB hard drive and 8MB of RAM upgradable to 24MB.

Digital says a 520MB hard drive and a multimedia docking station will be available later this spring. PCMCIA slots accommodate two Type I or Type II PC Cards or one Type III PC Card.

As for speed, we found the CT 475 to be an above-average performer on Windows applications. The active-matrix systems should run for 3 to 5 hours,

according to the company.

Digital also offers less expensive HiNote Ultra models. The \$2899 HiNote Ultra CS 433 486SX-33 with a 240MB hard drive and \$3299 HiNote Ultra CS 450 DX2-50 with a 340MB hard drive provide dual-scan color and weigh 3.9 pounds. These models come with 4MB of RAM expandable to 20MB.

—Russell Glitman and Laurianne McLaughlin

## Toshiba Brings Mobile Multimedia to Notebook Line

### TEST DRIVE

▶ Cramming a CD-ROM drive into a notebook requires engineering savvy. The drive must be light, durable, and miserly with battery power. Toshiba's CD-ROM-equipped Satellite Pro T2150CD scores well on all counts.

Hot on the heels of IBM's ThinkPad 755CD and Panasonic's V41, the T2150CD offers a 75-MHz DX4 processor, a 500MB hard drive, and a 10.4-inch color display. But the integrated multimedia features are the real news. The double-speed CD-ROM drive on the note's right side requires no disk caddy. Other features include 16-bit audio, a speaker, and a microphone, as well as headphone, microphone, and line-in jacks.

The Toshiba has its compromises: The floppy drive is an external unit. The CD-ROM drive uses about as much battery power as a floppy drive, and Toshiba says you can expect about 2½ hours of computing with the system in full-power mode.

The Toshiba T2150CDT ran *PC World's* application benchmarks roughly 22 percent faster than other comparably equipped 75-MHz DX4 notes we've tested. The T2150CDS with a dual-scan color screen is street priced at \$4249; the T2150CDT with an active-matrix color display costs \$5549.

• Toshiba America Information Systems Inc.; 800/334-3445, 714/583-3000

Reader service no. 828

—Jeff Bertolucci



### TEST REPORT

#### Fast Multimedia to Go: Toshiba's T2150CDT

System	Price	RAM (MB)
Toshiba Satellite Pro T2150CDT	\$5549	8
<div style="display: flex; justify-content: space-around;"> <span>1:42</span> <span>1:11</span> <span>1:34</span> <span>1:57</span> </div>		
Average of six DX4-75 notebooks	\$4319	8
<div style="display: flex; justify-content: space-around;"> <span>1:55</span> <span>1:34</span> <span>1:54</span> <span>2:53</span> </div>		

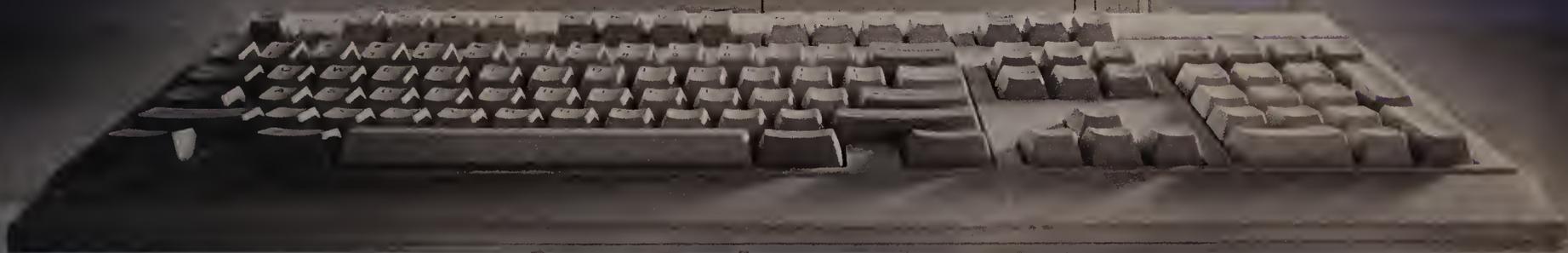
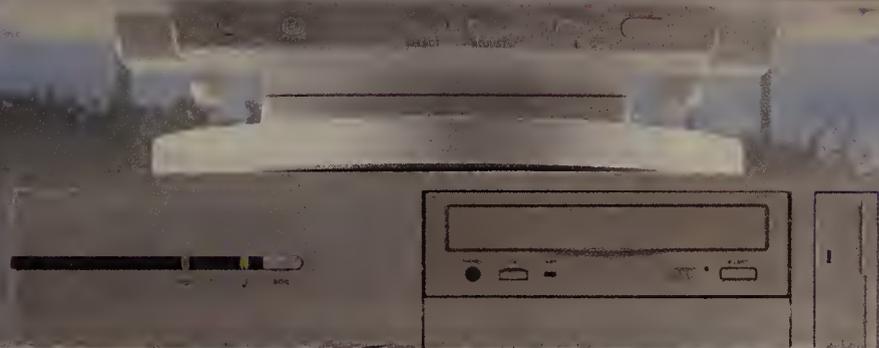
Windows application test times in minutes. Shorter times are better.

Word 2.0 Excel 4.0 Freelance 1.0 Paradox 1.0

Results from PC World Test Center application benchmark tests.

Acer Direct.

The most  
reliable  
source for  
business.



# FOR THE CORPORATE



## AcerPower™ Pentium™/100MHz Minitower

### ■ Intel® Pentium/100MHz Processor

- 8MB System RAM (Expandable to 128MB)
- 256KB Second-Level Cache
- 1.2GB IDE Fast Hard Disk Drive
- PCI Enhanced Local Bus IDE

### ■ Quad-Speed CD-ROM Drive

### ■ 2MB VRAM Diamond Stealth 64 PCI Accelerator Card

- 1.44MB Diskette Drive
- 4 PCI 32-Bit Expansion Slots, 4 ISA 16-Bit Slots (1 Combination PCI/ISA Slot)

- Flash BIOS
- High-Speed I/O Parts
- Microsoft® Windows™ for Workgroups, MS-DOS® 6.2
- 3-Year Limited Warranty with First Year On-site
- 15" .28mm Non-interlaced Flat Screen Color Monitor†

**\$2,895**

Business Leasing Available



039SDIR21

## AcerPower Pentium/75MHz Desktop

### ■ Intel Pentium/75MHz Processor

- 8MB System RAM (Expandable to 128MB)
- 256KB Second-Level Cache
- 540MB IDE Fast Hard Disk Drive
- Double-Speed CD-ROM Drive
- 1MB 64-Bit PCI Local Bus Video
- 1.44MB Diskette Drive
- 2 PCI 32-Bit Expansion Slots, 3 ISA 16-Bit Slots (1 Combination PCI/ISA Slot)
- Flash BIOS
- High-Speed I/O Parts
- Microsoft Windows for Workgroups, MS-DOS 6.2
- 3-Year Limited Warranty with First Year On-site
- 15" .28mm Non-interlaced Flat Screen Color Monitor†



**\$1,995**

Business Leasing Available

039SDIR10

## AcerPower IntelDX4™/100MHz Desktop

- IntelDX4/100MHz Processor
- 8MB System RAM (Expandable to 64MB)
- 540MB IDE Fast Hard Disk Drive
- 1MB Local Bus Video
- 1.44MB Diskette Drive
- 4 ISA 16-Bit Slots
- Flash BIOS
- High-Speed I/O Parts
- Microsoft Windows for Workgroups, MS-DOS 6.2
- 3-Year Limited Warranty with First Year On-site
- 15" .28mm Non-interlaced Flat Screen Color Monitor†



**\$1,695**

Business Leasing Available

039SDIR00

## AcerPower Pentium/100MHz Minitower

### ■ Intel Pentium/100MHz Processor

- 16MB System RAM (Expandable to 128MB)
- 256KB Second-Level Cache
- 1.2GB IDE Fast Hard Disk Drive

### ■ Quad-Speed CD-ROM Drive

### ■ 2MB VRAM Diamond Stealth 64 PCI Accelerator Card

- 1.44MB Diskette Drive
- 4 PCI 32-Bit Expansion Slots, 4 ISA 16-Bit Slots (1 Combination PCI/ISA Slot)
- Flash BIOS
- High-Speed I/O Parts
- Microsoft Windows for Workgroups, MS-DOS 6.2
- 3-Year Limited Warranty with First Year On-site
- 17" .28mm Non-interlaced Flat Screen Color Monitor†

**\$3,595**

Business Leasing Available

039SDIR20

## AcerPower Pentium/75MHz Minitower

### ■ Intel Pentium/75MHz Processor

- 8MB System RAM (Expandable to 128MB)
- 256KB Second-Level Cache
- 850MB IDE Fast Hard Disk Drive

### ■ Quad-Speed CD-ROM Drive

### ■ 2MB VRAM Diamond Stealth 64 PCI Accelerator Card

- Flash BIOS
- High-Speed I/O Parts
- 1.44MB Diskette Drive
- 4 PCI 32-Bit Expansion Slots, 4 ISA 16-Bit Slots (1 Combination PCI/ISA Slot)
- Microsoft Windows for Workgroups, MS-DOS 6.2
- 3-Year Limited Warranty with First Year On-site
- 15" .28mm Non-interlaced Flat Screen Color Monitor†

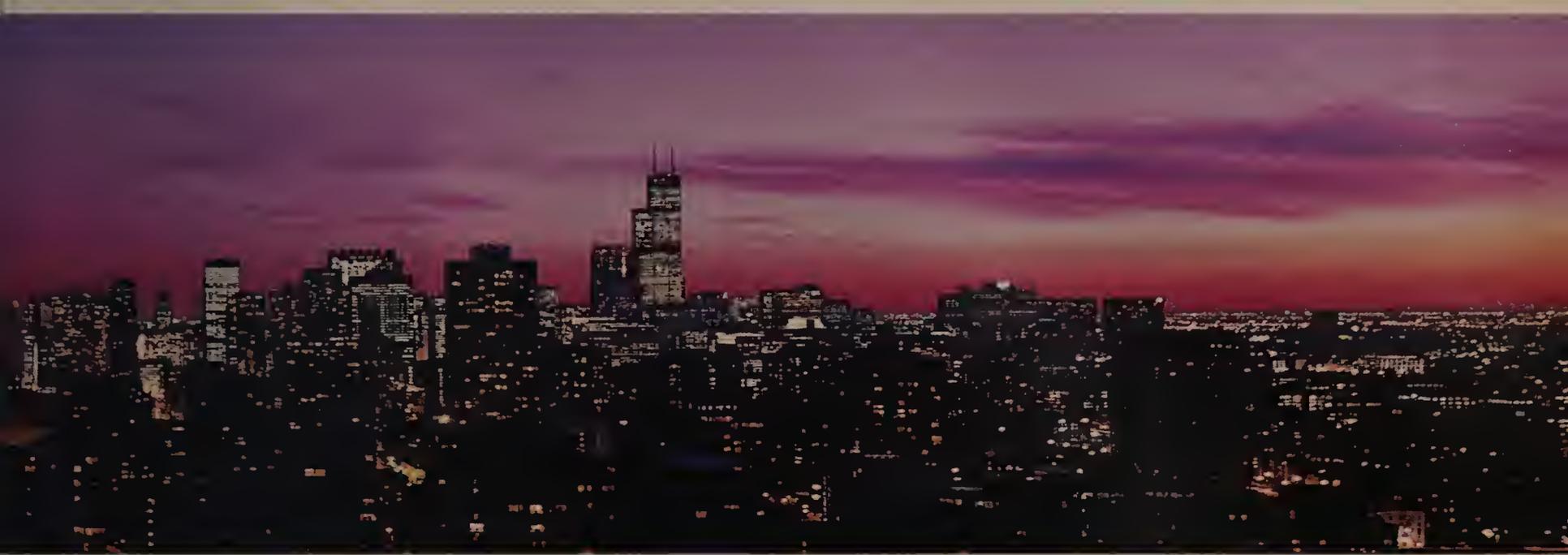
**\$2,395**

Business Leasing Available

039SDIR22

† Monitors are protected by a one-year warranty.

# SUITE.



## ACER DIRECT SALES TEAM IS BUSINESS-SAVVY!

If you need help determining the right mix of business PC power, call Acer Direct. Our sales managers are experts in outfitting specific business models with the right mix of Acer PCs, third-party software, even suggestions for peripherals and communications! Just tell us your goals and basic requirements, and we'll suggest configurations that will get the job done...while staying neatly within your budget guidelines.

## FORTUNE FINANCE PLANS KEEP YOUR BUSINESS MOVING!

Got to outfit a workgroup, department or entire firm with PCs, fast? Call Acer Direct and request the Fortune Finance Plans! We can arrange attractive lease pricing or credit financing over the phone within three business days! We'll fax you all the forms you need to apply...and get back to you with the results, pronto!

## CHOOSE ACER FOR RELIABILITY

When it comes to PCs you can count on, Acer Direct delivers the goods. Our commitment to quality and high manufacturing standards was rewarded with high marks in the *PC World Magazine Reliability and Service Ratings*, published in November 1994. While Acer PCs got an above average rating in product reliability, other direct PC companies didn't quite make the grade.

## THREE-YEAR WARRANTY!

All Acer desktops and minitowers are protected by a 3-year limited warranty! Call 1-800-848-ACER for the details.



Source: PC World, November 1994

PC World Magazine Reliability and Service Ratings

## SATISFACTION GUARANTEED!

If you're not happy with your Acer direct purchase within 30 days, we'll solve the problem to your satisfaction... or you'll get a full refund!

## MAKE THE SMART DECISION, OPT FOR ACER.

Since 1976, Acer has grown to a \$3.2 billion computing powerhouse that's now among the top five in units shipped worldwide\*!

\*Shipping statistic courtesy International Data Corp.



Also available at fine retailers and resellers.

When calling, please reference #045 ACD. Specifications and pricing are subject to change. Prices valid through April 30, 1995.



Please call 1-800-574-ACER for details on the money-back guarantee, limited warranty and International Travelers Warranty. Return shipping and insurance charges are the responsibility of the customer. Not available in Canada. On-site service may not be available in certain remote locations. Products, availability, prices and programs are subject to change or cancellation without notice. Shipping and handling charges are extra. Acer, AcerAcros and the Acer logo are registered trademarks and AcerNote, AcerPower, AcerView, ChipUp and SmartCase are trademarks of Acer America Corporation and Acer Inc. Intel and the Intel Inside Logo are registered trademarks and Pentium and the Pentium Processor logo are trademarks of Intel Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies. ©1995 Acer America Corporation. All rights reserved.

Circle 229 on reader service card

# FOR EXECUTIVES ON



## AcerNote 765 i486DX2™/50MHz

- i486DX2/50MHz Processor with Built-In 8KB Cache and Coprocessor
- 4MB System RAM (Expandable to 20MB)
- **9.5" Active-Matrix LCD Displays 256 Colors**
- **Easily Upgradable 500MB 2.5" Hard Disk Drive**
- **Bundled with a 14.4 PC Card Data/Fax Modem**
- 2 PCMCIA Type II/1 Type III Slot
- **Ergonomic Palmrest with Integrated EasyTrac Trackball**
- 1.44MB Diskette Drive
- Suspend-to-Disk Feature, "No Reboot" CMOS Setup and Suspend/Resume Hot Button Preserves Battery Life
- Simultaneous LCD/CRT Display
- Slim 8.66" x 11.4" x 2.1" Case Weighs 6.4 lbs, Including NiMH Battery
- MS-DOS 6.2, Microsoft Windows 3.1 and Productivity Pack, Personal Organizer, Epic Pinball Software Included
- One-Year, 24-Hour "Hot Swap" Warranty in U.S. and Canada



**\$2,799**

Business Leasing Available

## AcerNote 763 i486DX2/50MHz

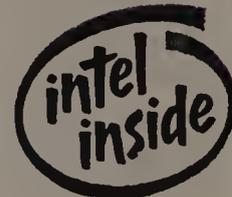
- i486DX2/50MHz Processor with Built-In 8KB Cache and Coprocessor
- 4MB System RAM (Expandable to 20MB)
- **9.5" Active-Matrix LCD Displays 256 Colors**
- Easily Upgradable 340MB 2.5" Hard Disk Drive
- 2 PCMCIA Type II/1 Type III Slot
- **Ergonomic Palmrest with Integrated EasyTrac Trackball**
- 1.44MB Diskette Drive
- Suspend-to-Disk Feature, "No Reboot" CMOS Setup and Suspend/Resume Hot Button Preserves Battery Life
- Simultaneous LCD/CRT Display
- Slim 8.66" x 11.4" x 2.1" Case Weighs 6.4 lbs, Including NiMH Battery
- MS-DOS 6.2, Microsoft Windows 3.1 and Productivity Pack, Personal Organizer, Epic Pinball Software Included
- One-Year, 24-Hour "Hot Swap" Warranty in U.S. and Canada

**\$2,499**

Business Leasing Available

## AcerNote™ 787 IntelDX4™/75MHz

- IntelDX4/75MHz Processor with Built-In 16KB Cache and Coprocessor
- 8MB System RAM (Expandable to 20MB)
- **9.5" Active-Matrix LCD Displays 256 Colors**
- Easily Upgradable 500MB 2.5" Hard Disk Drive
- 2 PCMCIA Type II/1 Type III Slot
- **Ergonomic Palmrest with Integrated EasyTrac™ Trackball**
- 1.44MB Diskette Drive
- Suspend-to-Disk Feature, "No Reboot" CMOS Setup and Suspend/Resume Hot Button Preserves Battery Life
- Simultaneous LCD/CRT Display
- Slim 8.66" x 11.4" x 2.1" Case Weighs 6.4 lbs, Including NiMH Battery
- MS-DOS 6.2, Microsoft Windows 3.1 and Productivity Pack, Personal Organizer, Epic™ Pinball Software Included
- One-Year, 24-Hour "Hot Swap" Warranty in U.S. and Canada



**\$2,999**

Business Leasing Available

### PRESENTATION POWER FROM ACROSS THE ROOM!

The new *Mind Path™ Remote Control* is a powerful, lightweight, inexpensive remote control that combines total control of your mouse and keyboard from up to 45 feet away with dramatic special effects that add flair to any presentation, training, or demonstration. Includes free Presentation F/X software, over 20 remote control special effects such as zoom, telestrator, spotlights, breaktimers and sound.



**\$149**

Available only with the purchase of an AcerNote.

# THE GO.



## AcerNote 782 IntelDX4/75MHz

### ■ IntelDX4/75MHz Processor with Built-In 8KB Cache and Coprocessor

- 4MB System RAM (Expandable to 20MB)
- 9.5" Dual-Scan LCD Displays 256 Colors
- Easily Upgradable 340MB 2.5" Hard Disk Drive
- 2 PCMCIA Type II/1 Type III Slot

### ■ Ergonomic Palmrest with Integrated EasyTrac Trackball

- 1.44MB Diskette Drive
- Local Bus Accelerated Graphics
- Easy-to-Remove Keyboard for Quick Memory and BIOS Upgrade
- Suspend-to-Disk Feature, "No Reboot" CMOS Setup and Suspend/Resume Hot Button Preserves Battery Life
- Simultaneous LCD/CRT Display
- Slim 8.66" x 11.4" x 2.1" Case Weighs 6.4 lbs, Including NiMH Battery
- MS-DOS 6.2, Microsoft Windows 3.1 and Productivity Pack, Personal Organizer Software Included
- One-Year, 24-Hour "Hot Swap" Warranty in U.S. and Canada

# \$1,999

Business Leasing Available

Also available at fine retailers and resellers.



**Cards  
Welcome**



# Call 800-574-ACER

When calling, please reference #045 ACD. Specifications and pricing are subject to change. Prices valid through April 30, 1995.

## EXPANDABILITY FOR TOMORROW, POWER FOR TODAY



The AcerNote portable computer series gives you all the expandability, plus more power than many current desktop PCs. The high performance of the IntelDX4/75MHz processor, combined with local bus architecture, gives you the power to take all your projects on the road with you, not just the less-demanding ones.

Acer protects AcerNote owners with the three-year International Travelers Warranty. If you experience a problem while on the road with an AcerNote, we'll get you a replacement within 24 hours! This pledge is honored in any of the 30 countries where there's an Acer sales office!

## MODULARITY FOR YOUR NOTEBOOK

Convenient, upgradable architecture has arrived with the AcerNote series. It features a revolutionary modular design that makes upgrading components and servicing easy. That's important, because when you're traveling with your notebook, your system administrator won't be around to help you.



# Acer



Circle 229 on reader service card

**AT 600 DOTS PER INCH IT MAKES YOUR LETTERS  
LOOK PERFECT. (AT THIS PRICE, IT ALSO MAKES  
YOUR NUMBERS LOOK PRETTY DARN GOOD.)**

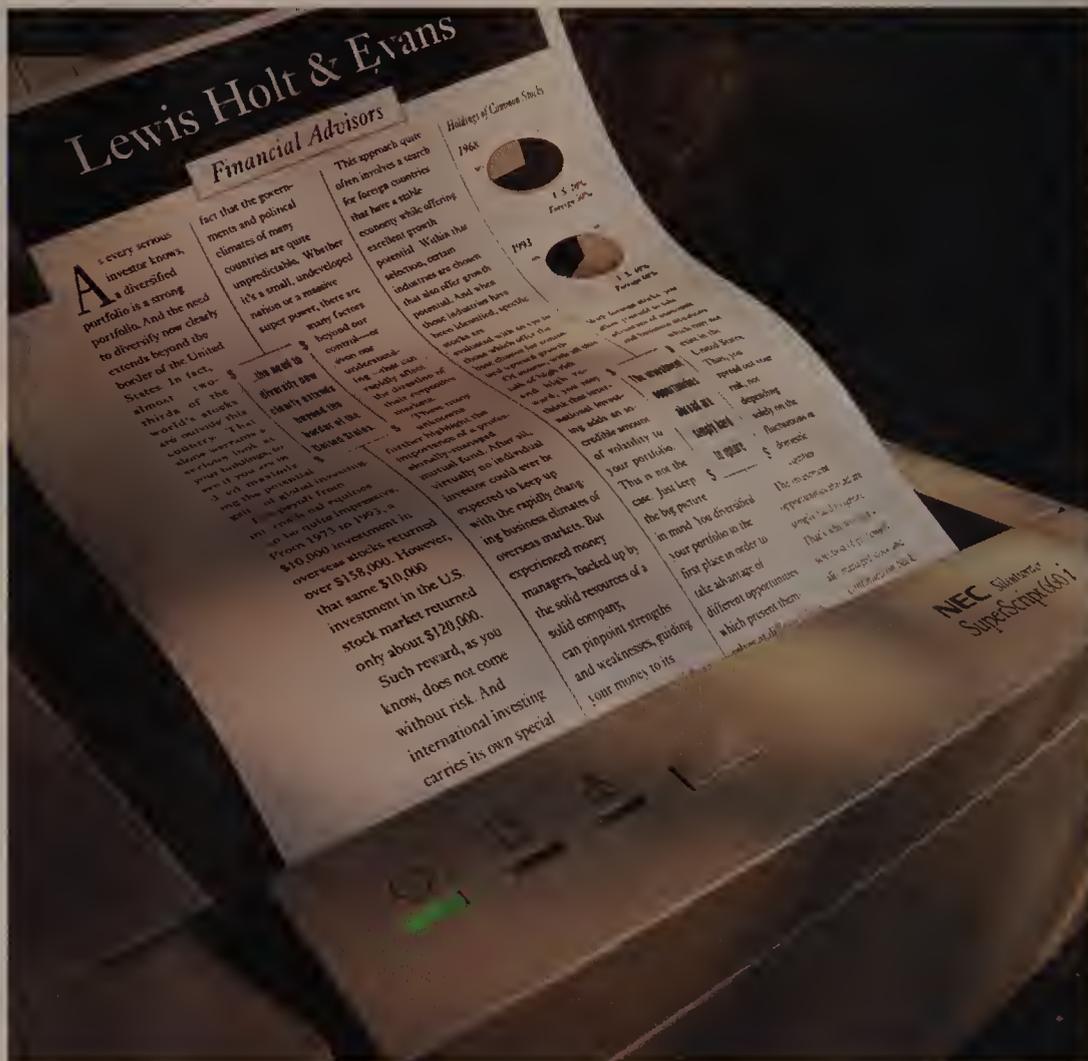
For less than \$800, the new NEC SuperScript™ 660i printer will make everything look exceptional. Including your budget.

In fact, everything will look great except for the Hewlett-Packard® LaserJet® 4P printer. It simply falls a bit short by comparison.

First off, let's talk about one big difference. Speed. Our 660i is simply faster. It prints 6 ppm. Their 4P printer turns out only 4 ppm. And that's significant when you think of the time you could save during your typical, no-time-for-lunch, a-thousand-things-to-do-workday. Like today.

Another difference you'll notice is the availability of optional PostScript™ emulation software. It costs only \$99\* to upgrade with our 660i printer. If you want to upgrade the 4P printer, it costs hundreds of dollars more.

Speaking of price, let us point out perhaps the most logical argument for buying the new NEC SuperScript 660i: It does more, it costs less. For



all the advantages we've listed, (and more) we ask less than \$800.

<b>SuperScript 660i</b>	<b>HP LaserJet 4P</b>
Prints 6 ppm	Prints 4 ppm
PostScript emulation upgrade \$99*	PostScript emulation upgrade \$412***
2-year limited overnight warranty	1-year return to dealer policy
Average Street Price \$800	Average Street Price \$920**

Hewlett-Packard, on the other hand, asks you to part with more. Quite a bit more, to be honest. By the way, with our 660i you will get a two-year limited overnight

replacement warranty. By comparison, Hewlett-Packard gives you just a one-year return-to-dealer policy.

The SuperScript 660i from NEC. It's simply a better value than the HP LaserJet 4P printer. For information call 1-800-NEC-INFO. For details sent via fax, call FastFacts™ at 1-800-366-0476 and ask for document #796604.

**SEE, HEAR  
AND FEEL THE  
DIFFERENCE.™**

**NEC**

\*Suggested Retail Price. \*\*Average Street Price based on ARS, Inc. Retail Price and Margin Report, 10/31/94. \*\*\*Dealer listings may vary. SuperScript, FastFacts and See, Hear and Feel the Difference are trademarks of NEC Technologies, Inc. All other registered trademarks are the property of their respective holders. ©1995 NEC Technologies, Inc. NEC GSA #GSOOK91AGS5241.

## A New Spin on Removable Hard Drives

**R**emovable mass storage drives are getting smaller, cheaper, and easier to use. Whether your buying decision is based on price or capacity, some innovative products from three well-known vendors provide unique storage solutions.

Iomega and SyQuest offer 3½-inch drives using removable cartridges, which resemble chubby floppy disks. This technology provides inexpensive, highly expandable storage—to add disk space, you just slide in a blank cartridge.

The Iomega Zip drive sells for under \$200 on the street—a price previously unheard of in removable-storage circles. A 100MB Iomega cartridge sells for a street price of \$19.95, making the price per megabyte lower than a floppy disk's. Iomega plans to introduce a

a Sony Discman than like a removable-cartridge drive.

If you need a faster, larger-capacity model, consider SyQuest's SQ3270. This product is a 270MB, 3½-inch version of the classic Winchester magnetic-cartridge hard drive revered by desktop publishing service bureaus everywhere. The SQ3270 sells for \$599; the cartridges, which fit neatly into a shirt pocket, cost \$59.

With a 13.5ms access time, the SQ3270 is about as fast as a typical hard drive. The Zip is substantially slower, but acceptable, at 30ms. Both are available in SCSI and parallel port versions; the SCSI models deliver faster data transfer rates. Though the parallel port drives are slower, you can plug them into any parallel port. Now *that's* portability.



**MEGA STORAGE FOR LESS:** Iomega's Zip drive stores 100MB of data on removable 3½-inch disks and costs under \$200.

200MB cartridge later this summer. The whole package (drive, cables, and cartridge) weighs just over a pound, so it's portable. The Zip drive's slick blue plastic casing with cut-away window should also appeal to your aesthetic side as well as to the technophobes in your office—it looks more like

### Even Higher Performance

LaCie Limited's line of Joule Portables offers a higher-performance option for removable mass storage. LaCie encapsulates full- and half-height Quantum hard disks in a rugged, soft plastic casing and bundles a proprietary, portable SCSI docking unit. Slide out



**HARD DRIVE TO GO:** LaCie's line of Joule removable hard drives feature a rugged black casing and a SCSI docking station.

the drive, and off you go—you can leave the 10-ounce dock behind or bring it with you. The dock itself plugs into a SCSI host adapter (no parallel port version is available). You lose the convenience of a simple parallel port connection, but you gain SCSI-2 performance and expandability.

Joule capacities range from the 2½-inch, 170MB module (\$299) up to the full-height, 3½-inch, 4.3GB unit (\$2569). Prices include the dock but not the SCSI host adapter. LaCie offers the option (at additional cost) of stacking up to six modules vertically on a proprietary base that provides a single power source and SCSI connection to the tower.

The parallel port versions of the Zip drive and SyQuest cartridge hard drives offer easy installation at a low cost per megabyte. The SCSI versions of these drives, and the Joule Portables, offer faster performance at a higher price—along

with potentially more difficult installation. It's a convenience-versus-performance trade-off.

—Susan Silvius

### Joule Portables

Up to 4.3GB of storage.

**LaCie Limited**

800/999-0143

Street price: \$299 to \$2569 including dock

Reader service no. 759

### SQ3270

Removable-cartridge drive now in 3½-inch format.

**SyQuest Technology**

800/245-2278

Street price: \$599, 270MB cartridge \$59

Reader service no. 760

### Zip drive

Low-cost, portable storage.

**Iomega Corp.**

800/777-6654

Street price: \$199; 100MB cartridge \$19.95

Reader service no. 761

## Dual-Processor Pentiums: High-Speed Desktops

**G**iven the recent bad press surrounding the Pentium chip, it's inevitable that some wags will simply dismiss the new dual-Pentium Celebris XLs from Digital Equipment Corporation as double trouble. But these feature-rich, 90-MHz and 100-MHz dual-Pentium minitowers have the ability to process the most demanding tasks at least 50 percent faster, and DEC hopes they'll become the PCs of choice for CAD/CAM, desktop publishing, and statistical analysis.

The Celebris XL models are available in four Pentium configurations. The 590 model has a single 90-MHz processor, and the 590DP includes two 90-MHz chips; the 5100 and 5100DP follow the same pattern but use 100-MHz processors. The dual-processor machines with a 1GB SCSI drive cost \$4998 for the 590DP and \$5298 for the 5100DP, not including the monitor.

Unlike the few other dual-Pentium systems on the market—such as AT&T Global Information Solutions' 3430 Dual SMP—the Celebris XLs were designed to be high-end desktops, not network servers. To get the most from them, you need a 32-bit multitasking,

multithreading operating system like Windows NT, as well as multithreaded applications designed for dual-processing PCs. At press time, a few such applications were available, including Microsoft's Excel and Word for Windows NT and Intergraph's MicroStation CAD package. Micrografx expects to ship Picture Publisher 5.0 for Windows NT by late summer.

The dual-Pentium systems come loaded with 16MB of RAM (upgradable to 192MB). Storage options range from 540MB up to 2GB hard disks.

—James A. Martin



**DOUBLE POWER:** Digital's new dual-Pentium systems offer performance potential previously reserved for network servers.

## Three Fast SCSI Adapters Offer Easy Installation

**M**ost people associate SCSI with great performance but difficult installation. Now a new trio of SCSI adapter cards offers fast data transfer rates without setup woes.

Speed freaks ought to check out AdvanSys's AdvanSCSI ABP-852 VL dual SCSI host adapter. With two full-speed SCSI channels, the \$479 ABP-852 has a fast transfer rate of 20 mbps (10 mbps per channel)—double that of other cards. The vendor claims two channels on one card increases the speed at which SCSI peripherals deliver data. For example, the ABP-852 reads from drives on the first SCSI channel while writing to the backup device on the second. Because it's dual-SCSI, it handles up to 14 peripherals in one VESA slot.

Adaptec's new AHA-1540CP SCSI host adapter supports Plug and Play, which Windows

95 is also expected to support. With a 10-mbps transfer rate, the \$249 AHA-1540CP slips into any available ISA slot. Adaptec includes EZ-SCSI 3.1 software to ensure both automatic SCSI installation and support for up to seven SCSI devices such as tape backup drives, hard disks, and scanners. You can configure the card via software, so there are no jumpers to deal with. Adaptec also offers the \$269 AHA-1542CP, which has floppy drive support.

If you're on a tight budget, consider Future Domain's \$125 PNP-1630SVP, a 16-bit SCSI-2 controller that fits into an ISA slot and supports Plug and Play. It has no DIP switches or jumpers to set, provides a 10-mbps transfer rate, and includes PowerSCSI software. It has a seven-year warranty.

—Steve Bass

### AdvanSCSI ABP-852

Speedy SCSI board.

AdvanSys

800/525-7443,

408/383-9400

List price: \$479

Reader service no. 763

### AHA-1540CP, AHA-1542CP

Easy-to-install board.

Adaptec, Inc.

800/442-7274,

408/945-8600

List price: AHA-1540CP

\$249, AHA-1542CP \$269

Reader service no. 764

### PNP-1630SVP

Low-cost SCSI solution.

Future Domain Corp.

714/253-0400

List price: \$125

Reader service no. 765

### Celebris XL 590DP, XL 5100DP

PCs with dual-CPU option.

Digital Equipment Corp.

800/722-9332

List price: \$4998 590DP,

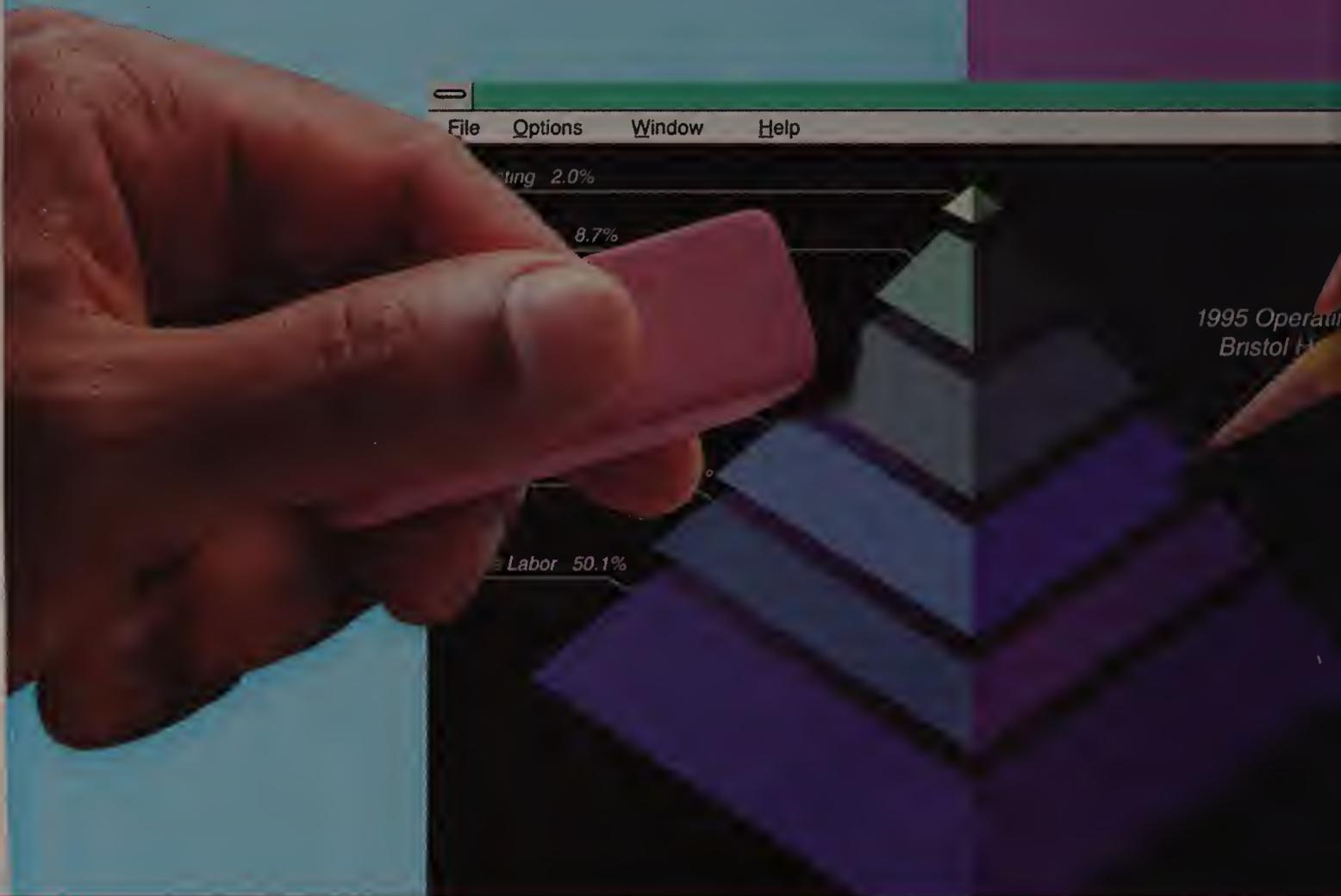
\$5298 5100DP (without  
the monitor)

Reader service no. 762

Say goodbye  
to working in  
an isolation  
chamber.



# Introducing Globalyst PC Finally, simultaneous, instant long distance together



&Cs.  
aneous,  
ess.

## The first computers with true application sharing. For instant collaboration, not isolation.

Take a look at your average workday. Half of it can end up just plain wasted. Sitting in meetings. Running to the fax machine. Going through rounds of revisions on every document. You know the story.

Now welcome to the exciting new world of Personal Computing and Communications—PC&C. Discover AT&T Globalyst™, the first computers with AT&T Vistium™ Share Software. It lets you and a client or colleague share live Windows™ files, make changes in real time and transfer the final document to either user. Even if only one of you has the application you're sharing. Work with someone a thousand miles away as easily as if they were across your desk.



Because they're from AT&T, Globalyst PC&Cs aren't some proprietary system, but open, industry-standard, Intel™ processor-based technology.

*Best in reliability & service support  
PC World, November 1994*

There are three easy ways to order your AT&T Globalyst PC&Cs. From America's premier resellers, from convenient retail locations or direct. And you can reach them all at this number:

1 800 542-9901

Can spontaneous collaboration make a difference in your business? Call today. We'll tell you more.

**GET IT.**  
move  
USE IT.™

*Now that NCR and AT&T are one, computing and communications have come together to help you get, move, and use information.*



**AT&T**

Global Information  
Solutions

Circle 4 on reader service card

# Sharp's Zaurus: A Very Small, Very Versatile PDA

Sharp's new personal digital assistant, the Zaurus, offers unusual versatility for a device in its class. This tiny organizer supports a variety of communications options and lets you navigate and input data with a miniature QWERTY keyboard or an electronic pen.

At \$749, the Zaurus isn't cheap, but it is small. The 13½-ounce, 1-inch-thick device fits easily in a jacket pocket or a

purse. It uses a Windows-like operating system and comes with a variety of applets, including a contact manager, a calendar, E-mail and fax programs, and a basic word processor. (It cannot run Windows or DOS programs.) Sharp expects more Zaurus applets to be available later this year.

For your communications needs, the Zaurus offers a compact 9600/2400-bps fax-modem that attaches to the serial port (it costs an additional \$100). A PCMCIA Type II slot provides room for extra storage, a cellular fax-modem, or a pager card.

An optional \$30 serial cable lets you exchange data between the Zaurus and a desktop PC. The device also has an infrared port; the optional



**SHARP'S PRICEY PDA:** The \$749 Sharp Zaurus offers a variety of useful applets and a choice of either keyboard or pen input.

adapter for your desktop PC costs about \$100.

The Zaurus is powered by a 16-bit Sharp processor and in-

cludes 1MB of RAM. The device will run for about 60 hours on two AA batteries.

—Laurianne McLaughlin

### Sharp Zaurus

Multifunctional PDA.

Sharp Electronics Corp.

800/237-4277

List price: \$749, \$849  
with modem

Reader service no. 766

# Pocket Finance: Your Electronic Banker for the Road

The Pocket Finance is a \$99 device with capabilities beyond those of most hand-held organizers, sporting features found only in personal finance software like Quicken. The product also saves your ac-

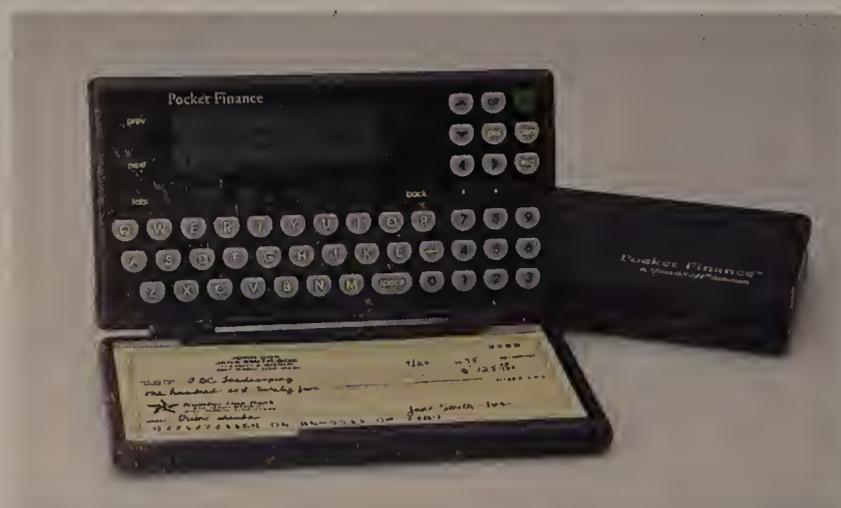
count files in Quicken Interchange Format (QIF), which you can upload to your PC via a serial port link (using the LinkLine feature, an option available for \$50) and import right into your finance package.

About as big as a paper check register, the Pocket Finance flips open to reveal a full alphanumeric keypad and four-line LCD screen on top, and a tray for blank checks below. Use the keypad to set up checking, savings, and other accounts, and to enter deposits and withdrawals. Unlike other hand-held organizers, the Pocket Finance lets you assign categories and subcategories to each transaction so you can view a report of, say, how much you spent on food last week. You can also store phone numbers and brief memos in its 32K of RAM.

My beefs with the Pocket Finance are minor but worth noting. The device won't permit you to transfer funds be-

tween accounts—you have to withdraw from one account and deposit into the other. Also, you can upload only one account at a time to your PC, and the data link is strictly one-way; if you change the data on your PC, you have to update the Pocket Finance manually to keep your accounts in sync.

—Daniel Tynan



**QUICKEN PORTABLE:** The Pocket Finance lets you keep track of your finances wherever you go, and upload the information to your PC.

### Pocket Finance

Hand-held organizer for personal finance.

TouchSoft

800/900-0968 ext. 690

List price: \$99, \$149 with  
Pocket Finance LinkLine

Reader service no. 767

# FREE 60-pg Power Solutions Handbook

No matter how fast your computer is, it will never outrun a power problem...so get your FREE handbook today!



- YES!** I'm interested in learning more about APC UPS protection. Please send the name of my nearest dealer.
- No!** But I would like a FREE Handbook.

Name \_\_\_\_\_ Title: \_\_\_\_\_

Company \_\_\_\_\_

Street/City/State \_\_\_\_\_

Phone/fax: \_\_\_\_\_

Brands of UPS used? \_\_\_\_\_ # servers/PCs to be protected? \_\_\_\_\_

*What are the myths and musts of PC protection? What are the 10 most common power protection mistakes? The top tips for adding reliability to your LAN? Get your FREE copy and find out!*

NO POSTAGE  
NECESSARY IF  
MAILED IN THE  
UNITED STATES



---

# BUSINESS REPLY MAIL

---

FIRST CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

---

POSTAGE WILL BE PAID BY ADDRESSEE

**APC**<sup>TM</sup>

AMERICAN POWER CONVERSION

Attn: Dept. R7  
132 Fairgrounds Road  
P.O. Box 278  
West Kingston, RI 02892-9920



IT'S NOT IF. IT'S WHEN.

# 486, Pentium, PowerMac...

# No matter how fast your PC is, it can't outrun a power problem (Get Uninterruptible...starting at \$119)

Just don't have the time for power problems on your PC? Don't worry. They'll always make the time for you. It's not if a power problem will occur, but when. Due to household appliances, poor wiring, bad weather or even other office equipment, power problems are as inevitable as death and taxes.

**IN THE NEXT THREE MONTHS, MORE THAN 30,000,000 PCs WILL BE HIT BY POWER PROBLEMS...**

In fact, you have better odds of winning the lottery than of escaping the sting of power problems on your PC. One study discovered a typical PC is hit over 100 times a month, causing keyboard lockups, hard drive damage, and worse. And since sags and blackouts represent more than 85% of power problems likely to

## APC UNINTERRUPTIBLE POWER MEANS SAFE DATA, HAPPY COMPUTERS

Sealed no-maintenance internal battery provides instant power in event of sag or blackout, protecting your data from loss

Surge protection backed by up to a \$25,000 insurance policy protects valuable computer hardware from loss

Site wiring fault indicators automatically diagnose dangerous wiring conditions

Audible and visual alarms alert you to power problems

Filters remove electromagnetic interference

Signals your computer, saves your data (APC software required)



Raw AC



Safe AC

APC Uninterruptible Power Supplies provide instant battery backup to protect your data from loss and your hard drive from damage. Units are even backed by up to \$25,000 in lifetime surge protection insurance.

hit your computer, standard surge suppressors are literally powerless to protect you. And a study in a recent PCWeek showed that the largest single cause of data loss is bad power, accounting for almost as much data loss as all other causes combined.

### PROTECT YOURSELF BEFORE YOU KICK YOURSELF...

Get instantaneous battery backup power from an APC Uninterruptible Power Supply and prevent keyboard lockups, data loss, and hard disk crashes. Surge protection performance is even backed by up to a \$25,000 Lifetime Equipment Protection Guarantee.

Ask for APC at your computer reseller today or call for your FREE handbook.



Starting at just \$119, an APC UPS is serious protection no serious computer user should be without.



"Don't take chances...get the ultimate protection... from APC." --PCWorld

### OVER 3,000,000 SATISFIED APC USERS...

"This is the best computer related purchase I have ever made! Has saved me hours of re-programming..."  
Carol Irvine, Wizard Assoc.

"We reduced our maintenance costs the first year by 50% in repairs of equipment."  
Valentin Gonzalez, Pfizer

"Our server was running a project when it lost power... messed up all the data files. It took four days to recover. But we don't worry anymore since we got APC..."  
Tony Chen, DeAnza Systems

"We were working on a state bid when the power went off. APC saved the day and year and future...about 800 pages of data saved thanks to APC."  
Ravi Iyer, Software Galleria

"A power surge did significant damage to all of our systems except those protected by APC. The APC units were undamaged..."  
C. Jeffrey, C. Jeffrey Eng.

"APC has virtually eliminated downtime in our corporate network..."  
Kurt Roemer, Searle Corp.

"Power went out while processing payroll! If not for APC we would have had a walkout!"  
Suzi Higgason, OSI Inc



Home office user Don Traux knows first hand about APC reliability: "It ought to be against the law to buy a computer without an APC Back-UPS 250. I recently had a direct lightning hit right outside the house...my computer never blinked."

"APC lets me sleep better at night. How much would you pay to get back that one file you worked all day to complete for the boss who gets on the plane at 8:00 a.m? You should assume that you'll buy a UPS, not that it's some luxury item."  
R. Morella, Westinghouse

"A power surge wiped out the FAT tables on all PC's not protected by APC. Now have APC installed on all..."  
Craig Post, Comm. Tech.

"Before I purchased the UPS I had to put in at least two hard drives at \$1000. With APC products...no new hard drives in two years!"  
S. Foreman, LSP

### Solutions

### FREE 60-PAGE HANDBOOK

What are the causes and effects of power problems? The most common power protection mistakes? Call for your free handbook today! Please reference Dept P3.

# APC™

AMERICAN POWER CONVERSION

## 800-800-4APC

401-788-2797 fax / 800-347-FAXX faxback  
132 Fairgrounds Rd., W. Kingston RI 02892 USA  
A publicly-traded company (NASDAQ: APCC)

PCW 495



## Profit 2.0 Accounting Package Adds Speed and a Sporty Interface

This accounting package, formerly known as Microsoft Profit, is now in the hands of Great Plains Software, an accounting software developer that originally developed the program for Microsoft and recently took over its sales and marketing.

The new Profit 2.0 is noticeably faster than the first version introduced two years ago. Great Plains claims that Profit has 112 new features, though most are relatively minor improvements. The interface has been cleaned up, eliminating some of the too-cute-for-words cartoon characters that popped up in the original.

But this doesn't mean Profit 2.0's interface is dull. If you have trouble keeping track of your business bills and paperwork, you'll find they're never more than a few clicks away in Profit's innovative electronic filing cabinet.

This filing cabinet metaphor is designed to help you manage bookkeeping "paperwork." Click the file cabinet drawer and it slides open, revealing file folders on the right. Click the sales folder and select from a number of sales forms, including those for invoices and price quotes. They all look much

like their paper counterparts.

While the filing cabinet hides accounting complexities from the average user, the program is useful for experts, too. For instance, bookkeepers can click the accounting drawer, then debit and credit to their heart's delight.

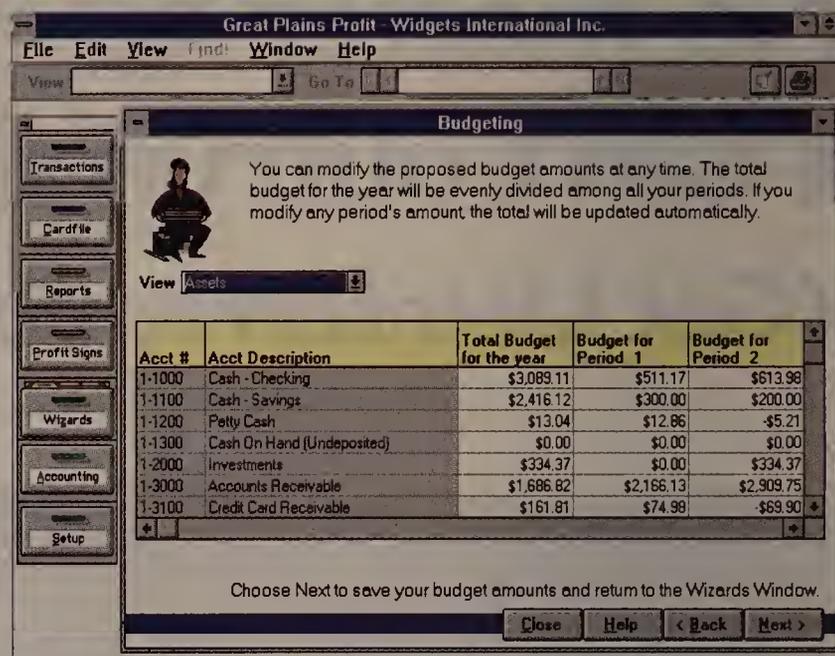
But Profit does more than just help you fill out forms and track numbers. It also makes it easier to look at the big picture and assess where your business is going. The Profit Signs drawer includes ratios and charts that measure your company's financial vital signs. These tools help you monitor cash flow and measure profitability in several different ways—by project, customer, or manager.

A customization Wizard steps you through the process of modifying invoices, customer billing statements, and checks. You can drag and drop sections of text and data fields to create a form that suits your needs. You can even add a business logo or other artwork.

The \$249 Profit 2.0 is networkable and handles most major accounting functions. Great Plains' Payroll module can be bundled with Profit 2.0 (total cost \$299), or be purchased separately for \$99.

Profit 2.0 is probably overkill for very small businesses with less than \$500,000 in annual revenue; Intuit's QuickBooks is more suitable for that. Profit 2.0 is aimed, instead, at businesses with up to \$5 million in annual revenue and up to 25 employees. If your business fits this profile, Profit could become your electronic accountant.

—Richard Morochove



**GREAT PLAINS PROFIT 2.0's WIZARDS** guide you through complicated accounting procedures, such as setting up an annual budget.

## No More Sticky Notes

Before personal information managers (PIMs) became sophisticated relational databases hiding behind a snazzy interface (such as Lotus Organizer or WordPerfect InfoCentral), they were primarily free-form databases—great nets to catch schools of unrelated information, including to-do lists, phone numbers, appointment reminders, and so on.

Micro Logic's Info Select Express for Windows, which began life as Tornado Notes, harkens back to the simple, free-form days of PIMs. It lets you store numerous bits of information on the fly and search for them quickly. The package doesn't come with the bells and whistles found in most of today's PIMs, but it does dial phone numbers and let you set ticklers for appointments.

On the other hand, it doesn't come with the price tag of most

### Info Select Express for Windows

An electronic shoebox for storing information in your computer.

Micro Logic Corp.  
800/342-5930

List price: \$19.95

Reader service no. 745

PIMs. Micro Logic has kept Info Select Express under \$20 by packaging it in a box the size of a compact disc and forgoing printed documentation for online help.

If you use the card file program that comes packaged with Windows, or if you just want to store random bits of information that you can find easily, Info Select Express is a robust utility that can't be beat for the price.

—John P. Mello Jr.

### Great Plains Profit 2.0

Formerly Microsoft Profit, version 2.0 adds some snappy new features.

Great Plains Software  
800/926-8962

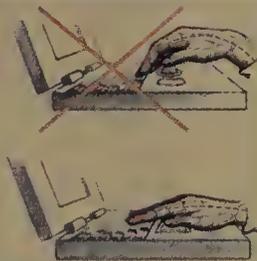
List price: \$249, with Payroll module \$299

Reader service no. 744

# MPC INTRODUCES THE FIRST ALL-IN-ONE CONCEPT IN NOTEBOOK COMPUTING.



## MPC 700 TouchNOTE™



**\$2199**

DX4-75 DUAL SCAN, 8MB RAM, 260MB HDD



### 3-VOLT DESIGN

MEANS LESS POWER CONSUMPTION, PROVIDING MORE OPERATING TIME, LESS HEAT AND GREATER RELIABILITY.



### PCMCIA IV SLOT

WHILE OUR COMPETITORS INCLUDE ONE PCMCIA TYPE III SLOT, WE GIVE YOU A TYPE III PLUS AN EXTRA TYPE II SLOT, ALLOWING YOU INSTANT FAX, MODEM, NETWORKING AND OTHER CAPABILITIES.



**NEW TOUCH PAD!**  
ERGONOMIC POINTING DEVICE USING AWARD-WINNING GLIDEPOINT TECHNOLOGY IS DESIGNED FOR LONG TERM COMFORT.

**GLIDEPOINT TECHNOLOGY**  
BEST PRODUCT OF 1994  
PC MAGAZINE, JAN. 10, 1995

**UPGRADEABLE CPU**  
LETS YOU EXPAND YOUR COMPUTING POWER AS YOUR PERFORMANCE NEEDS CHANGE.

### 700 SERIES SPECIFICATIONS

- DX2-50, DX2-66, DX4-75 or 100 MHz
- 8MB RAM, max: 32MB; EMS 4.0 supp.
- 3.5" 1.44MB FDD
- Slide-out HDD: 340MB up to 700MB
- 9.5" or optional 10.4" color dual scan STN LCD
- 1MB Video Local bus
- VGA port support 1024x768x256 color
- New PCMCIA IV slots, support 1 type II & 1 type III
- Built-in 19mm extra-large centertrack ball or Touch Pad
- Built-in 16-bit stereo Sound Blaster compatible
- True 3.3 Volt system
- Advanced SMI power management
- System status panel
- Upgradeable LCD screen
- NiMH battery w/hot swapping features
- I/O: parallel, serial, VGA, audio in/out, docking connector
- Built-in microphone & stereo output
- MS-DOS & Windows for Work Group
- 5.7 lbs, including battery pack



<b>MPC'S 799 SPECIAL BUDGET PACKAGE:</b> DOS, WINDOWS FOR WORK GROUP & CARRYING CASE	
DUAL SCAN 100MHZ, 8MB RAM, 340MB HDD	\$2,299
<b>MPC'S 799 SPECIAL POWER PACKAGE:</b> DOS, WINDOWS FOR WORK GROUP, 1 EXTRA NiMH BATTERY, CAR ADAPTER, 14.4 FAX/MODEM PCMCIA CARD & CARRYING CASE	
DUAL SCAN 100MHZ, 8MB RAM, 524MB HDD	\$2,599
<b>MPC'S 799 SUPER PACKAGE:</b> DOS, WINDOWS FOR WORK GROUP, 1 EXTRA NiMH BATTERY, CAR ADAPTER, EXTERNAL CHARGER, 14.4 FAX/MODEM PCMCIA CARD & TARGUS CASE	
TFT ACTIVE-MATRIX 100MHZ, 8MB RAM, 524MB HDD	\$3,520
<b>MPC'S CD-BOOK™ SPECIAL PACKAGE:</b> 12-PAK CD, DOS, WINDOWS FOR WORK GROUP, 1 EXTRA NiMH BATTERY, CAR ADAPTER & CARRYING CASE	
DUAL SCAN 100MHZ, 8MB RAM, 524MB HDD	\$2,845
TFT ACTIVE-MATRIX 100MHZ, 8MB RAM, 524MB HDD	\$3,880

Above configurations are for immediate delivery. Other configurations are available, but please allow a few days for delivery. Trackball option is available at additional charge.

### FREE CD TITLES (A \$459.00 VALUE) INCLUDE:

**FREE!**

Astrology Source, Healthy Cooking, Cool Crafts, Dandy Dinosaurs, Complete Guide to Gardening, The Legends of Oz, National Parks of America, Journey to the Planets, Great American Cooking, Americans in Space, Wines of the World, Warren Miller's Ski World

### 800 SERIES SPECIFICATIONS

- DX2-50, DX2-66, DX4-75 or 100 MHz
- Built-in double speed CD ROM supports 5.25" CDs
- 12 free CD titles
- 4MB expandable to 32MB
- 9.5" Dual Scan & TFT Active LCD screen
- Accelerated 32-bit VESA Local Bus VGA with 1MB
- VGA port support 1024x768x256 color
- Built-in pointing device (Versa Point)
- PCMCIA Type III slot
- 16-bit stereo (Sound Blaster compatible)
- NiMH battery
- Advanced power management
- Built-in microphone & stereo speakers
- I/O: parallel, serial, VGA & audio in/out
- DOS & Windows for Work Group
- Carrying case
- 6.6 lbs. (DS) with battery
- Cigarette lighter adapter

MPC Technologies, Inc. makes portable computers even more affordable. Now we are introducing the All-In-One Concept.

Feature for feature, MPC delivers the best value in notebook solutions. As PC Magazine wrote, MPC 75 MHz's performance was in the same league as the 100 MHz IBM and Panasonic machines on the Winstone 95 test (Dec. 6, 1994). Call today and let one of our skilled sales consultants help you determine which MPC System is best for you.



**MPC CD-BOOK™**  
THE COMPLETE COLOR MULTIMEDIA PORTABLE



**\$2460**  
DX4-75  
4MB/260MB

MPC TECHNOLOGIES, 2915 DAIMLER ST., SANTA ANA, CA 92705. LOCAL: (714) 724-9000. (800) MPC-9979. FAX: (714) 724-9648. BBS: (714) 724-1519/724-1543. TECH SUPPORT: (800) 672-6686. 24-HOUR FAX/BACK: (800) 672-8882. CUSTOMER SERVICE: (800) 672-9929



Terms: No sub-charge for MasterCard or Visa orders. Credit card purchases subject to service charge. Purchase orders accepted from approved corporations, government institutions and universities. 30-day money back guarantee, not including shipping. All trademarks and registered trademarks are of their respective companies. All prices & configurations subject to change without notice or obligation. CD BOOK™ is a licensed trademark of MPC Technologies, Inc. MPC Technologies is not responsible for any advertisement errors. All repair or replacement of defective parts is at the discretion of MPC Technologies, Inc. There are no returns for credit after 30 days. All returns must be shipped in original packaging. Shipping, handling and opened software are non-refundable during and after 30 day money back guarantee period.



**1-800-672-9979**

SALES DEPARTMENT OPENS EVERY DAY EXCEPT HOLIDAYS  
MON.-FRI 8:30 AM-6PM PST, SAT.-SUN. 9AM-3PM PST

## ClarisWorks 3.0: A Beefy Alternative to Bloated Office Suites

Where's the beef?" used to be the complaint about everything-but-the-kitchen-sink integrated software packages. Vendors were so intent on stuffing every major application category into one box that each applet suffered from limited functionality. But Claris Corporation learned from these mistakes: Its latest integrated package should give the pricier office suites a run for their money.

ClarisWorks 3.0 might not be as beefy as full-featured software suites such as Microsoft Office, Lotus SmartSuite, or Novell's PerfectOffice, but it does offer surprising muscle, a sleek and intuitive interface, and an appealing \$99 price tag.

Such features may explain why many small businesses increasingly rely on integrated packages such as ClarisWorks instead of the disk- and RAM-hogging application suites. A full installation of Microsoft Office, for example, consumes 65MB of hard disk space. ClarisWorks takes just 9MB.

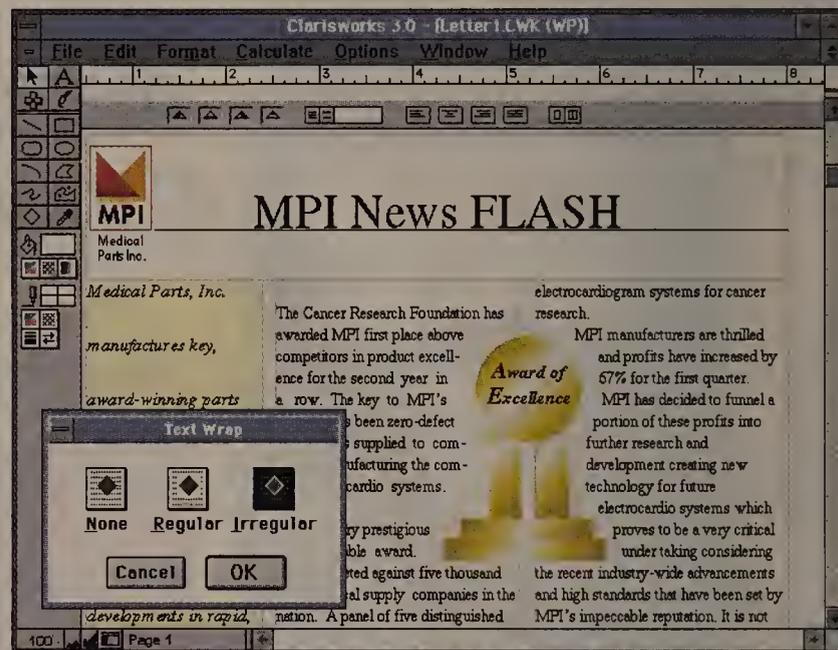
Besides the usual major apps, ClarisWorks 3.0 offers outlining and presentation management. The program's new Assistants guide you through common

tasks, such as creating a name-and-address database, as well as more-complicated procedures, such as formatting footnotes or designing a newsletter. And moving objects from one ClarisWorks app to another is a seamless point-and-click affair.

ClarisWorks 3.0 is being released simultaneously for Windows and the Macintosh, so users can open documents created on either platform—perfect for dual-platform offices.

For users who don't need an office suite, this package is a price-performance winner.

—Michael S. Lasky



**POWERFUL INTEGRATION:** ClarisWorks 3.0's desktop publishing tools let you create professional-looking documents.

## ManagePro 3.0: Project Manager for Workgroups

Other than death and taxes, a manager's life has two certainties: overseeing employees and meeting goals. As neither is always easy, it's nice to know there's a software package available that can help with the complexities of project management.

Introduced in 1992, Avantos Performance Systems' Windows-based ManagePro was originally designed to help managers establish goals and monitor employees' progress.

Version 3.0 is built for collaborative computing. Its new MultiLink feature allows managers across an organization to share information about common projects. MultiLink lets users link their Goal Planner databases, which chart the status of projects, so that everyone on a team is working from the same set of expectations.

The new version also incor-

porates suggestions from users. A new Report Customizer, for example, allows you to edit the program's report templates or create a personalized report from scratch. An improved project manager calculates the cost and duration of a project, taking into account holidays and weekends. And a refined calendaring feature now lets you see text descriptions of the day's activities. If there's a conflict in your schedule, a color-coded "busy bar" shows you where it is.

The new version of ManagePro also comes with 20 reference databases that outline tasks for different kinds of managers. If you're a product manager, for example, your database provides you with information about writing a business plan, developing product specifications, getting packaging designed, and so forth.

### ManagePro 3.0

Improved project manager now lets users share information across a network.

**Avantos Performance Systems, Inc.**

800/282-6867

Street price: \$189, upgrade \$99

Reader service no. 747

ManagePro's personal information manager is still a 90-pound weakling compared with those in other packages, and you'll probably need help setting up DDE links to other Windows packages. On the other hand, since ManagePro helps you organize and concentrate on specifics, you'll spend less time putting out fires. And that just might help you get promoted.

—Bronwyn Fryer

### ClarisWorks 3.0

Powerful integrated package with word processing, spreadsheet, database, and graphics programs.

**Claris Corp.**

800/325-2747,

408/927-8227

List price: \$99

Reader service no. 746



1

“¡Increíble! I’ve saved hundreds of hours!”

We have a two-inch-thick employee manual that is also sent to our European offices. Power Translator helped me translate it into the local languages of our branch offices. It even imported the original word processing file, so I didn’t have to waste time typing. Now all our employees feel they’re part of the team, and I’m a hero!



2

“C’est facile! I’m learning French faster!”

To improve my French, I found a pen pal on the Internet. Power Translator helped me start trading letters right away. Now Pierre and I exchange e-mail all the time and I’m using the grammar and dictionary modules to advance my skills. Thanks to Power Translator, I’m going to visit Paris next summer!

# Read and Write Spanish, French and German... Even if you know only English.

Available at Computer City, CompUSA, Micro Center and other leading software stores.

**Globalink**  
THE TRANSLATION COMPANY

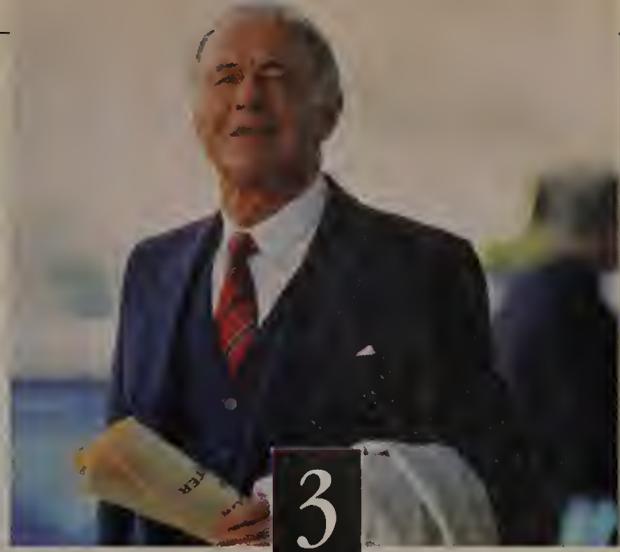
**800-255-5660**  
703-273-5600



**Power Translator**  
for Windows and Mac  
Only \$249

90-Day Money-Back Satisfaction Guarantee.

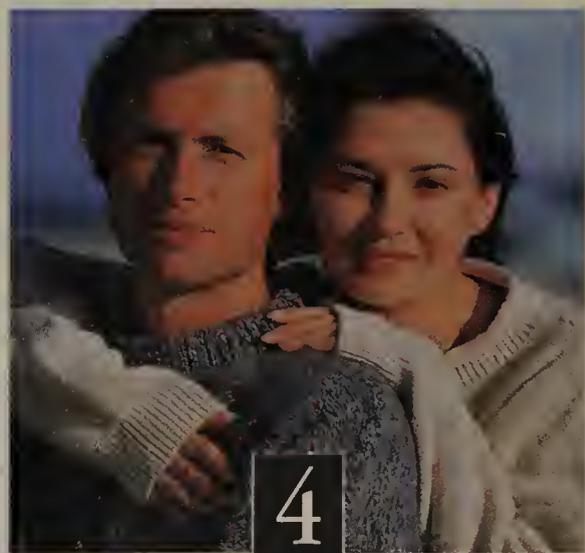
Circle 101 on reader service card



3

“¡Muy bien! My sales have doubled!”

Since NAFTA went into effect, I’ve been expanding my business into Mexico. Using Power Translator I’ve established new distributor relationships in Mexico City. And by customizing the dictionary, I only had to enter specialized business terms once! Although I still use professional translators for contracts and legal documents, Power Translator helps me understand the basic stuff in Spanish right from the start.



4

“Spitze! We didn’t have to settle for the ordinary!”

We wanted something unique for our honeymoon. With Power Translator we sent letters out to small bed and breakfasts on the Rhein. We spent two wonderful weeks at a vineyard along the river. Power Translator made it easy to plan a romantic adventure in Germany!

## PerForm for Windows Helps Small Businesses Design Forms

**R**eturning to its small-business roots, Delrina has released a new version of PerForm for Windows, its popular electronic forms design package. A slick little program, PerForm is targeted at the business user who currently uses a word processor, spreadsheet program, desktop publishing package, or drawing program to create and fill out invoices, purchase orders, expense reports, or any other business form.

Following the lead of Microsoft and other software companies, Delrina includes helpful tools—called DelrinaExperts—that guide you through the process of creating professional-looking documents in PerForm. Once you answer some simple questions about your preferred design style and form components, PerForm creates customized forms.

However, you'll probably want to refine what PerForm creates for you. The invoice form, for instance, is designed for businesses that bill customers for goods purchased. If you're a service provider, you'll want to remove the "Ship to" text box.

PerForm comes with a bevy of tools for customizing the in-

cluded forms templates and for designing forms from scratch. You can use design elements such as rounded or square-cornered rectangles, solid and dotted lines of varying widths, and opaque or transparent shading of various tints and colors. As a shortcut, you can add preformatted tables to your forms design. And you can import ten different graphics formats. Moving these elements around the screen is a simple drag-and-drop affair.

The text tools let you scale characters up to 127 points, color or shade letters, and rotate words vertically.

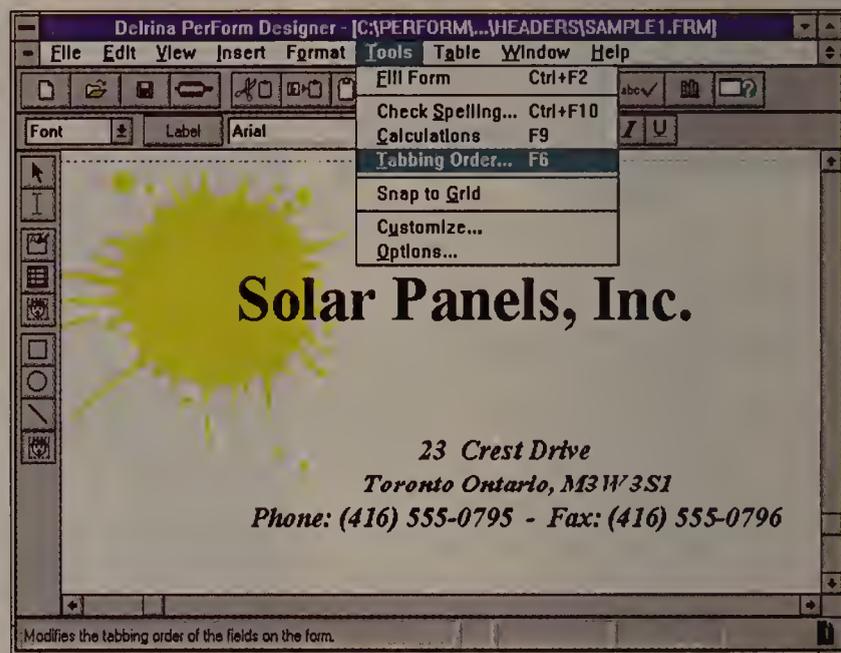
PerForm comes with a measly 43 sample forms—not a lot for an electronic forms program. An earlier version of the program included 145 forms templates but occupied an additional 10MB of hard disk space. Ah, trade-offs.

PerForm has features not found in most other forms programs. For instance, you can use calculated fields to add taxes, apply variable discounts, and include shipping charges. PerForm stores the data as multiple records in a searchable, flat-file database, but it doesn't have Boolean operators or other sophisticated search functions.

Unlike its sister product, Delrina FormFlow, and other high-end forms programs, PerForm isn't designed for workgroup computing. You won't find tools to route forms to different users over a network.

But PerForm adds up to a handy, easy-to-use forms program for small-business users with simple needs.

—Reid Goldsborough



**PUT AWAY THAT WORD PROCESSOR:** Delrina's PerForm for Windows has an easy-to-use interface for creating electronic forms.

## Delphi Takes On Visual Basic

**E**vent-driven programming for Windows has been hot news since the introduction of Microsoft's Visual Basic, which greatly simplified application development. But Borland's upcoming software development tool, Delphi Client/Server, will offer developers an important alternative.

Although targeted at developers of client-server applications, Delphi is capable of creating virtually any kind of Windows application. And while Delphi and Visual Basic both provide powerful tools that simplify interface design, Delphi can create faster, stand-alone executable (EXE) files, Borland claims.

Unlike Visual Basic, Delphi can produce its own reusable DLL and control extension objects, meaning that developers will have less need to resort to the C++ language or third-

### Delphi Client/Server

Visual development system for client-server and general Windows applications.

**Borland Int'l**

**800/331-0877**

**List price: Under \$2000**

**Reader service no. 749**

party add-on libraries.

Based on object-oriented Pascal, Delphi will include a full set of SQL and other database access tools. Support features for Windows 95 should ship on the heels of Windows 95 itself, Borland says.

Two flavors of Delphi should be available by the time you read this: a full-scale client-server version and a desktop version without network and database features. Delphi is expected to cost less than \$2000.

—George Campbell

### PerForm for Windows

Single-user electronic forms package with slick automation features.

**Delrina**

**800/268-6082,**

**416/441-3676**

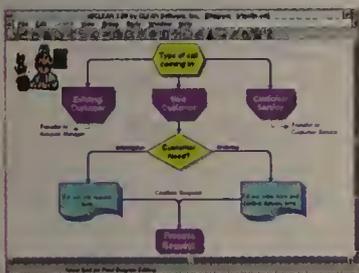
**Street price: \$75 to \$80**

**Reader service no. 748**



**Tolstoy became infuriated whenever asked to edit or revise his work. Reminds us of someone using our competitors' flow charting software.**

Leo Tolstoy had a standard reaction to editors' revisions: unbridled rage. And we can hardly blame



*Choose from over 180 shapes, and dozens of different diagram and line styles, colors and fonts.*

him since we all know what a pain revising and editing can be – especially if it's a complex flow chart you're working on. That's the beauty of new

allCLEAR III™ for Windows. Whether your changes are minor or major, now you can drag and drop complete flow chart structures like two-way decision points or multiple choices anywhere you like. And, unlike Visio™ or ABC FlowCharter,™

allCLEAR III intelligently redraws and aligns every step in your chart for you.

Creating charts and diagrams from scratch is also radically faster and easier. You can use the handy drag and drop templates, or create entire flow charts simply by describing your process in plain English. And allCLEAR III even inserts page breaks automatically at the most logical points.

So visit your nearest dealer today, or call 800-338-1759 to order allCLEAR III. And the next time you need to change a flow chart, you'll be a lot less cranky.



## Monocle+ Offers Tips and Tricks for Mutual Fund Investors

For some time now, savvy investors have used financial software to help them play the stock market. Unfortunately, affordable Windows-based analytical tools have been slow in appearing. One such new tool is Monocle+, a mutual fund investment program from Manhattan Analytics.

### Monocle+

Mutual fund analysis.

Manhattan Analytics

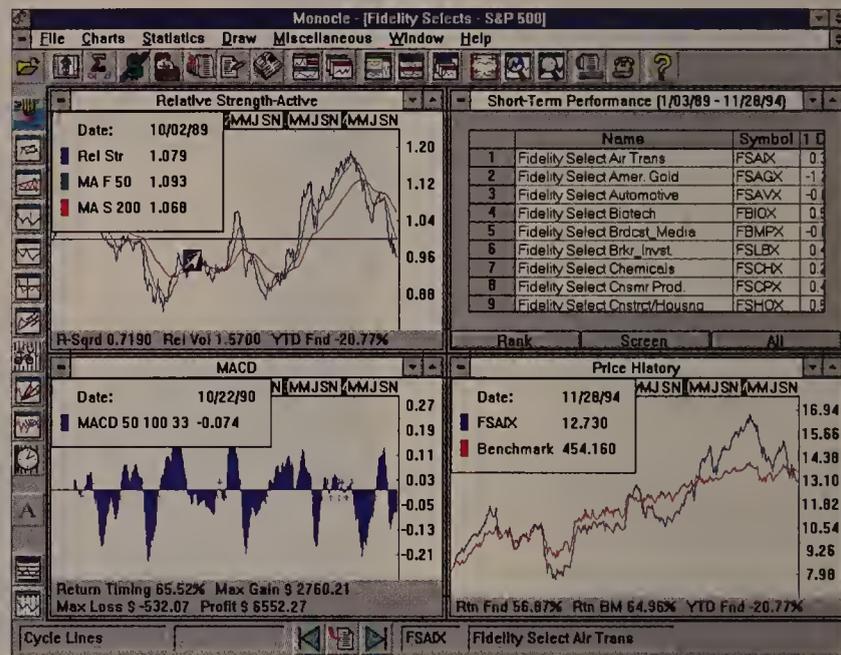
800/251-3863

List price: Software \$149, quarterly BBS subscription \$75, disk-based updates \$10 monthly

Reader service no. 750

Mutual funds offer an alternative to traditional single-stock investing by letting you pool your money with others under the care of a fund manager. By investing in a number of stocks, the fund spreads the risk, while its manager tries to outperform the market.

Manhattan Analytics maintains a five-year historical database of every mutual fund and lets users dial in daily via modem for fund updates. This allows you to graphically analyze a portfolio of funds. You choose one fund or market index as a baseline, and Monocle provides comparative analyses. You'll be able to see when a fund consistently outperforms other similar funds.



### TRACK YOUR MUTUAL FUND INVESTMENTS with Monocle Plus.

With a readable manual and a cleanly designed user interface, Monocle+ is a good tool for conscientious investors. But

combine it with a subscription to the *Wall Street Journal* and your own research.

—Joe Abernathy

## StaffWorks Helps Managers Plan Employee Schedules

Ask any retail manager: Having too many employees on a shift wastes money, yet having too few compromises service. Smart managers

should consider using Campbell StaffWorks 3.0, an employee scheduling package for the retail industry that makes its Windows debut and offers a va-

riety of enhancements over the previous version.

StaffWorks produces an optimized work schedule by balancing the needs of a company with those of its employees. A manager configures StaffWorks with the company's employee information, work rules, and past scheduling and sales-traffic data, then selects a scheduling priority, such as minimizing payroll or distributing shift hours evenly. Each week thereafter, the manager enters workload requirements and makes adjustments based on employee availability; StaffWorks then calculates a schedule. After making any necessary changes, the manager can print weekly schedules for both the staff and individual employees.

### Campbell StaffWorks 3.0

Automated retail employee scheduling software.

Campbell Software, Inc.

708/328-3200

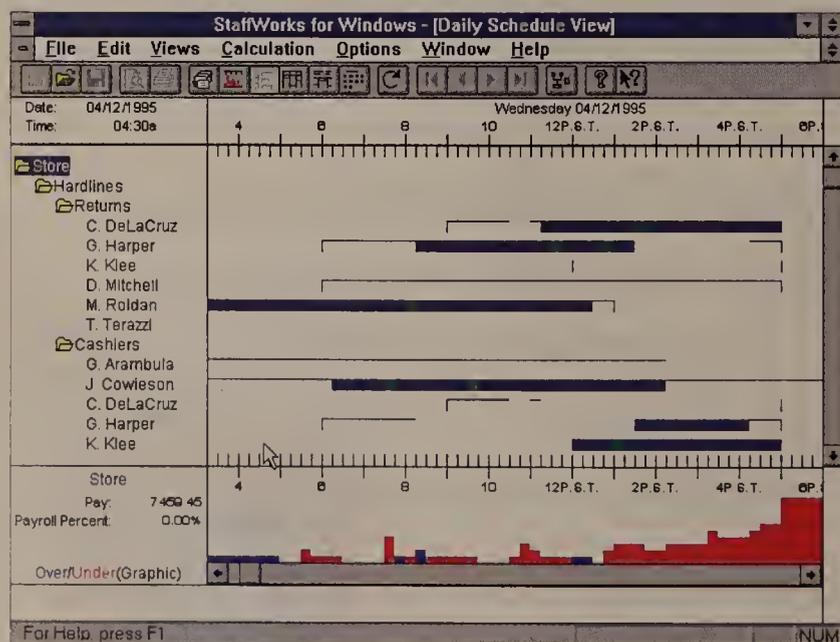
Price: Starts at \$2000 for a 100-employee business

Reader service no. 751

Version 3.0 supports up to 10,000 in-store departments and job classifications. It can adjust business hours based on seasonal changes, and its search feature retrieves sales and scheduling records.

Pricing for StaffWorks 3.0 begins at \$2000 for businesses with 100 employees. DOS and UNIX versions are available.

—Shane Rau



STAFFWORK'S 3.0's DAILY SCHEDULE VIEW graphically displays employee work hours—helpful for harried managers.

# Free CompuServe membership kit for *PC World* readers.

To order, just mail this card, or call 1 800 487-4838 and ask for  
the *PC World* representative.

---

Name

---

Address

---

City, State

Zip

(\_\_\_\_\_) \_\_\_\_\_

Day Phone

(\_\_\_\_\_) \_\_\_\_\_

Evening Phone

DOS 3.5  5.25  Mac  Windows 3.5  5.25

Check One:  Novice computer user  Experienced computer user

PCW 4/95



**CompuServe**<sup>®</sup>

**FREE OFFER**

PCW 4/95



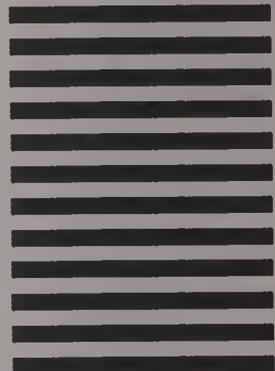
NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST CLASS PERMIT NO. 407 COLUMBUS, OHIO

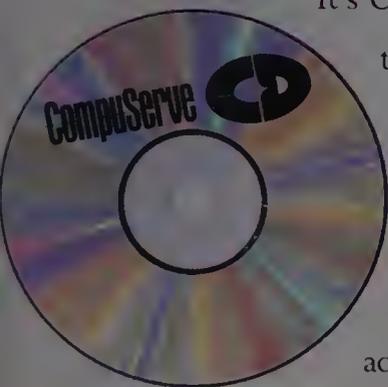
POSTAGE PAID BY ADDRESSEE

COMPUSERVE  
NEW MEMBER DEPARTMENT  
5000 ARLINGTON CENTER BLVD.  
PO BOX 20961  
COLUMBUS OH 43220-9910



Introducing  
the fraction  
of an inch

that puts you  
miles ahead.



It's CompuServeCD. And it'll put you in the forefront of online technology because of what it does, and what it will let you do.

CompuServe is the first online information service to add an interactive multimedia enhancement like this one. CompuServeCD lets you explore the depths and breadths of CompuServe more easily, more productively, and more efficiently — having, while you're at it, a great time. With it, you'll be able to view

moving travelogues in our travel section, listen to clips from new music CDs, save time (and money) by searching for files and shopping the CompuServe Mall offline, plus much, much, *much* more.

So call CompuServe at **1 800 487-4838**. When you do, you'll receive two free CDs: a membership CD that lets you join CompuServe with no sign-up fees, and a recent CompuServeCD release to enjoy. They'll start you down the road to where you always wanted to be. Ahead.

 **CompuServe**<sup>®</sup>  
The information service you won't outgrow.

Circle 33 on reader service card

# TIRED.



 **SyQuest**® **200MB**  
TECHNOLOGY

5.25" Removable Cartridge

NETWORK ROUGH

Apply

store in case.

 **DC-2120** QIC 80 FORMATTED  
1/4" MINI DATA CARTRIDGE  
550 Oe ■ 15,000 FTPI ■ 307.5 FT / 93 M

**maxell**

HD BACK-UP/12

Prinzl

ABP-1

DO NOT COVER

BERNOULLI  
MultiDisk

**150**

222967  
020-795512  
1-800-554-984  
E 800-8911  
N 900-994910  
DK 800-11125  
SF 8001-0889  
9800-14930

# WIRED.



*Warrantied for life, DynaMO 230MB disks provide an absolutely reliable, inexpensive and high performance way to store and transfer files.*

Tired of space limitations? Lost data? Expensive cartridges? The old storage technology is just that. Old.

Get wired! With the Fujitsu DynaMO™ optical drive, the new

standard in high-capacity

data storage, you can reliably store and transport all kinds of large files. Even the most demanding graphics and multimedia applications.

DynaMO's industry-standard, 3.5" 230MB cartridges provide greater storage capacity for about 17¢ per megabyte. So you

can save larger files while you save money.

DynaMO also protects your data better. Since it uses magneto-optical media, DynaMO is immune to the problems that plague removable magnetic media. It's simply the most stable medium you can buy for transporting files or storing them.

That's why DynaMO disks come with an exclusive lifetime

warranty from Fujitsu, the world's second largest computer company.

And no matter what your application, from color separations to multimedia to backing up, DynaMO is faster than ever before. Up to 60% faster in the Mac version equipped with Turbo MO software.

No wonder DynaMO outsells all other optical drives. Highest performance, lowest cost, unmatched reliability. Get DynaMO and you've got it wired.

1-800-898-1302

**FUJITSU**

COMPUTERS, COMMUNICATIONS,  
MICROELECTRONICS



#### DYNAMO SPECIFICATIONS

CAPACITY	128-230MB
DATA TRANSFER RATE	2.1 MB/SEC.
AVERAGE SEEK TIME	30 MS
ROTATIONAL SPEED	3,600 RPM
DISK WARRANTY	LIFETIME
WEIGHT	2 LBS.

## 2Market Lets You Shop From Your Desktop

Online shopping has a long way to go. Without the tactile sensation of in-store shopping—picking up a product, kicking the tires, trying on something new—consumers have little real-world information to rely on. While the 2Market shopping service can't offer the touch-and-feel ambience of, say, Sears Roebuck, its

new CD-ROM collection of catalogs features video and audio clips that give cyberspace customers a better idea of what's for sale.

The CD-ROM version of 2Market features electronic catalogs from a variety of well-known mail-order merchants, including Hammacher Schlemmer, The Nature Company, and The Sharper Image. The service is also available via America Online, but the CD-ROM is the better option; it allows you to browse more than 20 catalogs, learn about the products through video and audio clips, and order by phone or fax.

2Market has its drawbacks. For instance, the service pro-



**SHOP TILL YOU DROP** with 2Market, an electronic general store.

vided only a subtotal of my charges when I placed my credit card order—taxes and shipping fees are determined

by individual merchants and will remain a mystery until my next billing statement arrives.

—Richard Overton

### 2Market

**MULTIMEDIA** Electronic catalog collection.

2Market, Inc.

800/622-6600

Price: CD-ROM with three quarterly updates \$25

Reader service no. 618

## Smart Moves Helps You Relocate to a New City

The company's transferring you from San Antonio to San Diego, and you don't have a clue about your new city's housing prices, neighbor-

hoods, crime rate, schools, and other vital facts. PHH Corporation's Smart Moves can help. This \$39.95 CD-ROM contains detailed information on

more than 2000 U.S. cities presented in colorful, easy-to-follow maps, graphs, and charts.

Simply select a city from Smart Moves' Pick Destination box, and up pops a map of the region, color-coded to identify desirable locations: Areas in red are best; blue ones are worst. Communities are judged on housing market conditions, quality of public and private schools, crime rates and trends, and taxes, among other criteria. Smart Moves' data comes from a variety of sources, including the U.S. Census Bureau, the FBI, and PHH's own Homequity Relocation Network.

I was impressed with Smart Moves' powerful search capabilities. Finding the right area is easy, whatever your standard.

### Smart Moves

Valuable data to choose your new neighborhood.

PHH Corp.

800/210-8852,

913/661-0808

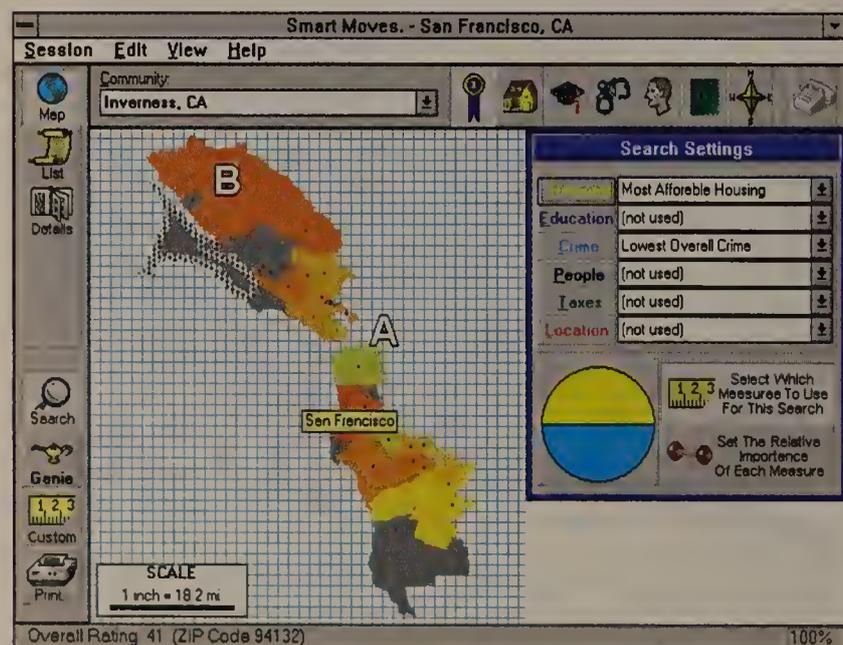
List price: \$39.95

Reader service no. 619

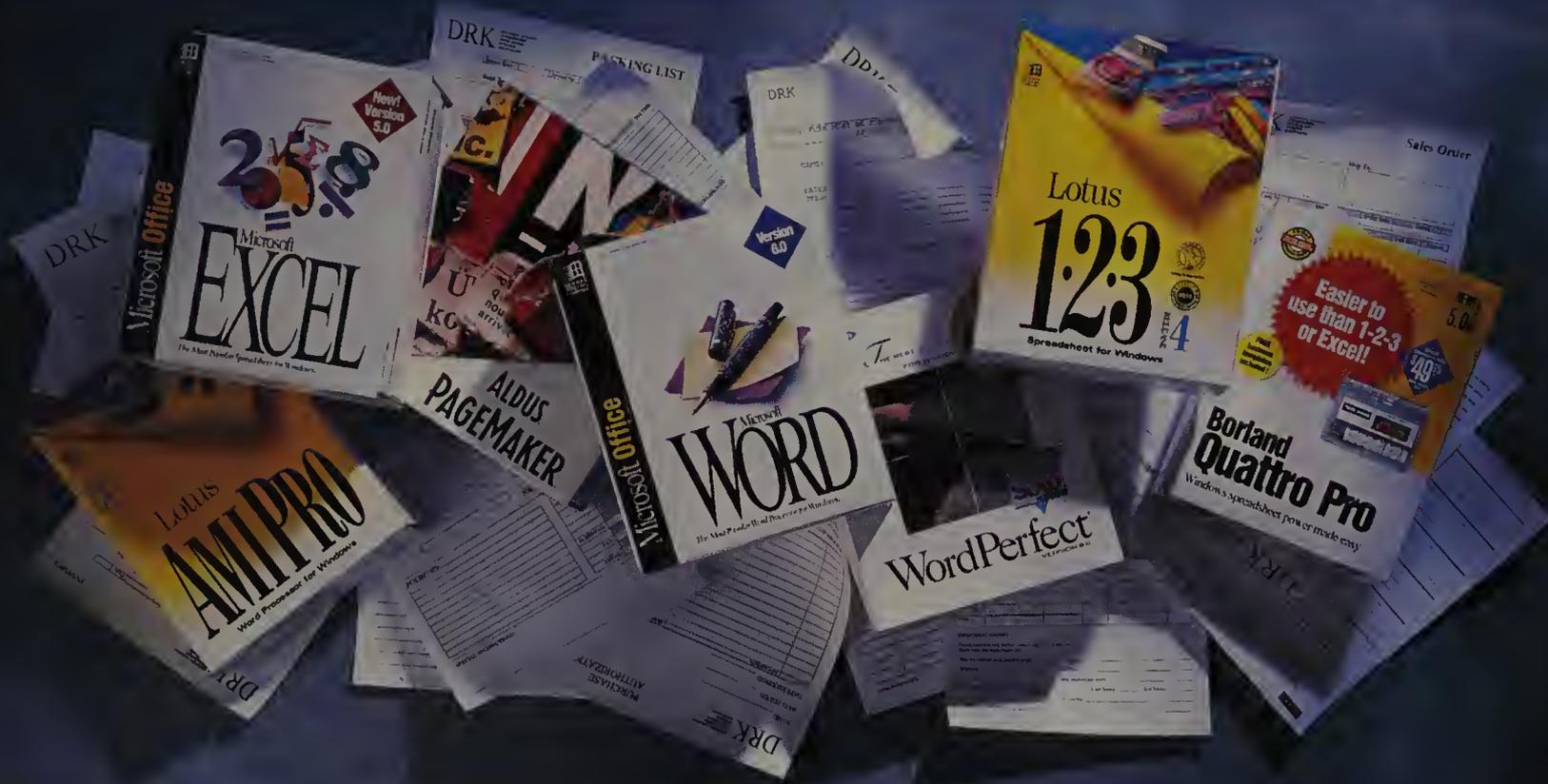
For instance, clicking an icon brings up a color-coded map of a region's housing prices.

But Smart Moves doesn't stop there. You can find practically everything—from basics like where to find the most-affordable one-bedroom apartments to esoterica such the areas with the highest concentration of solar-heated homes.

—Jeff Bertolucci



**GET SMART BEFORE YOU MOVE:** Smart Moves' data on thousands of U.S. communities helps you find the right neighborhood.



# No wonder people hate forms. Just look what they use to create them.

There's a better way to make business forms. With new Delrina PerForm® for Windows.™

Until now, people were forced to make forms with software designed for something else. A painful, time-consuming experience with less than ideal results.

But now there's Delrina PerForm for Windows, an entirely new kind of software designed specifically for creating, filling and printing the kind of forms you use every day. An alternative that's faster, easier and more powerful than the software you use now. Here's why.

First, PerForm comes with dozens of professional, ready-to-use forms. As well as the DelrinaExpert™ that guides you through choosing and customizing the ones that are best for you. Nothing is easier.

It has powerful form design capabilities. With outstanding drawing, text and graphic controls. And it intelligently files

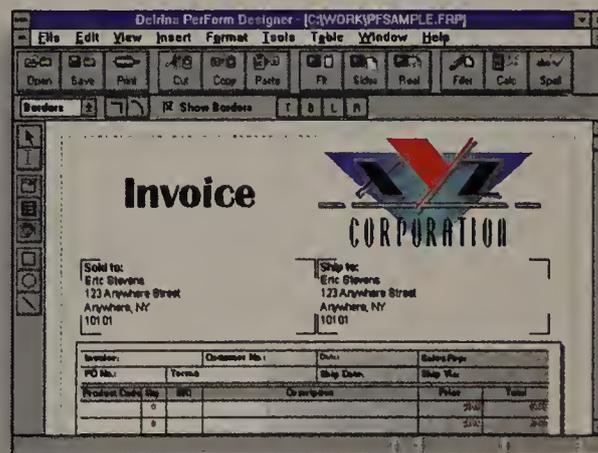
INTRODUCTORY  
**\$20**  
REBATE  
SEE YOUR DEALER



completed forms so you can instantly retrieve them based on any piece of information they contain. Go try that with your word processor.

With PerForm, you get forms that look better, fill better, print better, even fax better using Delrina WinFax PRO.™ In short, forms that just plain work better than those made any other way. And we'll help you prove it.

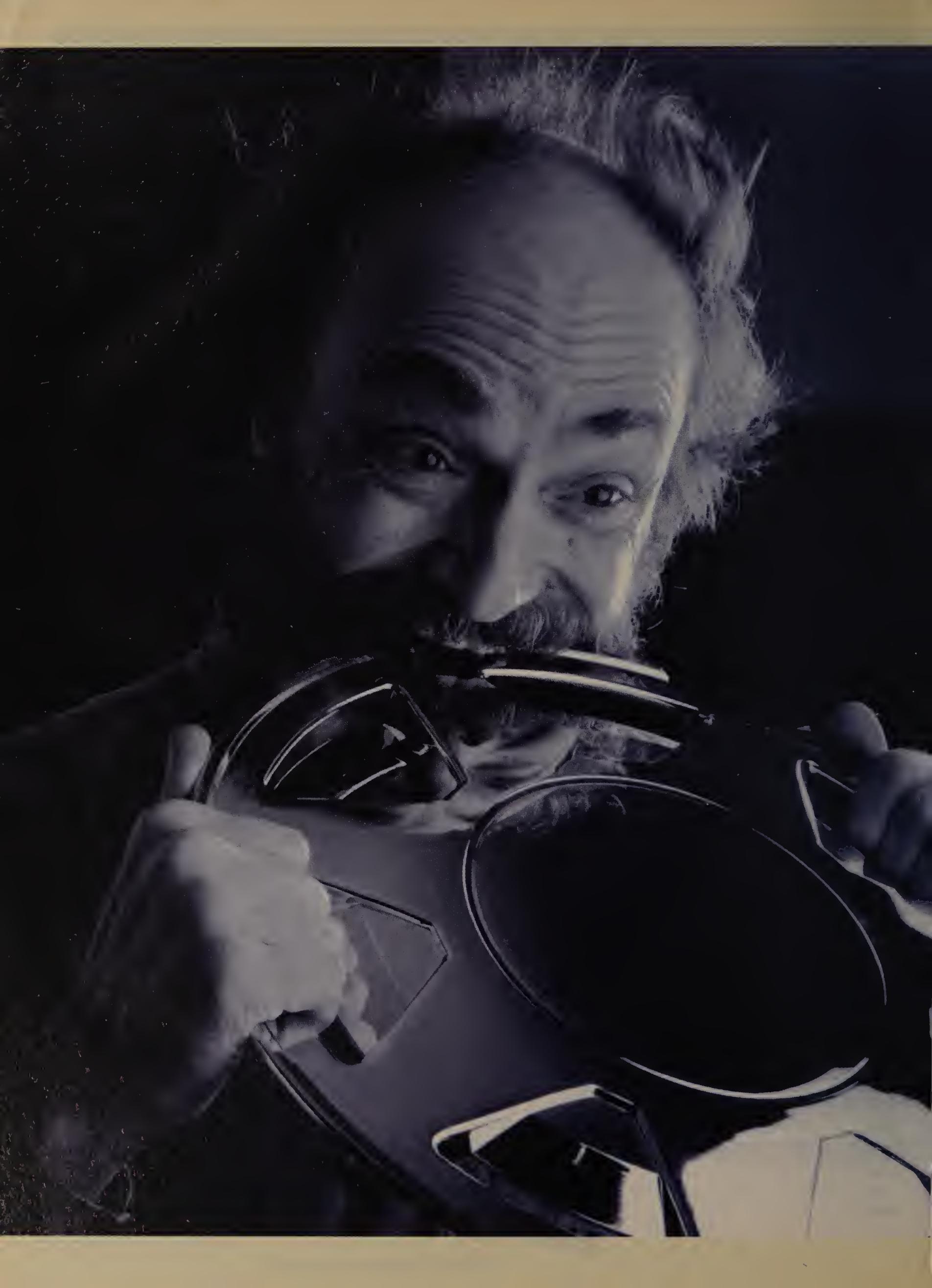
If you use any other application to make your forms, buy new PerForm now (list price \$129 \*), and we'll give you \$20 back. See your dealer today.



With new PerForm for Windows, making better looking, more effective forms is fast and easy.

**DELTRINA**  
1-800-598-8681

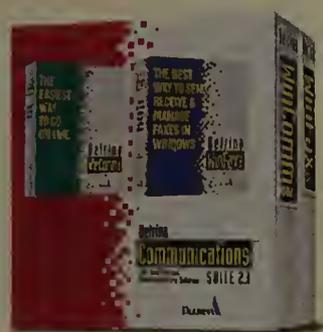
\*Dealer prices may be lower. Delrina, PerForm for Windows, WinFax PRO and DelrinaExpert are trademarks of Delrina (Canada) Corporation. All other product names are copyrights, trademarks, registered trademarks or tradenames of their respective owners. ©1994 Delrina (Canada) Corporation. All rights reserved.



Since 1975, Ivan Opachevsky's somewhat unorthodox diet has included, 6 cars, 10 shopping carts, 8 TV sets, 3 computers, 1,000 record albums and a twin-engine airplane.

Because he seems to thrive on doing things the hard way, he is undoubtedly one of the few people not interested in Delrina Communications Suite.

Mr. Opachevsky knows there are easier ways to get his daily dose of iron. So he probably won't care that Delrina Communications Suite™ is the easiest way to fax and go on-line. You, however, will be pleased to learn that the world's best-selling fax software, Delrina WinFax™ PRO, and the powerful



Delrina Communications Suite includes both WinFax PRO and WinComm PRO.

communications software, Delrina WinComm™ PRO, are now available together in one economical, easy-to-use package – Delrina Communications Suite. WinComm PRO gives you push-button connections to most major on-line services, like CompuServe™ and MCI Mail™. You get all the important file transfer protocols, the most popular terminal emulations and a whole lot more. It lets you send and receive Internet e-mail off-line. Plus learning it is a piece of cake, since both applications share the same intuitive interface. WinFax PRO lets you send and receive faxes with your PC from any Windows application – eliminating countless trips to the fax machine. Sending a fax is as easy as printing a document. You can even receive faxes in the background while you work in another application. And you can organize and manage your faxes with handy drag-and-drop folders. So visit your local software dealer today, or call us at 1-800-270-8031 to order or upgrade. Once you try Delrina Communications Suite, you'll be so much more productive with your PC, you won't be tempted to eat it.



**Talk about fast food... Ivan O. devoured the 290-horsepower, dual carb '60 Corvette pictured below in a mere 4 months. More important, WinFax PRO saves you from eating up time hiking back and forth to the fax machine – since you can conveniently send and receive faxes right from your PC. Plus WinComm PRO gives you double-click access to many**



**on-line services, and features Delrina's Internet Messenger™ for sending and receiving Internet e-mail. You can get WinFax PRO and WinComm PRO together in Delrina Communications Suite.**

## AirAccess Promises Easy Remote Access but Fails to Deliver

**A**irSoft's AirAccess 2.0 offers a tantalizing premise: fast, seamless access to files on your office PC or LAN, regardless of whether you're computing at home or on the road. Rather than using a file transfer utility, such as those in Traveling Software's Lap-Link and Symantec's pcAnywhere, you can have AirAccess retrieve a file and load it directly into a word processor, spreadsheet, or other program on your remote PC. Unfortunately, in my hands-on testing of a shipping version, I found the program long on promise but short on usability.

To use AirAccess, you first must load it on your office and portable (or home) PCs. During installation, AirAccess can connect both systems via modem and copy the file structure of the office PC to the portable. Say you're on a business trip and want to edit a document that's stored on your office machine. You simply load the notebook's word processor and select the document from the "virtual drive" that AirAccess uses to represent the office PC; for instance, drive D: could represent the office PC's C: drive. AirAccess automatically dials the office system and moves the file to the notebook.

### AirAccess 2.0

**Promises easy remote access but is hard to use.**

**AirSoft, Inc.**

**800/708-4247, 408/777-7500, 408/777-7527 (fax)**

**List price: starts at \$199**

**Reader service no. 740**

The program saves the document on the notebook, so the next time you select the same file from the D: drive, it'll load quickly—no modem connection required.

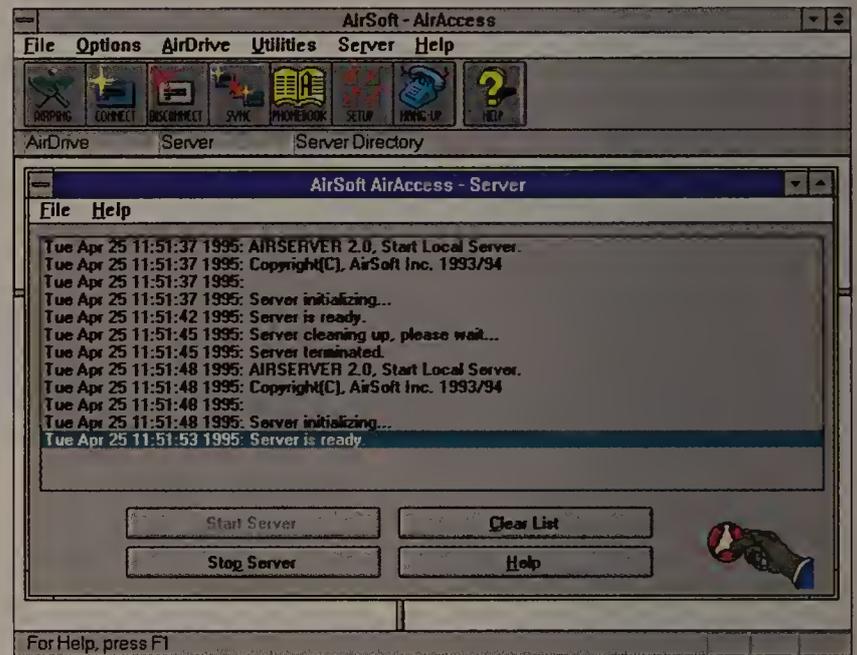
That's the theory, anyway. In reality, AirAccess proved difficult to set up and frustrating to use. The software crashed several times during installation on both my office and notebook PCs and also crashed my notebook (an AST Ascentia 910N) whenever the portable went into power-saving mode.

When I switched to a different modem, I still wasn't able to connect my portable and desktop machines. After calling AirSoft's technical support, I discovered that I needed to type C:\ rather than simply C: in the server directory box—I'd forgotten the all-important backslash. (The server directory is the drive that you want to access on your office computer.) The manual doesn't tell you to include the backslash, but the software should be smart enough to understand what C: means.

Once I finally got the software installed properly, AirAccess successfully retrieved files from my office PC about half the time. In many instances, the program failed to copy a text file but still listed the file's name at the top of the screen, as if the document had been moved successfully.

Despite my problems with AirAccess, I believe it can be a useful tool for business travelers. But wait for the next version—AirSoft needs to clean the bugs out of version 2.0.

—Jeff Bertolucci



**AIRSOFT'S AIRACCESS** lets you set up your office PC as a server, allowing your remote PC to phone in to access files.

## Free Mutual Fund Info

**N**etworth, a free new Internet service, provides comprehensive investing advice on more than 5000 mutual funds. This sophisticated yet friendly research tool offers information ranging from the down and dirty details of a fund's prospectus, performance, and promotional materials to a weekly market outlook, newsletters, and the complete Morningstar database, which gives objective analyses of funds. Pricing quotes are obtained directly from the markets via Standard & Poor's, while interactive discussion forums put you in touch with industry professionals.

The way you access Networth is through the World Wide Web, the point-and-click multimedia interface that takes the drudgery out of Internet access. If you're already using the Web, you need only point

### Networth

**A graphical mutual fund investment center arrives on the Internet.**

**Galt Technologies Inc.**

**Access: <http://networth.galt.com> on the World Wide Web**

**List price: free**

your browser to the address <http://networth.galt.com>.

I liked Networth a lot and would rather work with it than with most mutual fund investment counselors. However, that doesn't mean that it's all things to all people—it's more for those who have some idea of what they're doing. As always, exercise due caution when anyone, or any company, tells you how you should invest your money.

—Joe Abernathy

600 dpi-class  
output  
on a 300 dpi  
budget.

OKIDATA

The OL410e prints presentation-level output at a simple-text-and-graphics price. It's designed for laser class output so you can print great looking sales presentations, newsletters and direct mail flyers easily and affordably. The LED printhead carries a 5 year limited warranty and the print speed is a

The  
**OKIDATA**

OL410e and 410e/PS

Personal Printers.

fast 4 pages-per-minute. And there's also a Mac version with Adobe PostScript — the OL410e/PS. To take advantage of this opportunity at a dealer near you, call 1-800-OKI-TEAM, ext. 565 (U.S. or Canada).

**YOUR BUSINESS HAS NEVER LOOKED BETTER.**

© 1995 Okidata. Okidata Reg. T.M. M.D. Oki Electric Industry Co. Ltd. Adobe, PostScript are trademarks of the Adobe Systems Corp. which may be registered in certain jurisdictions.

Circle 140 on reader service card

# Cordless PCMCIA Fax-Modem Frees You From the Phone Jack

If you'd like the freedom to use your modem anywhere in a room, no matter where the phone jack is located, you're going to like the Airplex 2705 Faxmodem. This PCMCIA Type II fax-modem uses infrared technology to send data from your notebook PC to a receiver attached to the phone jack—no more fooling with phone cables. The Air-

plex is great for use in hotel rooms and conference centers, where phone jacks aren't always accessible. However, this convenience comes at a cost: The \$599 Airplex is rated at 14.4 kbps, while PCMCIA modems operating at 28.8 kbps list for about \$400.

The Airplex uses a small infrared adapter that attaches to the inserted PCMCIA modem card. This adapter communicates with the infrared receiver unit, which is the size of an index card and weighs 10½ ounces. You plug the receiver into a standard phone jack. When you want to use the modem, you call up your communications software, and you're ready to send or receive.

### Airplex 2705 Faxmodem

Cordless PCMCIA fax-modem uses infrared signal.

K and M Electronics

800/442-4334

List price: \$599

Reader service no. 742



**THE AIRPLEX CORDLESS FAX-MODEM** uses an Infrared signal to send data from a notebook to a receiver attached to the phone jack.

The Airplex works in areas up to 1000 square feet in size, useful for conference rooms. Because it employs diffuse in-

frared technology, physical objects won't block the transmission, the vendor claims.

—Laurianne McLaughlin

# Two New Telecommuting Devices Bring the Office to You

Multi-Tech Systems has announced two new communications devices with options for remote users. Telecommuters should consider the MultiMux MMV101, which can forward LAN, fax, and phone traffic simultaneously from your office to your

home over a single phone line, according to the vendor. You'll need to buy two of the \$1299 units, however—one resides in your office and attaches to a PBX phone switch and LAN, and the other resides in your home and connects to a phone (for voice calls) and your PC's

serial port (for fax and data). The units, which each require a communications device, such as a modem, can be connected by either a regular phone service or a high-speed digital service, like ISDN or Switched 56. The MultiMux is expected to ship this spring.

For mobile types, there's the MultiModem MT2834LT, a 28.8-kbps PCMCIA fax-modem with all the latest features. Like any desktop modem, the \$399 product includes two RJ-11 jacks—one to connect the cord from your phone and the other to connect your phone line from the wall. An upgradable flash ROM lets the unit accommodate future communications standards, possibly including the rumored V.34bis for

### MultiMux MMV101, MultiModem MT2834LT

An innovative telecommuting device that forwards phone calls and LAN and fax traffic from your office to your home; a PCMCIA fax-modem with all the latest features.

Multi-Tech Systems

800/328-9717,

612/785-3500

List price: MMV101 \$1299,  
MT2834LT \$399

Reader service no. 743

33.2-kbps communications. As with many PCMCIA products, installation was a pain, and I had to call Multi-Tech's technical support for assistance.

—Randy Ross



**MULTI-TECH'S MULTIMUX DEVICE** forwards phone, fax, and LAN traffic from an office to a remote location.

# What makes SAMTRON MONITORS such a great value?

## QUALITY

Producing high quality monitors is our only business. In fact, our commitment to quality has been

recognized by the leading testing facilities in the U.S. According

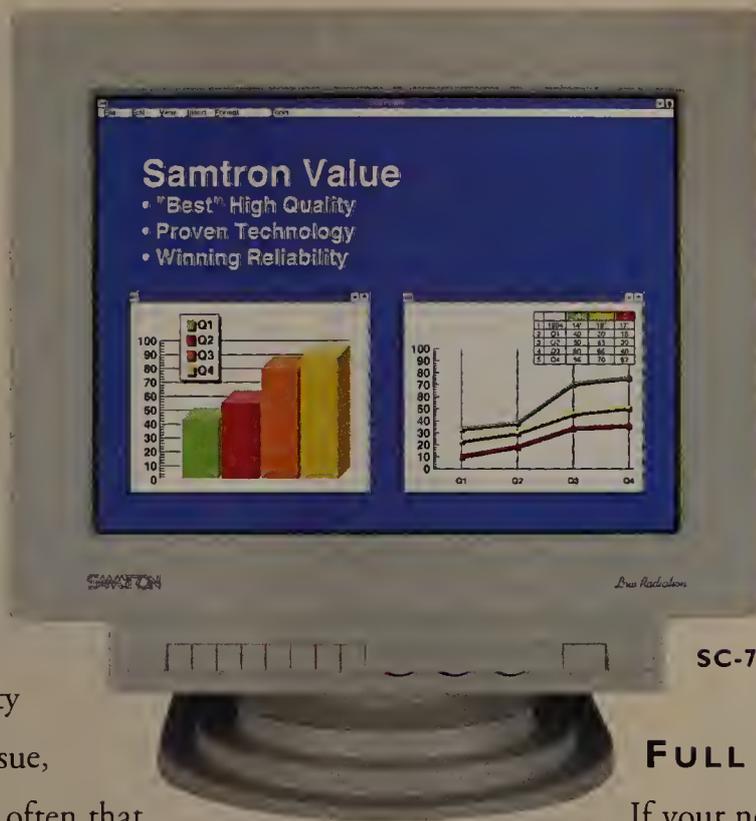
to the NTSL lab report in the January 1995 issue of BYTE magazine, "The Samtron SC-728SXL earned the best overall image quality rating". In their December 1994 issue,

Windows Magazine wrote "It's not often that

high quality comes at a midrange price. But Samtron's SC-728SXL, with its truly flat 17-inch screen is an exception. Right out of the box, the quality of this 17-inch monitor was apparent."

## TECHNICAL SUPPORT

Our commitment to quality doesn't end when you buy a Samtron monitor. Our professional Customer Service Representatives are available for unlimited technical support. Call our toll-free technical support line at 1-800-SAMTRON.



SC-728SXL

## WARRANTY & SERVICE



Our DXL line of monitors feature a new 3-year Parts and Service Warranty. Samtron "STAR" Service Centers guarantee your satisfaction by offering 48-hour turnaround warranty service\*.

## FULL LINE SELECTION

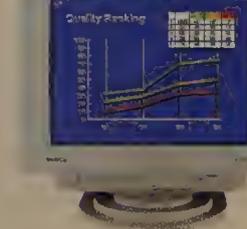
If your needs call for the impact of a 20" display, or the versatility of a 15" flat screen, our product line offers a full selection of high-quality monitors ideal for use in any application.



SC-528UXL  
15" 0.28 Dot Pitch  
1280 x 1024 (60 Hz)  
MPR II



SC-726DXL  
17" 0.26 Dot Pitch  
1280 x 1026 (76 Hz)  
MPR II Mac Compatible



SC-208DXL  
20" 0.28 Dot Pitch  
1280 x 1024 (76 Hz)  
MPR II Mac Compatible

Resellers circle 204 on reader service card

# SAMTRON

MONITORS WITH STARPOWER™

18600 Broadwick Street  
Rancho Dominguez, California 90220  
Tel: (310) 537-7000  
Fax: (310) 537-1033  
Technical Support: (800) SAMTRON



\*STAR Service Centers available to U.S. Customers only. The EPA Energy Star™ emblem does not represent EPA endorsement of any product or service. Specifications subject to change without notice. Screens are simulated.

Circle 213 on reader service card



THEY NOT ONLY  
SOUND GREAT,  
THEY PUT PRODUCTIVITY  
IN MOTION.



100 MHz  
NOW AVAILABLE

#### TravelMate™ 4000M Series

- 486 processors from 50MHz to 100MHz
- Active Matrix Color or Dual Scan Color Displays
- Hard Disk Drives: 200MB to 524MB\*
- Built-in 16-bit sound
- PCMCIA Type III Slot
- Integrated Pointing Device
- Multiple Interfaces including SCSI II, Audio Controls, and MIDI/Game port
- Intel Indeo™ Video

#### Portable CD-ROM Docking System

- Double-speed CD-ROM drive (250ms)
- Built-in stereo speakers
- Separate NiMH battery gives you AC or battery-powered operation
- SCSI II connection
- Optional SCSI II bay for additional hard drive

The right multimedia notebook can give you a decided advantage in your work. That's why we made the TravelMate M Series notebook computers.

These powerful multimedia machines give you desktop PC capabilities in a portable package, including the industry's first truly portable, battery-powered CD-ROM Docking System. So you have the freedom to use them anytime, anywhere.

The M Series continue the TravelMates' award-winning reputation for incredible power, performance and reliability. Each comes standard with 16-bit sound, a built-in speaker and microphone, plus a choice of 486 processors to handle full-motion video and speed you through other multimedia applications.

And the optional, battery-powered CD-ROM Docking System gives you access to the growing libraries of CD-ROM software, no matter where you are.

The TI TravelMates. They're for people who are going places.

For more information or the name of the dealer nearest you, call *1-800-TI-TEXAS* (1-800-848-3927).

EXTENDING YOUR REACH™

 **TEXAS  
INSTRUMENTS**



August 1994  
TM4000M/25



July 1994

\*Depending on model. TravelMate and "Extending Your Reach" are trademarks of Texas Instruments. Indeo is a trademark and the Intel Inside logo is a registered trademark of Intel Corporation. ©1994 TI.

Circle 220 on reader service card

## PowerBrain

No, we're not talking about the guy down the hall who went to MIT. PowerBrain is a hardware-software product that acts as a power management system for your PC. PowerBrain's hardware consists of a 9-volt power supply, a controller unit about the size of a cigarette pack, and a small power module that plugs into an electrical outlet. Plug the PC and the power supply into the power module, then connect the controller to both the serial port and the power module (cables are included). The product comes with DOS and Windows utilities that let you turn the PC on or off at specific times. PowerBrain also lets you automate certain computer tasks, such as downloading files from bulletin board services. While some new Energy Star-compliant PCs (such as IBM's Aptiva) already offer similar features, PowerBrain makes them available to all PC users. It lists for \$175. Quantum Composers, Inc., 800/556-9686, 406/586-3159.

Reader service no. 729

## Drag and Zip 5, Drag and File 2

Canyon Software's latest versions of its well-received file compression utilities include such useful features as a built-in virus scanner for zipped files and links to popular Internet World Wide Web browsers such as Mosaic and Netscape. Both Drag and Zip 5 and Drag and File 2 make it easier for Windows users to compress and expand files using the PKZip utility. After you download a file from the Internet using your Web browser, the

\$30 Drag and Zip pops up automatically and lets you view or extract the file immediately. The \$69.95 Drag and File is a handy file manager that includes all the features of Drag and Zip, as well as a new DOS command line that allows you to enter DOS commands without leaving Windows. Canyon Software, 800/280-3691, 415/453-9779, 415/453-6195 (fax).

Reader service no. 730

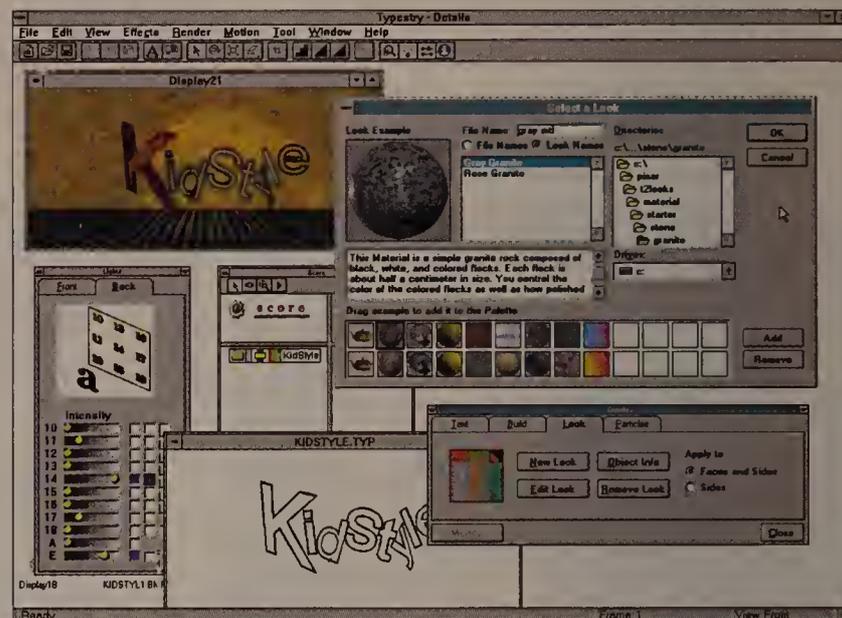
## Teac SuperQuad Combo Drive

Running out of drive bays? Teac's new SuperQuad Combo Drive packs a quadruple-speed CD-ROM drive and a 3½-inch floppy drive into a single device that fits in a half-height drive bay. The \$499 SuperQuad features a CD-ROM data transfer rate of 600 K/sec and a 195ms access time, according to Teac. It also has a 64K CD-ROM data cache and uses a proprietary ISA bus interface card. The SuperQuad's floppy drive offers the usual features and supports both 720K and 1.44MB floppies. Teac America, Inc., 800/888-4923, 213/726-0303.

Reader service no. 731

## Typestry 2 for Windows

The last word in 3-D type manipulation, Pixar's Typestry 2 builds spectacular text creations and even AVI or QuickTime animations for logos, presentations, newsletters, and the like. Type in your desired text (or import an Adobe Illustrator file); pick a font; and apply configurable bevels, lighting and shadow effects, and wall and floor background colors and textures. You can select indi-



**TYPESTRY LETS YOU PICK A "LOOK"—texture, color, and pattern—and apply it to the text or background to create stunning effects.**

vidual letters and use your mouse to rotate, extrude, and move them in three dimensions. Get creative and turn letters into neonlike tubes, or set them atop a wavy rubber sheet and add just the right amount of wind (with settings for speed and gustiness) to impart an appropriately breezy air. It's easy to apply "looks"—customizable colors, patterns, reflectivity, and opacity—to any element in a Typestry creation. A 32-bit application, the \$299 Typestry runs under Windows 3.1 (when you install the bundled Win 32s module) and Windows 95. Pixar, 800/888-9856, 510/236-4000.

Reader service no. 732

## VirusScan 2.1

McAfee's popular antivirus software for LANs and stand-alone PCs is now faster, easier to use, and less memory hungry, the company claims. VirusScan 2.1 features a new Windows interface that's designed to shield novices from the earlier versions' command-line interface while allowing power users to continue using it.

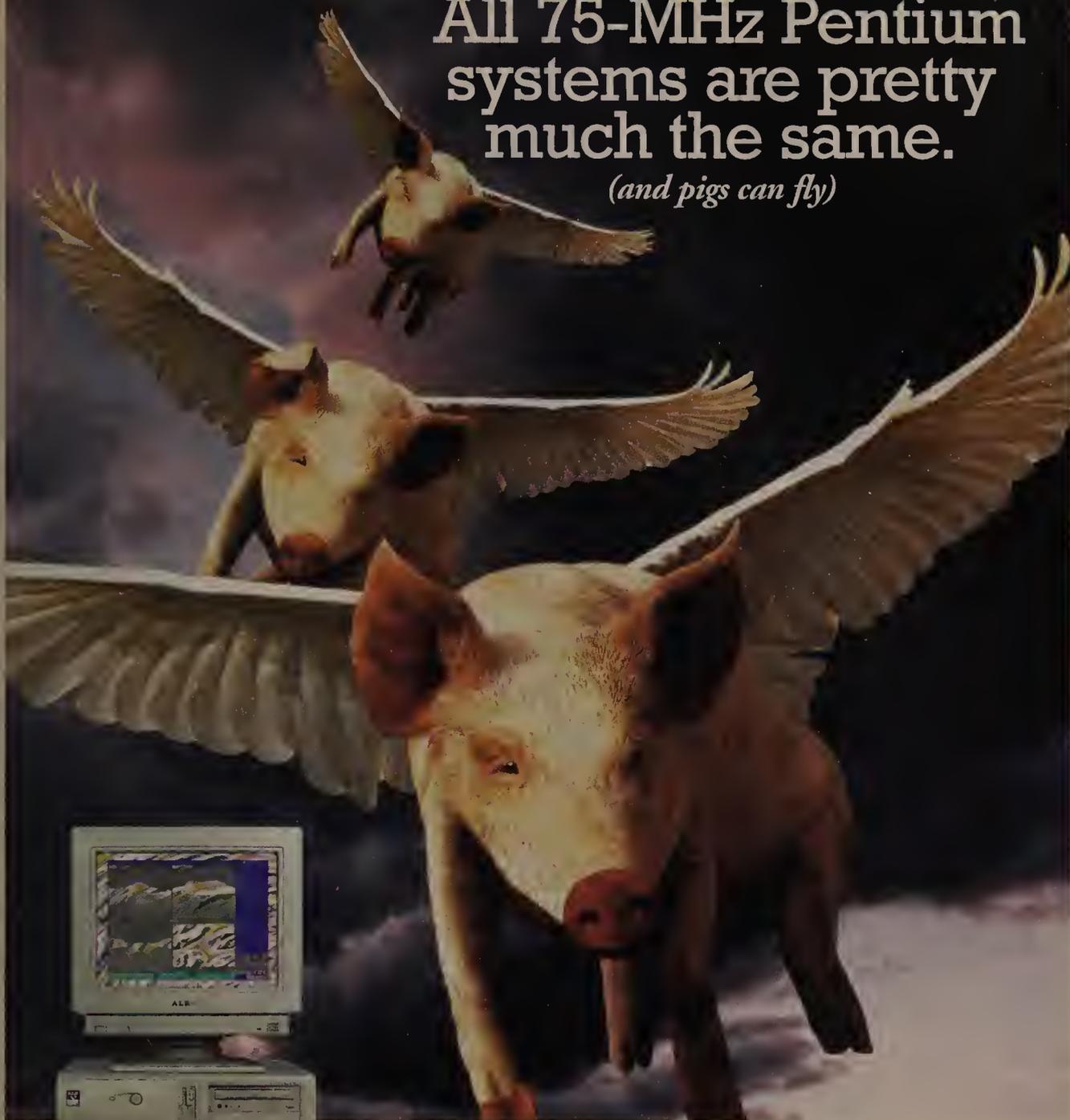
McAfee has improved VirusScan's performance by separating the virus scanning engine from the virus data files; this means the scanning engine doesn't need to be recompiled and retested for each update to the virus data file. VirusScan 2.1, which detects more than 3000 viruses, has a street price of about \$50 for a single-user copy; multiuser pricing is also available. McAfee, 408/988-3832, 408/970-9727 (fax).

Reader service no. 733

## HotFax Menu

Any fax software user can tell you: Nothing's more annoying than having to reconfigure the Windows printer driver every time you want to send a fax. Smith Micro Software's HotFax Menu saves you the trouble by adding the word *Fax* to the File menu of your favorite Windows applications. Even better, HotFax Menu works with most popular Windows fax software, including WinFax Pro, FaxWorks Pro, Trio DataFax, BitFax Pro, Eclipse Fax, SuperFax, and Smith Micro's own QuickLink Gold and

All 75-MHz Pentium systems are pretty much the same.  
(and pigs can fly)



Rated 10 out of 10 for "Service and Support" by PC Computing, these systems keep serving your needs for years to come. We've backed them with the industry's longest most comprehensive warranty- 5 year/36 months with one year of on-site service for free\*.

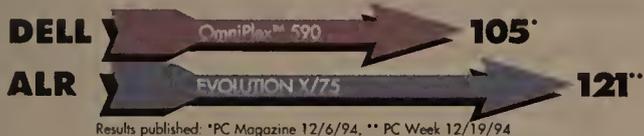
We use only genuine Intel microprocessors in our quality computer systems.



## The ALR EVOLUTION X/75

**Contrary** to what other manufacturers would like you to believe, all 75-MHz Pentium systems are *not* the same. For proof, take a look at the ALR EVOLUTION X/75. While most 75-MHz machines settle for being just slightly faster than 66-MHz systems, the value-priced EVOLUTION X/75 actually outperforms some 90-MHz Pentium PCs.

Winstone 95  
Higher Score is Better  
Winstone 95 Ver. 1.0 tests to measure the machines' performance when running typical Windows applications.



The secret to this added performance is our award-winning, 64-bit Flex architecture enhanced with 256-KB of write-back cache. Thanks to this design, the cool running 75-MHz Pentium processor can soar to new heights of performance.

ALR... FIRST TO ENGINEER  
QUAD 100-MHz PENTIUM  
SYMMETRICAL MULTIPROCESSING  
WORKSTATIONS & SERVERS.



Complementing this advanced CPU architecture is one of the most advanced implementations of PCI local bus technology available today. The EVOLUTION X/75 comes equipped with an enhanced Mode 3 PCI/IDE interface, providing up to 300% better disk performance than systems using standard IDE technology. It even supports future 8.4-GB IDE drives. And thanks to our dual channel IDE implementation, the ALR EVOLUTION X/75 supports up to four IDE devices. That's enough support for an ALR IDE CD-ROM drive, two hard drives and a removable storage device.



**ALR EVOLUTION X Series**  
 ① 75- and 90-MHz Pentium Processor enhanced with PCI Local Bus Technology ② 8-MB RAM expandable to 264-MB on the system board ③ Integrated 64-bit 256-KB Read/Write-back cache ④ Three PCI, five ISA slots (one slot is shared PCI/ISA slot); PCI Plug 'n' Play Technology ⑤ Three 5 1/4" and three 3 1/2" Storage Bays ⑥ 200 Watt Power Supply **Prices Start at \$1595 & \$1995 (SRP) for 75- and 90-MHz Pentium Processors, respectively.**

**ALR**  
Advanced Logic Research, Inc.  
800-444-4ALR

To experience the 75-MHz Pentium system that would make any power user go hog wild **call** our toll-free number **today.**

QuickLink II Fax. To fax a document, just choose Fax from the File menu, and HotFax Menu sends the fax automatically. You needn't change the default printer driver manually from the printer to the fax program. This \$19.95 utility is also included in the company's new HotFax communications program. Smith Micro Software, Inc., 800/964-7674, 714/362-5800.

Reader service no. 734

## NEC MultiSync XV15

NEC has never been known for low prices: The company builds premium monitors, and it charges accordingly. But now NEC has introduced the MultiSync XV15—a low-cost monitor that lives up to the company's reputation for quality. Street priced at about \$455, this 15-inch model isn't the least expensive display you'll find, but compared to other NEC 15-inchers it's a steal. (For example, the high-end XP15 sells for just under \$700, while the midrange XE15 goes for around \$575.) And the XV15 has several features you won't find on cut-rate competitors: It displays resolutions of up to 1280 by 1024 (although such a high resolution is virtually unusable on the monitor's 13.8-inch viewable area) and supports an ergonomic 76-Hz refresh rate at 1024 by 768. NEC Technologies Inc., 800/632-4636, 708/860-9500.

Reader service no. 735

## HotDocs 2.0 for Windows

HotDocs 2.0 is a low-cost utility that lets you create document templates using popular Windows word processors such as WordPerfect, Word, and Ami

Pro. To use HotDocs, first load the document you want to base your template on, then click the HotDocs button that the program adds to your word processor's button bar. Next, select the template's "variable text"—the text (such as a name, date, or address) that may change each time

you use the template. HotDocs steps you through the template creation process. New features in version 2.0 include user-created template folders that let you organize templates by type—for example, Sales Brochures or Applicant Rejection Letters. HotDocs 2.0 has a list price of \$99, and upgrades cost \$39.95. Capsoft Development, 800/500-3627, 801/763-3900.

Reader service no. 736

## EasyPhoto, EasyPhoto Reader

Adding photographs to Windows documents is snapshot easy with Storm Technologies' EasyPhoto. This \$49 program, available on CD-ROM with hundreds of sample images, enables you to insert color or black-and-white photos into documents. EasyPhoto works with any OLE 2.0-compliant application and accepts photos from a variety of media, including Photo CDs and images scanned in with the EasyPhoto Reader, a handy pint-size photo scanner aimed at the home market but equally useful for businesses. The EasyPhoto Reader attaches to your PC's parallel port (with a pass-through connector for your printer)—there's no interface



**TRACKMAN GOES WIRELESS:** Designed for presentations, Logitech's TrackMan Live is a radio-controlled pointing device.

card to install. It lets you quickly scan in photos; you then use the EasyPhoto software to resize and crop the photo or adjust its colors, brightness, and contrast. The EasyPhoto Reader (including EasyPhoto software) is street priced at around \$249. Storm Software, Inc., 800/275-5734, 415/661-6600.

Reader service no. 738

## TrackMan Live

The TrackMan Live is a radio-controlled handheld pointer that's convenient for users who give computer-based presentations. Sleekly contoured and stylishly encased in black, the device fits in either hand. Your thumb controls the trackball and three oblong buttons. The receiver plugs into your PC's serial port, but you and the TrackMan Live can wander anywhere within the product's 30-foot transmission range. With Logitech's MouseWare utility, you can program the pointer's buttons to perform a variety of functions with a simple click. Since the TrackMan Live uses radio signals to relay information between the pointer and the receiver, it doesn't suffer from the line-of-sight problems that plague many infrared devices (such as TV re-

mote controls). TrackMan Live lists for \$169 and includes two AAA batteries. Logitech Inc., 800/231-7717, 510/795-8500.

Reader service no. 737

## OnFile

Lost that file again, eh? Try Software Publishing's new OnFile, a handy file manager that helps you organize and keep track of the zillions of files on your hard disk. OnFile's file viewer enables you to view documents, spreadsheets, and other files without having to load the application that created the file—a real time-saver. The program also lets you organize files into folders that you open by clicking the mouse, and you can write text descriptions of up to 255 characters for each file. For example, the cryptic 4HOMBUD.XLS can become April 1995 Household Budget Spreadsheet—a much more civilized approach to file management. OnFile is street priced at around \$49. Software Publishing Corp., 800/234-2500, 408/986-8000.

Reader service no. 739

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

# LOTUS

GET THE MOST FROM THE LOTUS APPLICATION SUITE

## Map Out Your Strategies

When I first saw release 5.0's mapping tool, I thought it would join the long list of Great-But-Rarely-Used 1-2-3 Features.

Okay, desktop mapping is unmatched for studying where and how your customers live. A worksheet is a handy place to store the customer data. And release 5.0's implementation is workable. But aren't maps beyond the mainstream for most 1-2-3 users?

Wrong! Lotus tells us many release 5.0 users do maps—and no fewer than 10 percent of them are buying extra maps.

For help in opening your first maps, check out Richard Cranford's "Put Your Data on the 1-2-3 Map." If you're already deep in map mania, let us hear what you're doing—and how you'd like this tool strengthened. Drop me a note at 77 Franklin St. #300, Boston, MA 02110; or via fax (617/426-0235); or online (ebender@aol.com).

*Eric Bender*

Eric Bender, Executive Editor

## How Healthy Is Your Business?

**L4** Common financial ratios let you take your company's pulse and spot symptoms of trouble early on. Our quick guide gives you a lineup of basic profitability, liquidity, and activity ratios and shows how to apply them to your business. \*

### Put Your Data on the 1-2-3 Map

**L15** You can target sales efforts, analyze customer needs, and choose the

best sites for stores or service centers—all within release 5.0. Moreover, you can purchase additional maps with demographic data tailored to your needs. Here's how you can get started with maps, plus tips on customizing them.

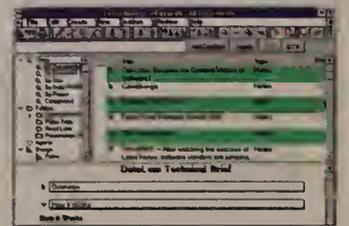


### Let 1-2-3 Track Time Off

**L19** It's easy to monitor employee vacations, sick days, and other types of leave with this simple worksheet for releases 2.3 and up. \*

### News

**L2** Lotus provides glimpses of the dramatically overhauled Notes 4.0 and fixes bugs for a troubled Organizer 2.0.



### Improving Your Skills

**L22** Protecting Range Names

### 1-2-3 Tips

**L25** Seven Ways to Fight Worksheet Mistakes

#### COMING IN MAY

- ▶ Sharing SmartSuite Data
- ▶ Ten Formulas You Should Know

### Q&A

**L28** Show File Name in Footer

### Macros

**L33** Prompt Users Through Your Macros \*

### Suite Success

**L36** Create Organization Charts in Freelance

\* The models and other files from these articles are available via PC World Online on America Online and CompuServe.

# Notes Gains Power, Cuts Cost

Lotus has bet its entire future on Notes, its pioneering group application environment. Prospects seem bright this year as the company readies an impressive new release of Notes, adds full-blown companion products, presents dozens of third-party packages—and finally slashes the cost of bringing Notes to everyone on the network.

Notes 4.0 won't ship until the second half of 1995, but Lotus has already begun demonstrating the software's improvements, including many aimed at users of SmartSuite desktop programs. For instance, the new version of Notes sports the InfoBox context-sensitive control palette and supports OLE 2.0 data exchange and the LotusScript scripting language—three features being added to all the SmartSuite applications.

NotesMail now uncannily resembles cc:Mail, with file folders, an in-box, a mes-

sage log, and other features that should make the transition from cc:Mail to Notes far smoother. The primary interface for viewing both mail and shared databases has evolved into a cc:Mail-like three-pane display that lets you manage folders and view the documents in them without moving between multiple screens.

The folder concept has spread to the rest

of Notes 4.0. You can organize documents in any Notes database by dragging and dropping them into personal folders, rather than asking Notes to sort them. And you can also create "personal agents" that automatically find documents in multiple Notes databases based on criteria you've specified, then sort them into folders avail-

able only to you. Such tasks can now be completed by making a few clicks in dialog boxes, rather than by hammering out cryptic macros or groping your way through a new programming language.

Additionally, Notes 4.0 introduces Navigators—new kinds of visual browsers that provide alternatives to the usual file folder interface. For instance, a Notes database can show a map of the United States, wherein you can click on any state to get a list of documents pertaining to that area. Similarly, applications can organize

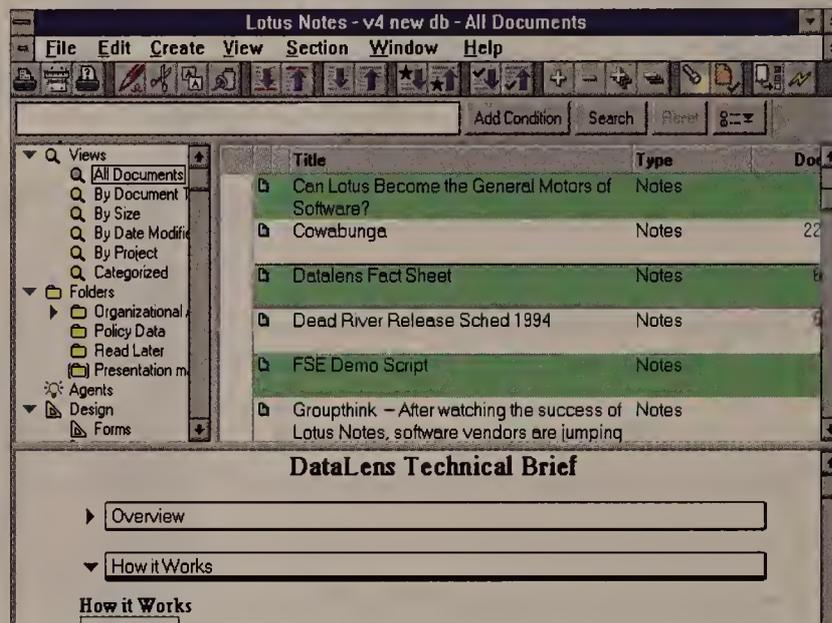
work-flow processes as flowchartlike boxes and arrows, rather than as folders.

## Cutting the Client Cost

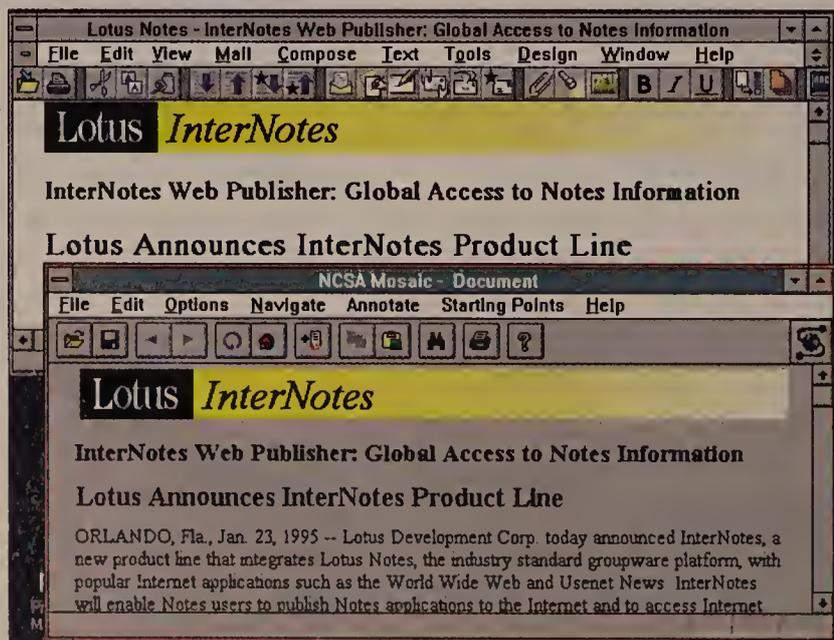
Lotus has dropped the price of the Notes client from \$330 to \$275 per user in volume purchases of 50 copies or more. The new Notes Desktop, a \$155 run-time version of the Notes software, can run any Notes application but lacks the development tools of the full-fledged package. Desktop's capabilities fall between those of the standard Notes client and Notes Express, a truncated client that met an unhappy reception from users last fall.

Ken Reid, a network administrator at Memorial Sloan-Kettering Cancer Center in New York, is among the users pleased by these moves. "Introducing a run-time version makes sense, since I can clearly discriminate between users who will never be doing design work and users who might eventually dabble a bit," says Reid.

Lotus has also greatly expanded its line of Notes add-ons. Its most striking move in this area is the launch of InterNotes, a set of add-ons that establish two-way commu-



**NOTES 4.0'S THREE-PANE INTERFACE lets you work with folders and their contents without jumping from screen to screen.**



**WITH LOTUS'S INTERNOTES WEB PUBLISHER, organizations can distribute Notes databases across the Internet's World Wide Web.**

nications between Notes and the Internet.

The initial InterNotes tools include InterNotes News, which allows Notes users to participate in Internet news group discussions, and InterNotes Web Publisher, which lets organizations distribute Notes databases over the Internet's World Wide Web, where they can be viewed using Web browser programs such as Mosaic and Netscape. Further down the road, Web Publisher will be joined by InterNotes Web Browser, which will let you explore the Web from Notes. —Harry McCracken

**Notes 4.0**—due in the second half of 1995—will introduce a dramatically easier interface, greater automation, more consistency and integration with other Lotus products, and a host of other improvements.

**Notes Desktop**, a \$155 Notes client, is aimed at users who don't need application development tools.

**InterNotes**, a line of add-ons, lets Notes communicate with Internet resources, including news groups and the World Wide Web.

**Notes Fax Server**, an add-on package, allows users to send, receive, and manage fax documents within Notes.

**Video for Notes**, an add-on package, lets Notes users capture, play, and distribute digitized video clips within Notes.

**More than 100 new third-party add-on products and services** are also in the works.

## Organizer 2.0 Stumbles out of the Gate

When Lotus shipped Organizer 2.0 last December, loyal users of version 1.1 thought they'd gotten an early Christmas present. But after loading the program, some would gladly have chosen a lump of coal instead.

Organizer 2.0 sports monthly calendar views, support for overlapping appointments, and other slick and long-awaited features. However, many users immediately complained about slow performance, huge file sizes, and other problems that kept the program from running properly. And hundreds of messages, with names like "Don't Touch Organizer 2.0" and "Or-

ganizer 2.0 Is Beta!!!," have clogged the Lotus CompuServe forum.

The biggest beef relates to the program's performance. "The speed problems made it an unusable product," says Jim Hardeman, environmental radiation program manager for the Georgia Department of Natural Resources in Atlanta, who loaded Organizer 2.0 onto a 25-MHz Compaq 486 laptop with 12MB of memory. "Showing planner events within the calendar seems to affect the response time dramatically. It takes 10 seconds to flip from one month to the next."

Users also complain that the new Organizer requires more memory than the version it replaces, and that the size of converted files has grown as much as fourfold. Lotus blames the slower performance and increased file size on the new, more complex database format needed for shared calendaring.

Organizer 2.0a, an update released in January, addresses some of the reported bugs, but it's not a cure-all. Ed Sisson, an Organizer user in Akron, Ohio, hoped the update would eliminate the crashes that occurred when he moved from Organizer's address book to the to-do list. But instead of getting a list of the day's tasks, Sisson was greeted with a Windows General Protection Fault error.

### Getting Reorganized

What should Organizer 2.0 users do? Lotus suggests that besides making sure you have the latest free bug fix (at press time another was planned for February), you take the following steps to avoid problems.

① Make sure your system has plenty of memory. Lotus recommends at least 6MB, but some early users of the product suggest more—especially if you want to multitask Organizer with other programs.

② If you're converting from version 1.x, follow the manual's procedures for optimizing, and make sure you run the compression utility ORGUTILS.EXE on your Organizer 1.x files before converting them. Once the files are in Organizer 2.0, reduce their size by choosing *File • Archive* to discard old and irrelevant information. "Some users are carrying around calendars that go back to 1992," notes Barbara Baird, director of product marketing for Organizer. As a final step in the conversion, Lotus suggests running ORGRBLD.EXE from Organizer 2.0 to rebuild indexes and in some cases compress files.

③ Any customers who have performance concerns should call Lotus technical support at 508/988-6400 and provide the company with information on their hardware and software setups. "What we don't have yet is a clear profile of [problematic] configurations so we can maximize on performance," says Lotus's Baird.

—Doug Barney



**ORGANIZER HAS GROWN MORE POWERFUL, but it has also become slower and larger, says user Jim Hardeman.**

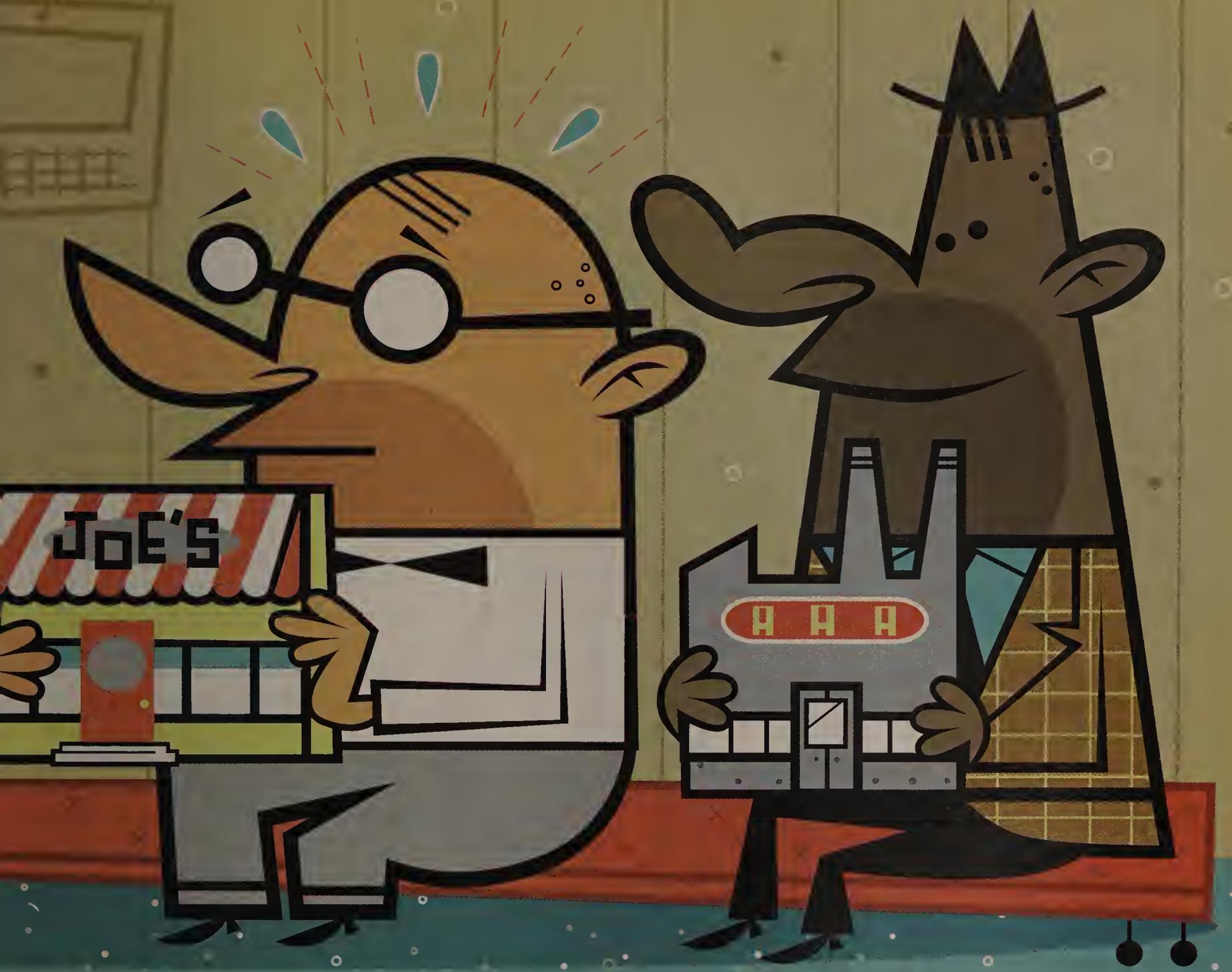
LOTUS



# HOW HEALTHY IS

BY STEVE ADAMS

# YOUR BUSINESS?



## Check your company's vital signs with these common financial ratios.

**D**o you ever wake up in the middle of the night and wonder how your business *really* is doing? Are your operating expenses too high? Are you carrying way too much inventory? Are you over your head in debt? Are your markups what they should be? Are you paying early and collecting late?

Financial ratios give you good clues.

Everyone's familiar with a profit margin, which is a simple ratio: Net profit (after paying yourself) divided by what you

spent. Suppose your business took in \$1 million and spent \$900,000 last year, including taxes. Your profit is 10 percent of sales, but is that good enough to keep your business running?

Finding your profit margin is just the start of a thorough analysis of your company's health. Other ratios, such as debt divided by total assets, help you pinpoint problems or leap on opportunities.

Financial ratios can vary considerably across industries. Turning over inventory only once a year, for example, would

mean bankruptcy for most retail businesses, but it's about what you'd expect to see in a jewelry store.

Here's a model that shows what ratios mean for a small business, using an independent jewelry store called Peacock Jewelers as an example. To use this model for your business, you'll need your income statements and balance sheets for the last several years. You'll also want a report of financial ratios for your type of business, though you can use the model to analyze trends in your own business without one.

## Keeping Three Scorecards

Financial ratios are a way of keeping score for your business, and to do so you need a scorecard—actually, three scorecards.

**1** The first is a simplified income statement and balance sheet, shown in **FIGURE 1**. These financial statements always have the same basic elements, but they don't always have the same individual lines. Here, we include only the items we need to make the calculations in the other sections. The "Other Information" part at the bottom of the figure lists several other factors Jewelers of America (whose industry survey we're employing for this example) uses in calculating ratios. We'll use the labels in column B to assign range names, then we'll hide the column so it doesn't appear in the final result.

**2** You'll also need same-size financial statements, as shown in **FIGURE 2**. These simply restate data from your income statement and balance sheet as ratios. In the income statement, the figures are shown as a percentage of sales (or gross revenue); in the balance sheet, the figures are shown as a percentage of total assets.

This approach offers two advantages. First, it makes it easier for you to gauge your business's financial performance over time. (Your cost of goods sold has increased over the last few years—but is it increasing in proportion to sales?) Second, it allows you to make more direct comparisons to the industry surveys, which also report these figures as ratios.

The figures in columns J through L are from the JA survey. They show the median, 25th percentile, and 75th percentile ratios for each row. You'll need a survey appropriate to your business to make a comparison. Don't worry if your survey is not in this median/low/high format—whatever comparison you can make will be useful.

**3** Finally, you'll need a set of financial ratios derived from the financial statements, shown in **FIGURE 3**. For the most part, these calculations are simple division.

## Building the Ratios Model

The model is built in a "diamond" pattern. That is, the second section is below and to the right of the first, and the third is below and to the right of the second. This type of arrangement allows you to add, delete, and hide columns, or change column widths in one section without affecting the others. If



**A**n income statement and balance sheet, a same-size statement, and ratios tell your business's story.

you're working in 1-2-3 for Windows or DOS release 3.x or higher, you should put the three sections on separate sheets.

The model covers only three years. If you want to analyze more years, simply move sections 2 and 3 farther to the right to accommodate the ad-

ditional columns, and copy the formulas to the extra columns for those sections. We'll be using range names in the formulas, so rearranging the model a little shouldn't complicate things. We assume you already have your statements.

*Income statement and balance sheet.* The first section of the model (Figure 1) contains no formulas. If you like, you can calculate the cells in the indented rows from

the rows above. They're simple addition, subtraction, and @SUM calculations.

Begin by setting the width of column A to 30. Choose *Style*•*Column Width* (*Worksheet*•*Column*•*Set-Width* in DOS releases), type 30, and click *OK* or press <Enter>. Set the width of column B to 11. Enter the labels shown in columns A and B in Figure 1 and the dates in ranges C5..E5, C19..E19, and C39..E39.

Then assign the labels in column B as range names: Highlight B7..B43, choose *Range*•*Name*, click *Use Labels*, and click *OK*. In DOS, select */Range*•*Name*•*Labels*•*Right*, highlight B7..B43, then press <Enter>.

Fill in the values in columns C through E from your own statements, or for our fictitious jewelry store. Next, highlight range C7..E15 and choose *Style*•*Number Format*, select *Comma* from the *Format* box, set *Decimal places* to 0, and click *OK*. In DOS, select */Range*•*Format*, select the comma, enter 0, specify range C7..E15, and press <Enter>. Repeat these steps for ranges C21..E26, C29..E35, and C41..E43.

With the pointer in column B, choose *Style*•*Hide*, select *Column*, and click *OK*. In 1-2-3 for DOS, select */Worksheet*•*Column*•*Hide*, and press <Enter>.

*Same-size statements.* The next section of the model, shown in Figure 2, comprises our same-size financial statements, along with industry comparisons. In the model it begins in cell F45, but it will be farther to the right if you entered more than three years' worth of data in the first section.

The values in this section are all percentages derived from the first section. In columns G, H, and I on the income statement, every value from the first section is divided by Net Sales. On the balance sheet, division is by Total Assets. The ratios in columns J, K, and L are from the JA survey. Substitute your own if you have the data; otherwise, leave those columns blank.

To build the section, set the width of column F to 30. Now enter the labels and dates shown in Figure 2, and assign the Percent 1 format to ranges G50..L58, G64..L69, and G72..L78.

In cell G50, enter the formula **+SALES/CS7**. Remember, all values in the income statement are divided by net sales for a given year. The absolute row reference lets us

complete this section in one step by copying cell G50 to range G50..I58. In Windows, select G50, choose *Edit•Copy*, select range G50..I58, and choose *Edit•Paste*. In DOS, place the pointer on cell G50, select */Copy*, and press **<Enter>** to specify G50 as

the range to copy from. Specify G50..I58 as the range to copy to, and press **<Enter>**.

In range J50..L58 enter values from a survey appropriate to your business.

Values in the same-size balance sheet are divided by Total Assets. First, enter the

formula **+CASH/TOT\_ASSETS** in cell G64, and copy it to ranges G64..I69 and G72..I78. To finish, enter values from your own industry survey in columns J through L.

*Ratios.* The ratios section of the model, shown in Figure 3, calculates a variety of

standard ratios, based on the values from your financial statements. We'll get to what they mean shortly. For now, set the width of column M to 30. Enter the labels and dates shown in Figure 3, then assign the Percent 1 format to ranges N85..S92, N98..S98, and N100..S100; the Fixed 1 format to ranges N96..S97, N99..S99, and N104..S109; and Comma 0 to range N113..S115.

Next, enter the formulas below, and copy them to columns O and P. Because we used range names, we can put the formulas anywhere as long as the items are laid out in *exactly* the same pattern.

A	B	C	D	E	
1					
2	Peacock Jewelers				
3					
4	Income Statement				
5		1992	1993	1994	
6					
7	Net Sales	SALES	773,538	709,077	838,000
8	Cost of Goods Sold	COG	416,478	375,264	436,000
9	Gross Profit	GROSS	357,060	333,813	402,000
10	Operating Expenses	OP_EXP	395,200	390,133	380,000
11	Operating Profit	OP_PROF	(38,140)	(56,320)	22,000
12	Interest Expense	INT_EXP	25,000	25,000	25,000
13	Net Profit Before Taxes	NPBT	(63,140)	(81,320)	(3,000)
14	Taxes	TAX			
15	Net Income	NET	(63,140)	(81,320)	(3,000)
16					
17					
18	Balance Sheet				
19		1992	1993	1994	
20	Assets				
21	Cash and Equivalents	CASH	25,000	20,000	50,000
22	Accounts Receivable	AR	33,333	20,000	20,000
23	Inventory	INVENTORY	479,600	741,200	545,000
24	Total Current Assets	C_ASSETS	537,933	781,200	615,000
25	Fixed Assets	FIXED	50,000	50,000	56,000
26	Total Assets	TOT_ASSETS	587,933	831,200	671,000
27					
28	Liabilities				
29	Accounts Payable	AP	84,810	84,810	91,333
30	Notes Payable	NOTES	45,667	45,667	45,667
31	Current Liabilities	C_LIAB	130,477	130,477	137,000
32	Long-Term Liabilities	LT_LIAB	304,000	304,000	304,000
33	Total Liabilities	TOT_LIAB	434,477	434,477	441,000
34	Net Worth/Equity	EQUITY	153,457	396,724	230,000
35	Total Liabilities/Net Worth	LIAB_NET	587,934	831,201	671,000
36					
37					
38	Other Information				
39		1992	1993	1994	
40					
41	Square Feet	SQFT	2,900	2,900	2,900
42	Employees	EMPLOYEES	9	8	10
43	Payroll	PAYROLL	198,000	176,800	225,000

CELL	FORMULA
N85	+NET/SALES
N86	+NPBT/SALES
N87	+OP_PROF/SALES
N88	+OP_PROF/TOT_ASSETS
N89	+NET/TOT_ASSETS
N90	+NPBT/TOT_ASSETS
N91	+NET/EQUITY
N92	+NPBT/EQUITY
N96	+C_ASSETS/C_LIAB
N97	(C_ASSETS-INVENTORY)/C_LIAB
N98	+TOT_LIAB/TOT_ASSETS
N99	+OP_PROF/INT_EXP
N100	+LT_LIAB/(LT_LIAB+EQUITY)
N104	+SALES/INVENTORY
N105	+COG/INVENTORY
N106	+SALES/AR
N107	365/N106
N108	+SALES/FIXED
N109	+SALES/TOT_ASSETS
N113	+SALES/SQFT
N114	+SALES/EMPLOYEES
N115	+PAYROLL/EMPLOYEES

**FIGURE 1: THE INCOME STATEMENT AND BALANCE SHEET are hard to interpret by themselves. Same-size statements and financial ratios put them into context.**

Finally, in columns Q, R, and S enter values taken from an appropriate industry survey.



# Lotus Notes authorized training open it all the way up

Some programs were never meant to be just pattered around with. Take Lotus Notes<sup>®</sup>, for example. Harness its potential, and you and your company will be in for the ride of a lifetime.

That's why you should consider Lotus<sup>®</sup> authorized training. Because at Lotus, we've discovered that while customers are happy with Notes, many have yet to open it all the way up and

see what it can do. Simply because they need help doing it.

So we've established Lotus Authorized Education Centers (LAECs) in local markets worldwide to help you take advantage of the full power of Notes.

Every LAEC uses Notes as an integral part of running its own business, so instructors better understand the challenges

## Alabama

ATHENA Computer Learning Ctr.  
Birmingham - 800-995-9075

## Arizona

Infomage/Workgroup University  
Phoenix - 800-489-9511

ExecuTrain Phoenix  
602-955-7787

## California

WORDLINK, Inc., San Francisco  
415-442-0137

Infomage/Workgroup University  
San Francisco - 800-489-9511

Productivity Point Int'l.  
San Francisco - 415-243-0100

Corporate Software Inc.  
San Jose - 800-274-4707

Infomage/Workgroup University  
Los Angeles - 800-489-9511

HTR, Inc., Los Angeles  
800-882-6420

## Colorado

Access Graphics Education  
Svcs., Denver - 800-730-6463

Productivity Point Int'l.  
Denver - 303-756-5756

## Connecticut

NextAge, Norwalk  
800-989-8989

NetImage, Inc., Danbury  
800-770-3445

HBM Education Center  
Hartford - 203-243-2001

## D.C. Metro Area

Corporate Software Inc.  
Arlington - 800-274-4707

HTR, Inc., Washington  
800-882-6420

ICI Systems, Inc.  
Washington - 800-424-0510

## Florida

The Waldec Group  
Ft. Lauderdale - 305-484-1131

Computer Savvy, Ft. Lauderdale  
305-486-0644

Computer Training & Consulting  
Tallahassee - 904-531-0960

Productivity Point Int'l.  
Orlando - 800-524-4282

The Waldec Group, Tampa  
813-286-8086

The Systems Consulting Group  
Miami - 800-225-3395

## Georgia

Universal Data Consultants  
(UDC), Atlanta - 404-446-6733

HTR, Inc., Atlanta  
800-882-6420

Productivity Point Int'l.  
Atlanta - 404-816-5833

## Illinois

WORDLINK, Inc., Chicago  
312-629-3401

TeKnowlogy-LAN\mind  
Chicago - 800-325-5267

Spectrum Integrated Services  
Chicago - 800-624-2033

Productivity Point Int'l.  
Chicago - 312-332-3865

WORDLINK, Inc., Schaumburg  
708-397-4000

WORDLINK, Inc., Champaign  
217-359-9378

## Indiana

WORDLINK, Inc., Indianapolis  
217-359-9378

## K.C. Metro Area

IES Midwest, Inc.  
Kansas City - 913-338-1437

## Maryland

USConnect Baltimore  
Columbia - 800-883-0616

HTR, Inc., Baltimore  
800-882-6420

HTR, Inc., Rockville  
800-882-6420

ADT Data Systems, Inc.  
Hunt Valley - 800-366-2381

## Massachusetts

Westcon Services Corp.  
Boston - 800-LAN-TEACH

HTR, Inc., Boston  
800-882-6420

Productivity Point Int'l.  
Newton - 800-649-1449

ALI Technologies Inc.  
Needham - 617-455-6910

Corporate Software Inc.  
Norwood - 800-274-4707

Trellis, Southborough  
800-390-9627

Synetics, Wakefield  
617-245-9090

## Michigan

The LEAD Group, Bloomfield Hills  
810-334-3800

Data Planners, Inc., Southfield  
810-353-0740

Productivity Point Int'l./ETC  
Grand Rapids - 616-285-6898



# ning. When you're ready to and see what it'll do.

you face and the solutions you're seeking. This enables LAECs to give practical training that's timely and applicable to your business.

Courses offered at LAECs also prepare you for certification as a Lotus professional. So not only will you be adept at handling Notes, but you'll have the license to prove it.

Call your local LAEC for information on specific training and certification programs. Or fax your name, address and phone number to #801-649-2195 and receive a free research paper, "An Under-the-Hood Perspective on Lotus Notes."

Get Lotus Notes training today and run your company like a well-oiled machine. **Circle 134 on reader service card**

## Minnesota

Connect, Minneapolis  
800-239-3096

HTR, Inc., Minneapolis  
800-882-6420

Productivity Point Int'l.  
Minneapolis - 612-341-0750

## Missouri

WORDLINK, Inc., St. Louis  
314-878-1422

Workgroup Connections, Inc.  
St. Louis - 314-436-2233

## New Jersey

:Track On, Paramus  
800-462-2323

Dataflex Corporation, Edison  
800-700-TRAIN (8724)

MicroAge Learning Centers  
Parsippany - 800-403-4449

Trellis, Princeton  
800-390-9627

ICM Education Services  
Roseland - 800-ICM-9987

## New York

Professional Training Services  
New York - 610-337-8878

Westcon Services Corp.  
New York - 800-LAN-TEACH

Productivity Point Int'l.  
New York - 212-398-6410

Logical Operations, Rochester  
800-456-4677

Information Technologists, Inc.  
Rochester - 716-244-4260

Productivity Point Int'l.  
Rochester - 716-232-6650

## Ohio

Productivity Point Int'l.  
Toledo - 419-891-9151

Sarcom Educational Services  
Toledo - 419-897-2300

Productivity Point Int'l.  
Cleveland - 216-642-8676

Productivity Point Int'l.  
Columbus - 614-841-7400

## Productivity Point Int'l.

Cincinnati - 513-772-5277

MarketWare Computer Systems  
Cincinnati - 513-576-8500

Sarcom Educational Services  
Cincinnati - 513-241-2030

## Pennsylvania

Professional Training Services  
Philadelphia - 610-337-8878

Information Technologists, Inc.  
Philadelphia - 800-296-4600

Productivity Point Int'l.  
Philadelphia - 610-834-1800

Information Technologists, Inc.  
Pittsburgh - 412-934-5885

ADT Data Systems, Inc.  
Harrisburg - 800-366-2381

Productivity Point Int'l.  
Allentown - 610-434-7242

## Tennessee

ATHENA Computer Learning Ctr.  
Nashville - 800-995-9075

## Texas

TeKnowlogy Education Centers  
Dallas Infomart - 800-783-7894

Spectrum Integrated Services  
Dallas Metroplex - 800-624-2033

WorkFlow Designs, Inc., Dallas  
214-991-3569

Corporate Software Inc.  
Dallas - 800-274-4707

HTR, Inc., Dallas  
800-882-6420

Absolute!, Inc.  
Dallas - 214-746-5611

Spectrum Integrated Services  
Houston - 800-624-2033

TeKnowlogy Education Centers  
Houston - 713-439-1916

## Virginia

Quality Systems Inc., Fairfax  
800-QSI-LAEC (774-5232)

USConnect Washington DC  
McLean - 800-883-0616

HTR, Inc., McLean  
800-882-6420

## Washington

Infolmage/Workgroup University  
Bellevue - 800-489-9511

Trellis, Seattle  
800-390-9627

## Canada

StarLight Inc., Toronto  
416-971-9053

Productivity Point Int'l.  
Ottawa, Ont. - 800-9-PPI-CAN

Productivity Point Int'l.  
Etobicoke, Ont. - 416-695-1393

**Lotus**

Authorized  
Education  
Center

## Checking Same-Size Statements

Now let's look at what the numbers mean.

Start by turning back to Figure 1. It's not hard to see that Peacock Jewelers has problems. It's lost money the last three years—substantial amounts in 1992 and 1993. (Remember that these figures don't include the owner's salary, which has already been taken out.) At least the losses are shrinking—and the store turned an operating profit in 1994. But where is the problem?

Scanning the model, we find several. On the income statement, we can see that Net Sales has bounced back nicely since a dip in 1993. We can see a lot more by turning to the same-size income statement in Figure 2. Here we see that Cost of Goods Sold is a tad higher than the industry median, but declining. Peacock's markups are fairly typical but might offer some maneuvering room. That also means that Peacock's Gross Profit is low, since Gross Profit is simply Net Sales less Cost of Goods Sold.

Operating Expenses were a problem in 1992 and 1993—well above the 75th percentile figure for the industry. This means that the store was spending a disproportionate percentage of its sales on salaries, rent, utilities, and other day-to-day costs. The figure is down to near the median for 1994, but there may still be room for improvement.

Now we come to Interest Expense. The percentage of sales is low—3 percent in 1994—but it's considerably higher than typical for the industry. We begin to suspect that Peacock is carrying too much debt.

Let's find out by looking further on the same-size balance sheet.

Accounts Receivable is on the low side; Peacock is not selling too much on credit, nor is it having a serious problem with collections. But look at Inventory—more than 80 percent of total assets, near the top of the industry range. You can't sell from an empty wagon, but Peacock might turn a profit if it ran a little leaner.

Moving down to Liabilities section, we can see that the store's Current Liabilities aren't out of line with the industry norm. Long-Term Liabilities, however, are over the top. Aha! That's the main reason Peacock's Net Worth/Equity ratio is so low.

That confirms our impression that Pea-

cock carries too much debt. But getting out of debt is hard when you're not turning a net profit. Perhaps the financial ratios in Figure 3 will turn up some opportunities.

## Starting With Financial Ratios

The values in Figure 3 reflect a number of common financial ratios. Depending on which source you use for industry figures, you may find more. It's also important to recognize that not all surveys use the same formulas to make their calculations. Dun & Bradstreet, for example, defines Inventory Turnover as Inventory/Net Sales, while

A	F	G	H	I	J	K	L
45	Same-Size Statements						
46							
47	Income Statement				Industry		
48		1992	1993	1994	Median	Low	High
49							
50	Net Sales	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
51	Cost of Goods Sold	53.8%	52.9%	52.0%	50.2%	43.4%	55.0%
52	Gross Profit	46.2%	47.1%	48.0%	49.9%	45.0%	56.6%
53	Operating Expenses	51.1%	55.0%	45.3%	44.3%	39.0%	49.5%
54	Operating Profit	-4.9%	-7.9%	2.6%	5.4%	0.4%	9.1%
55	Interest Expense	3.2%	3.5%	3.0%	1.4%	0.2%	2.2%
56	Net Profit Before Taxes	-8.2%	-11.5%	-0.4%	5.1%	0.4%	7.9%
57	Taxes	0.0%	0.0%	0.0%	NA	NA	NA
58	Net Income	-8.2%	-11.5%	-0.4%	NA	NA	NA
59							
60							
61	Balance Sheet				Industry		
62		1992	1993	1994	Median	Low	High
63	Assets						
64	Cash and Equivalents	4.3%	2.4%	7.5%	NA	NA	NA
65	Accounts Receivable	5.7%	2.4%	3.0%	11.9%	0.3%	14.6%
66	Inventory	81.6%	89.2%	81.2%	67.4%	54.2%	84.0%
67	Total Current Assets	91.5%	94.0%	91.7%	88.5%	84.8%	97.5%
68	Net Property	8.5%	6.0%	8.3%	9.3%	0.1%	11.2%
69	Total Assets	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
70							
71	Liabilities						
72	Accounts Payable	14.4%	10.2%	13.6%	NA	NA	NA
73	Notes Payable	7.8%	5.5%	6.8%	NA	NA	NA
74	Current Liabilities	22.2%	15.7%	20.4%	24.7%	8.6%	31.2%
75	Long-Term Liabilities	51.7%	36.6%	45.3%	22.0%	0.1%	40.1%
76	Total Liabilities	100.0%	52.3%	65.7%	NA	NA	NA
77	Net Worth/Equity	26.1%	47.7%	34.3%	53.3%	38.8%	74.3%
78	Liabilities and Net Worth	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

**FIGURE 2: SAME-SIZE STATEMENTS** express items on your income statement and balance sheet as percentages of sales and percentages of assets, making it easier to compare performance over time.

Robert Morris Associates defines it as Inventory/Cost of Goods Sold. (Peacock includes both methods.) So make sure you're comparing the same calculations.

Another factor in choosing a survey for comparison is the timing of the values. As is typical with the surveys, the model works with year-end figures.

Some models use annual averages for such items as inventory, calculated by taking the mean of inventory value at the ends of two years. That works if, for example, your business is rapidly expanding and your inventory on December 31 this year was twice the size of your inventory a year

earlier. Your actual inventory turn-overs will be significantly higher than the year-end figure for this year suggests.

On the other hand, neither method accounts for seasonal fluctuations. A retail store—and the fictitious Peacock Jewelers is a good example—may do a high percentage of its business during the holidays, so inventory may be a lot lower on December 31 than on October 31.

Now let's take a look at Peacock's financial ratios, as shown in Figure 3. Remember to take some time to think about what the numbers mean. There aren't any exact answers—this isn't rocket science.

## Profitability Ratios

You run a business to make money, right? Profit ratios tell you if you're succeeding.

**Profit Margin = net profit after taxes/net sales: +NET/SALES.**

Obviously, higher is better than lower. Although Peacock is getting close to breaking even, the store's figures are negative. Not good. We want to know why.

**Profit Margin Before Taxes = net profit before taxes/net sales: +NPBT/SALES.**

JA's and other surveys use this ratio because tax circumstances for small businesses vary crazily. Again, higher is better than

lower. Peacock's figure is the same as the Net Profit Margin, because the IRS has the good grace not to tax you for losing money.

**Operating Profit = (net sales-cost of goods sold-operating expenses)/net sales: +OP\_PROF/SALES.**

We've seen that Peacock may have a problem with debt; this ratio shows whether it's making money before interest and taxes. At last, Peacock has a positive figure for 1994—2.6 percent. But it's still near the bottom. Interest is part of the problem.

**Operating Profit/Total Assets = +OP\_PROF/TOT\_ASSETS.**

How efficiently is a business using its resources? Peacock's number is low. The store has too much stuff relative to how much it's selling.

**Return on Investment = net income/total assets: +NET/TOT\_ASSETS.**

Peacock is back in the red. That interest expense hurts.

**ROI Before Taxes = net profit before taxes/total assets:+NPBT/TOT\_ASSETS.**

This ratio removes the effect of taxes from the previous ROI calculation. Nothing new here for Peacock, since it hasn't been paying any income tax.

**Return on Equity = net income/net worth or equity: +NET/EQUITY.**

ROE is the return on your stake in your business. If it's less than, say, the rate on Treasury bills, then sell the business, invest the money, and retire to Tahiti. (But don't forget, you've already taken your salary home before you calculate ROE.) Peacock has gone from dismal (-41.1 percent) to poor (-1.3 percent), so there's hope.

**ROE Before Taxes = net profit before taxes/net worth or equity: +NPBT/EQUITY.**

Again, Peacock's figure is the same as the after-tax figure because the store is losing

money. From the JA statistics, we can see that a typical store earns 8.9 percent and that the 75th percentile is 20.7 percent, so money can be made in this business. Peacock, for once, isn't at the bottom of the pile. If your ROE is way above the industry median, you may have too much of your own money invested in the business.

We can see that Peacock's performance is improving, even though the store is still losing money. But can it stay afloat long enough to turn the corner?

## Liquidity Ratios

Next, we examine the creditors at the door.

We've noticed that Peacock's interest expenses are higher than the norm. Liquidity ratios, calculated from current and total assets and current and long-term liabilities, tell you about your asset and debt structure. Current assets are cash and assets that can readily be turned into cash. Total assets are everything the business owns. Current liabilities are debts that must be paid in the next 12 months, including the principal on long-term debt. (Interest payments due are excluded; they're expenses, not liabilities.)

Current assets and liabilities indicate whether you'll be able to pay your bills in the coming year. Long-term liability and total assets give a broader picture of your business's health. Obviously, you're in trouble if you owe more than you're worth. On the other hand, if you are debt-free, you may be missing opportunities that could be realized by borrowing.

**Current Ratio = total current assets/current liabilities: +C\_ASSETS/C\_LIAB.**

Current assets include cash and equivalents (such as marketable investments), accounts receivable, and inventory—items that you can convert to cash in the short term. Current liabilities are amounts you must pay (excluding interest), including accounts payable, short-term notes, and the current portion of long-term debt. The higher the ratio, the better. For once, Peacock is about in the middle. It doesn't have excessive short-term liabilities in proportion to current assets. That could be deceptive, however, if the store is sitting on a lode of inventory that isn't moving.



**Quick Ratio = (current assets - inventory) / current liabilities: (C\_ASSETS - INVENTORY) / C\_LIAB.**

Sometimes called the acid test ratio, the quick ratio removes inventory from the equation and thus is a sterner test of liquidity than is the current ratio. Peacock's ratio (0.5) is near the 25th percentile in the JA survey. Given that the store's current ratio is close to the median, the low quick ratio suggests that the business either is carrying too much inventory or needs to look at its product line to see whether it could stock merchandise that sells faster.

**Debt/Total Assets = total liabilities / total assets: +TOT\_LIAB / TOT\_ASSETS.**

How would you make out if you sold the business and paid off your debts? If this ratio is over 1, you're in trouble: You owe more than you own. But if it's low, you may be missing chances to increase earnings by borrowing money to expand. Net worth or equity is a liability (it belongs to the owner, not the business), but it's not included here. Peacock is way above the industry norm.

**Times Interest Earned = operating profit / interest expense: +OP\_PROF / INT\_EXP.**

This ratio measures a business's ability to cover interest costs out of operating profit before interest. If your company's operating profit is negative, as Peacock's is until 1994, interest is eating into capital. But even at 0.9 for the last year, the store is again on the bottom rung. We've identified two problems: high debt and high operating expenses.

**Long-Term Debt/Total Capital = long-term debt / (long-term debt + equity): +LT\_LIAB / (LT\_LIAB + EQUITY).**

Is the business overleveraged? Peacock's figures are high, another indication of high debt. But again, a low number may indicate an opportunity to fund expansion.

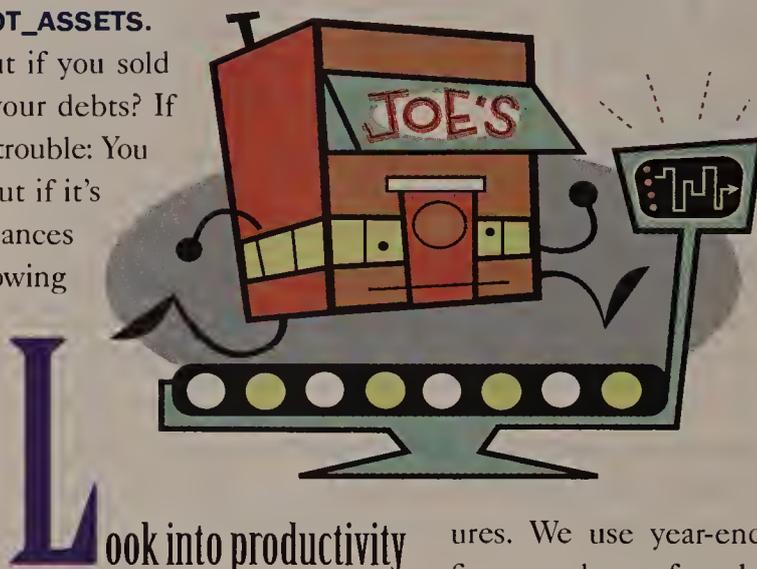
We're getting a clearer picture of Pea-

cock's troubles: high inventory, high operating expenses, and high debt. Can the store sell its way out of the problem?

## Activity Ratios

Let's look at turnovers. Activity ratios measure the return a business gets on its investment. Is it carrying too much—or too little—inventory? Does it have a collection problem on credit sales? And finally, is it earning a reasonable return on its total assets? These ratios give some hints.

There are several ways to measure inventory turnover. Some measure it by the average for the year, others by year-end fig-



**L**ook into productivity ratios if the profitability, liquidity, and activity ratios don't yield a solution.

ures. We use year-end figures and cost of goods. In your own calculations, make sure you're using comparable numbers.

**Inventory Turnover (Sales) = net sales / inventory: +SALES / INVENTORY.**

This is your sales volume in proportion to the merchandise you have in stock. Higher is better—keep that inventory moving out the door. Turnovers are low in the jewelry business. Peacock has bounced back in 1994 with 1.5 turnovers, compared with 1 in 1993.

**Inventory Turnover (COG) = cost of goods sold / inventory: +COG / INVENTORY.**

This is a measure of what you sold in proportion to what you paid for it. There are various ways of calculating inventory. JA uses first-in-first-out. Make sure you're consistent within your business and with

the survey figures you're using for comparison. See your accountant if you're unsure.

Low turnover may mean you're overstocked or need to examine your product line. A high figure may mean you could sell more if you had more to sell. Again, turnover is low in the jewelry business—about once a year, JA reports. Peacock is near the bottom, with 0.8 in 1994.

**Receivables Turnover = net sales / accounts receivable: +SALES / AR.**

How well are you collecting accounts? In a retail business, this isn't often a problem. But if you bill, say, 30 days net, it can be—especially if you're borrowing money to run your business. Peacock is doing fine, with nearly 42 turnovers a year, compared with an industry average of 8.4. The store doesn't make many credit sales.

**Collection Period = 365 / receivables turnover (some models use a 360-day year): 365 / N106 in our model.**

How long does it take you to collect bills? Peacock has no problem, but if your figure is high, stepping up collections could increase profits.

**Fixed Asset Turnover = net sales / fixed assets: +SALES / FIXED.**

This is net sales divided by anything on which you claim depreciation (plus land). High numbers are good, because you want to make the most you can on the least you can invest. Peacock is doing okay here.

**Total Asset Turnover = net sales / total assets: +SALES / TOT\_ASSETS.**

How much are you making on what you've got? If your figure is low, you may need to increase productivity. If it's high, you may be paying too much out of pocket, as opposed to investing in ownership. Peacock's figures are at the bottom. We've seen that receivables and fixed assets aren't the problem. We suspect that the store is carrying too much inventory or needs to explore products that move faster.

We've seen that Peacock has high debt, high interest payments, and high inventory in proportion to sales, but it doesn't have a problem with receivables or too much invested in property other than inventory.

## Productivity Ratios

But we still haven't found the answer. Productivity ratios may provide some ideas.

The productivity ratios shown in Figure 3 are based on data from the JA survey. These are less standardized than other business ratios, so you'll want to adapt your calculations to the statistics available for your industry. The ratios provided by JA tell jewelers whether they're using their space effectively, how well their employees perform, and whether their pay range is in line with the industry. (In the latter case, the owner's salary is included, so the problem may not be with the employees.)

**Sales/Sq. Ft. = net sales/square feet: +SALES/SQFT.**

Just what it suggests. Peacock's ratio is below the industry median (\$385) at \$289 in 1994.

**Sales per Employee = net sales/employees (Including the owner and family members paid to work in the store): +SALES/EMPLOYEES.**

This ratio tells whether your business is overstaffed, or whether hiring another salesperson might increase your sales. The jewelry store is way down below the 25th percentile here, meaning that there are too many employees or not enough sales.

**Payroll per Employee = payroll/employees (again, including everybody): +PAYROLL/EMPLOYEES.**

Here, we can see that Peacock doesn't pay much compared with the industry median. If there's a problem, then, it's more likely to

be too many employees, rather than pay scale. It might make a difference where you are located geographically.

## What to Make of the Numbers

How to run a business is a matter of particular circumstances. Ratios can show you how to do better. We can see that Peacock's debt, interest expense, inventory, and payroll expenses are above the industry median. Its liquidity, activity, and productivity ratios are below the norm. The

ratios send Peacock the message to run leaner and improve its marketing.

When you run the figures for your own business, you may be pleasantly surprised by the results. If not, the ratios will show you what you need to fix.

*Steve Adams is a freelance writer in Raleigh, North Carolina, and the author of several books, including Personal Finance with 1-2-3 (Brady Books, 1992). The model from this article is available via PC World Online on America Online and CompuServe.*

A	M	N	O	P	Q	R	S
80	Ratios						
81							Industry
82		1992	1993	1994	Median	Low	High
83	Profitability Ratios						
84							
85	Net Profit Margin	-8.2%	-11.5%	-0.4%	NA	NA	NA
86	Profit Margin Before Taxes	-8.2%	-11.5%	-0.4%	5.1%	0.4%	7.9%
87	Operating Profit	-4.9%	-7.9%	2.6%	5.5%	1.8%	10.2%
88	Operating Profit/Total Assets	-6.5%	-6.8%	3.3%	8.2%	2.2%	15.4%
89	Return on Investment	-10.7%	-9.8%	-0.4%	NA	NA	NA
90	ROI Before Taxes	-10.7%	-9.8%	-0.4%	7.2%	-0.7%	12.2%
91	Return on Equity	-41.1%	-20.5%	-1.3%	NA	NA	NA
92	ROE Before Taxes	-41.1%	-20.5%	-1.3%	8.9%	-3.0%	20.7%
93							
94	Liquidity Ratios						
95							
96	Current Ratio	4.1	6.0	4.5	4.3	2.7	8.5
97	Quick Ratio	0.4	0.3	0.5	0.8	0.4	1.9
98	Debt/Total Assets	73.9%	52.3%	65.7%	44.2%	26.5%	62.3%
99	Times Interest Earned	-1.5	-2.3	0.9	5.4	NA	NA
100	Long-Term Debt/Total Capital	66.5%	43.4%	56.9%	35.0%	17.0%	55.3%
101							
102	Activity Ratios						
103							
104	Inventory Turnover (Sales)	1.6	1.0	1.5	NA	NA	NA
105	Inventory Turnover (COG)	0.9	0.5	0.8	1	0.8	1.6
106	Receivables Turnover	23.2	35.5	41.9	8.4	NA	NA
107	Collection Period	15.7	10.3	8.7	43.4	NA	NA
108	Fixed Asset Turnover	15.5	14.2	15.0	10.8	NA	NA
109	Total Asset Turnover	1.3	0.9	1.2	1.5	1.2	1.9
110							
111	Productivity Ratios						
112							
113	Sales/Sq. Ft.	267	245	289	385	255	531
114	Sales per Employee	85,949	88,635	83,800	117,263	94,731	149,664
115	Payroll per Employee	22,000	22,100	22,500	25,520	21,129	32,153

**FIGURE 3: FINANCIAL RATIOS** help you examine the relationship between your income statement and balance sheet and gauge your performance against that of competitors.

# Now You Can Copy Information From Any Database... Into Your Lotus Notes Database

## Introducing EDA/SQL® Copy Manager for Lotus Notes

ADABAS  
ALLBASE/SQL  
ALL-IN-1  
ASCII  
Btrieve  
C-ISAM  
CA-Datcom/DB  
CA-IDMS/DB  
DB2  
DB2/2  
OS/400  
DB2/6000  
DBMS  
dBASE  
DL/1

DMS  
DSM  
ENSCRIBE  
FOCUS  
IDS-II  
IMS/DB  
Infoman  
Informix  
Ingres  
ISAM  
KSAM  
MODEL 204  
MUMPS  
NetISAM  
NonStop SQL  
ODBC  
OMNIDEX  
Oracle

PACE  
Private Files  
QSAM  
Rdb  
SAP  
ShareBase  
SQL/DS  
SQL Server  
SUPRA  
Sybase  
SYSTEM 2000  
TOTAL  
TurboIMAGE  
UFAS  
ULTRIX/SQL  
UNIFY  
UX C/ISAM  
VSAM  
WIIS  
...and others

EDA/SQL  
Copy Manager

Notes  
Database

Now you can copy sales information, customer profiles, financial results, personnel data, and other information located in virtually any database right into your Lotus Notes database. How?... With EDA/SQL Copy Manager for Lotus Notes, an exciting new product from Information Builders, that incorporates EDA/SQL middleware access technology and Notrix from Percussion Software.

### Simple and Easy

With EDA/SQL Copy Manager for Lotus Notes, any Notes client can create a request simply by filling in a Notes form. The form automatically defines the location of the data and all the necessary information needed to retrieve it.

You can join multiple files and specify how the original fields map to your Notes fields. You can even restrict selection criteria to ensure any level of appropriate security.

### Fully Integrated

Familiar Notes facilities are used throughout the process. And all EDA/SQL Copy Manager functions are fully integrated with the Notes environment. Jobs are entered in Notes forms, and deferred processing is scheduled automatically with just an entry in the standard Notes Name and Address Book.

Any Notes client can be used...on LAN or on dial-up...running Windows, OS/2, or Macintosh. No additional software is required for the Notes client.

### Access to Any Data

EDA/SQL Copy Manager is the most cost-effective way to transform your Lotus Notes environment into the true application development environment it was intended to be, with access to any information in the enterprise. For more information and a free product brochure, contact your local Information Builders branch office, or call:

**1-800-969-INFO.**

In Canada Call 416-364-2760

**Lotus**  
BUSINESS  
PARTNER

**Information  
Builders**

Circle 130 on reader service card

Put Your

DATA

on the 1-2-3

MAP



BY RICHARD CRANFORD

**Release 5.0's mapping tool helps you focus sales efforts, analyze customer needs, and pick the best sites for stores and service centers.**

1-2-3 has always been a math whiz—and with release 5.0's new mapping features, it's finally learned geography as well.

Whenever you're dealing with 1-2-3 data that is geographically distributed, creating a map can convey information much more

strikingly than ordinary worksheet numbers ever could. You can show where a product is successful and where it's not by mapping sales figures, or target your efforts by creating a map that shows which regions have the greatest populations in a particular age group. If you've conducted a consumer poll, a map makes it easy to interpret results by region. Public health experts can track the incidence and spread of diseases more easily on a map.

Mapping is a great addition to 1-2-3, and Lotus reports that 10 percent of users have purchased additional maps. Lotus should, and probably will, improve its ease of use, especially for such tasks as assigning more appropriate data groupings and adding la-

bels. For now, though, the effort needed to produce an attractive map isn't unreasonable. The steps involved in generating a map are similar to those you take to create a chart, and 1-2-3 does much of the initial work for you. However, producing a polished map requires lots of fiddling.

1-2-3's mapping feature works through the magic of Windows' OLE (Object Linking and Embedding). When you use the mapping commands in the Tools menu, 1-2-3 passes data from a worksheet range to a separate program, the Map Viewer. This program, in turn, puts a map object in your worksheet and establishes a two-way link; if you change the worksheet data, the change is reflected in the map.

Because of all this passing around of data in the background, creating and modifying maps can take a maddeningly long time on less-muscular computers. A 25-MHz 386 with 8MB of memory, which performs adequately for most Windows tasks, shows an hourglass and makes disk-access noises for many seconds while performing a map operation. My 60-MHz Pentium, which has

16MB of RAM, makes the process much quieter and more tolerable (although not instantaneous).

### Step 1: Table the Data

The first step toward creating a map is to set up a two-column table. The left column of this table contains the names of geopolitical regions—states, provinces, and countries, for example—and the right column contains the data for each region.

The names in the left column must be spelled out in full or abbreviated in a form that can be accepted by the map you plan to use. To create a map showing values by state, for example, you can use state names (Alabama, Arizona, Arkansas) or their two-letter postal abbreviations (AL, AZ, AR). For a map of Japan, you can use the names

MAPDATA subdirectory, which contains worksheets with demographic, income, and business data for all the countries noted above and for the world as a whole. The file USA\_A.WK4, for example, contains populations by state for 1990, 1993, and 1998 (projected) and breaks these down by sex and age group. It also provides the percentage changes in population between 1990 and 1993.

This file has four worksheets. Sheet A contains state names in column A, two-letter abbreviations in column B, and the population numbers beginning in column C. Sheets B and C contain data for Alaska and Hawaii. Sheet D explains the cryptic field headings used in row 1 of the other sheets.

Worksheet D shows that the term POP90 in cell A4 stands for 1990 total population, MALEPOP90 stands for 1990 total male population, and so forth. The other map-data sheets use a similar format.

To use the data supplied by Lotus, you need to put the column of numbers you want to use next to the list of region names and get rid of some of the regions (unless you want to map a whole country or the entire world).

In our example, we'll create a map showing populations of 50-to-64-

	A	B
1	AREANAME	P50T06493
2	Illinois	1563289
3	Indiana	775791
4	Iowa	382985
5	Kansas	323594
6	Michigan	1269813
7	Minnesota	564553
8	Missouri	722262
9	Nebraska	206959
10	North Dakota	79515
11	Ohio	1533691
12	Oklahoma	445278
13	South Dakota	90222
14	Wisconsin	660660

**FIGURE 2: THE MAP'S DATA must be entered in this two-column format.**

year-olds in America's midsection. We'll need a list of states and some of the data in column AA of USA\_A.WK4. There are a few ways you can go about this. You can copy range A1..AA50 to the Clipboard, paste it into a new worksheet, delete columns B through Z, and delete all the rows for states that aren't in the Midwest. Or you can save the USA\_A worksheet under a new name

and delete these columns and rows.

Because the tables in these worksheets are organized as databases, you may find that the best way to extract the data you want to map is to use 1-2-3's database tools. See the sidebar "Extracting Data From Lotus's Map Files" for an explanation.

If you're eager to start mapping, just enter the data in **FIGURE 2**. Feel free to omit the labels in row 1; you won't need them to produce the map.

### Step 2: Draw the Map

Once you have the data from range A2..B14 of Figure 2 in your worksheet, select that range, then choose *Tools • Map • New Map* from the menu bar. In a few moments, the mouse pointer changes to crosshairs with a spinning globe attached.

Click where you want the upper-left corner of the map to appear, and 1-2-3 produces the map shown in **FIGURE 3**. Note that

	A	B	C
1	United States	Basic Demographic Data by State	
2	AREANAME	Areaname	
3	STABBR	Federal Information Processing Standard (FIPS) state abbreviation	
4	POP90	1990 Total population	
5	MALEPOP90	1990 Total male population	
6	FEMPOP90	1990 Total female population	
7	POP93	1993 Total population	
8	MALEPOP93	1993 Total male population	

	A	B	C	D	E	F	G
1	AREANAME	STABBR	POP90	MALEPOP90	FEMPOP90	POP93	MALEPOP93
2	Alabama	AL	4040587	1936162	2104425	4169004	2000778
3	Arizona	AZ	3665228	1810691	1854537	3888730	1919842
4	Arkansas	AR	2350725	1133076	1217649	2410655	1162743
5	California	CA	29760021	14897627	14862394	31380053	15695741
6	Colorado	CO	3294394	1631295	1663099	3521490	1743192
7	Connecticut	CT	3287116	1592873	1694243	3276649	1588330
8	Delaware	DE	666168	322968	343200	699216	339078

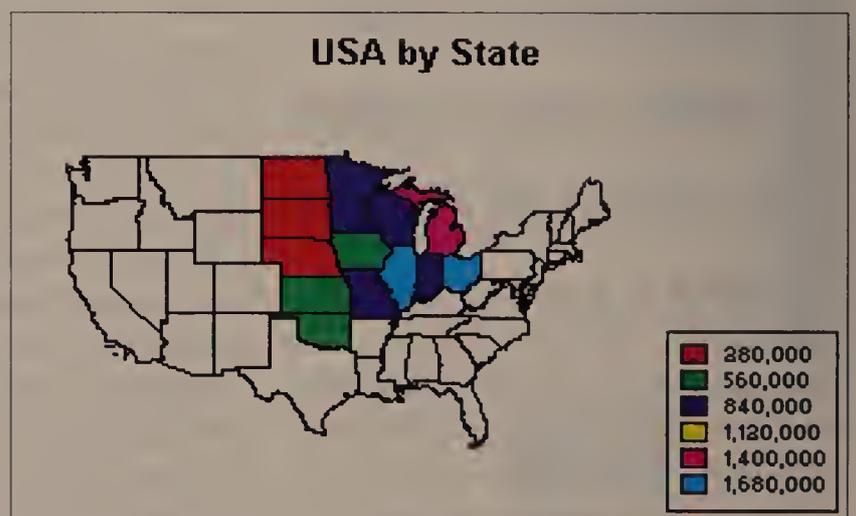
**FIGURE 1: WORKSHEETS WITH MAPPABLE DATA, like the lower sheet shown here, are included with release 5.0.**

of that country's prefectures (Kyoto, Osaka) or their codes (26, 27).

1-2-3 release 5.0 comes with maps for the United States (except Alaska and Hawaii, which have their own maps); the states of Australia; the provinces of Canada; the prefectures of Japan; the estados of Mexico; the counties of the Republic of China (Taiwan); the regions of the European Economic Community; and the countries of the world.

If your company sells its products in a wide territory, or gathers marketing or demographic statistics, you may already have data that's suitable for producing maps in 1-2-3. If you have your own data, enter it in this two-column format, or import the data from disk files and rearrange it to create a suitable table.

If you don't have any data of your own, you may find what you need in 1-2-3's



**FIGURE 3: 1-2-3 ASSIGNS SIX BIN VALUES (or groupings) by default, but they're usually not the most appropriate. Fortunately, you can change them to your liking.**

	A	B	C
16	Bins		
17	100,000	< 100,000	
18	500,000	100,000 - 500,000	
19	1,000,000	500,000 - 1 million	
20	1,600,000	1 million - 1.6 million	

**FIGURE 4: THE BIN VALUES IN COLUMN A are easier to understand when you add the legends in column B.**

the map appears in 1-2-3's default size. Unlike charts and other drawn objects, you can't size a map as you create it by dragging the mouse pointer. Instead, you resize (or move) the map after it's created.

Creating a basic map, as you can see, is easy. But this map needs some work. For one thing, the default title, *USA by State*, doesn't indicate what data we're mapping. For another, the map shows 48 states, not just those for which we have data.

The big problem, though, is the way the data is grouped—that is, with the bin values. Notice how North and South Dakota and Nebraska are all the same color—although Nebraska's 50-to-64 population is more than 2½ times North Dakota's. Should these states be in the same bin?

If you're not familiar with the concept of bins, consider the table of data in Figure 2. Although there are 13 values, we can regard each one as falling into one of a few size groups, as discussed in Step 3. Your maps can divide data into as many as six groups, or bins. 1-2-3 assigns six bins by default, but as you can see, it doesn't necessarily choose the most appropriate.

Let's fix these three problems. We'll change the map's title and zoom in on the Midwest, then tackle the bin-range issue.

With the map still selected, choose *Tools • Map • Ranges & Title*. In the resulting dialog box, replace the text in the Title box with **Population, Ages 50 to 64**; click *OK*.

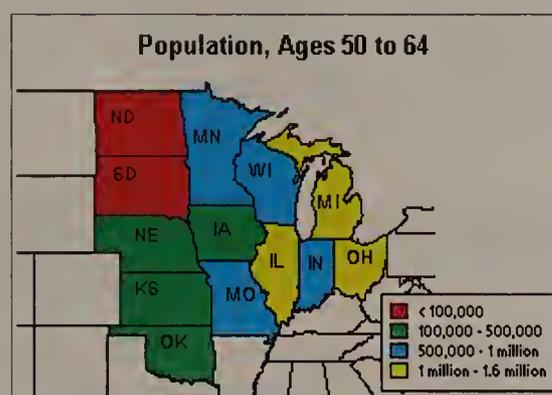
To focus on the Midwestern states, double-click the map to launch the Map Viewer application. There are a couple of ways to get a portion of a map to fill a window. Try this: Select *View • Zoom In*. This enlarges the map by 100 percent. (Another option is to hold down the <Ctrl> key and drag the mouse to form a rectangle around the area of interest.)

The tops of the northernmost states are cut off. To shift the image a bit, move the

mouse pointer to the map's center, near the middle of Iowa. (If you don't know which one Iowa is, watch the status bar at the bottom of the screen to see which state the pointer is over.) Once you've positioned the pointer, click the right mouse button to display a QuickMenu, then click *Recenter*. This should make all the tinted states visible. Select *File • Exit & Return to Lotus 1-2-3* to close the Map Viewer and update the map in the worksheet.

**Step 3: Adjust the Bins**

Now let's tackle the job of adjusting those bin values. You can use as many as six bins, and you can define them any way you want, but a sensible set of bins for our ex-



**FIGURE 5: AFTER A FEW ADJUSTMENTS to the bin values, the legend, the title, and the area of focus, your map will look like this.**

ample is 0 to 100,000, 100,000 to 500,000, 500,000 to 1 million, and 1 million to 1.6 million—four bins in all.

You can enter bin numbers into the Colors & Legend dialog box manually, but it's easier to enter them in a worksheet range, then link the map to that range.

Click cell A16, enter **Bins**, then, in range A17..A20, enter the values **100,000**, **500,000**, **1,000,000**, and **1,600,000**—the upper limit of each bin range. Click the map and select *Tools • Map • Colors & Legend*. Then click *Upper Limit* rather than *Exact Match* if necessary. Open the *Bin Values* list box and click *From Range*. Click the arrow button next to the leftmost of the Range boxes, temporarily hiding the dialog box. Drag the

mouse over range A17..A20. When the dialog box returns, click *OK*.

The map now has just four colors, and the states are grouped more sensibly. The legend could be more descriptive, though, since it simply lists colors and numbers with no indication of what they mean. Someone seeing the map for the first time might think the two red states are in a 100,000-to-500,000 group. By default, 1-2-3 uses the bin values as bin labels, but you can change the bin labels.

Click cell B17 in the worksheet, type an apostrophe, and enter **<100,000**. Then enter the labels **100,000 - 500,000**, **500,000 - 1 million**, and **1 million - 1.6 million** in range B18..B20. This section of your worksheet should now look like **FIGURE 4**.

Click the map, choose *Tools • Map • Colors & Legend*, select *From Range* in the *Legend Labels* drop-down list, click the arrow button next to the range box, drag the mouse over range B17..B20, and click *OK* when the dialog box returns. Your map should now resemble **FIGURE 5**, except for the state labels—our next step.

**Step 4: Add Text to the Map Itself**

OK, let's add two-letter state abbreviations to the center of each state to make our map easier to read. But be warned: The mapping feature is not terribly clever about adding text to a map (as opposed to a legend) in this way.

Unfortunately, you must manually feed location information into a map even for predefined regions such as states. And you must create a three-column table. The first column contains the labels for the map.

The second and third columns contain the latitudes and longitudes where you want the labels to appear.

If you don't happen to know the latitudes and longitudes at the centers of the Midwestern states, fear not. You can get them from the map. First, enter **Labels** in cell D16, and enter the state abbreviations shown in **FIGURE 6** in range A17..A29. Then select range

	D	E	F
16	Labels		
17	ND	47	-102.755
18	SD	45	-102.615
19	NE	42	-100.889
20	KS	39	-100.868
21	OK	36	-98.8407
22	MN	46	-96.0661
23	IA	42	-94.7166
24	MO	38	-93.4585
25	WI	45	-91.5712
26	IL	40.19144	-90.1033
27	MI	43	-86.1405
28	IN	40.09125	-87.0492
29	OH	40	-83.6726

**FIGURE 6: TO SUPERIMPOSE TEXT ON A MAP, create a three-column table with labels, latitudes, and longitudes.**

D17..D29, select *Style • Font & Attributes*, click 8 in the list of point sizes, and click *OK*. (The point size you assign to the labels in the worksheet controls the size of the labels in the map.)

Double-click the map to open the map viewer. Place the mouse pointer a bit left of the center of North Dakota (the most northwestern of the tinted states), click with the right mouse button, and select *Copy Coordinates* from the QuickMenu. Hold down the <Alt> key while pressing <Tab> to switch to 1-2-3 without closing the map viewer. Right-click cell E17 (next to ND) and select *Paste* from the QuickMenu. This adds the coordinates for the middle of North Dakota to the worksheet.

Press <Alt>-<Tab> again to switch back to the map viewer. (If you're right-handed, you may want to keep your left thumb and middle finger parked over the <Alt> and

<Tab> keys. That way, you can use your left hand to switch back and forth between the map and the worksheet, and use your right hand to copy and paste the coordinates with the mouse.)

Right-click just to the left of South Dakota's center and choose *Copy Coordinates*, switch back to 1-2-3, right-click cell E18, and choose *Paste*. Repeat this process until you've transferred coordinates from all 13 states to the worksheet. Remember to check the status bar as you click on states in the Map Viewer, to ensure that you're in the correct state when you select



**FIGURE 7: ADD FLAGS to mark cities or points of interest in the same way you add text.**

each coordinate. The listing of states in Figure 6 lets you work north to south and west to east. When you are finished, your worksheet should look like the one in Figure 6, although your exact numbers will vary depending on where you click on each state.

Click the map, then select *Tools • Map • Ranges & Title*. Click *Coordinates* in the *Assign range for list*, click the arrow button next to the Range box, drag the mouse over the table of states, longitudes, and latitudes (D17.. F29), and click *OK*. This will superimpose the state abbreviations on the map, roughly where they appear in Figure 5.

One could well ask why this process is necessary. If 1-2-3 knows where the states are to color them, why doesn't it know where they are to label them? It's a procedure that Lotus could improve.

You can also add text to a map to pinpoint cities or flag areas of interest. One of the symbols in the Wingdings font, which comes with Windows 3.1, is a flag; you get it by typing an uppercase O. Using this trick with the text-adding process you just went through, you can pinpoint any spot on the map with a flag, as in **FIGURE 7**.

#### On Your Own

Now that you've seen how simple it is to create and customize a map, try designing some maps of your own using the other data worksheets supplied with 1-2-3 or your own data.

If you'd like to make maps of other areas of the world, or maps of the United States divided into counties or other smaller units, contact Strategic Mapping Inc., Lotus's mapping partner (800/764-3228). This firm can give you information on ordering additional maps, as well as worksheet files of mappable data.

*Richard Cranford is a senior associate editor for PC World Lotus Edition and editor of The 1-2-3 for Windows Report.*

## EXTRACTING DATA FROM LOTUS'S MAP FILES

Each of the map-data worksheet files provided with release 5.0 lists the data in a range with the range name Database, making it possible to pull out a subset of the region names and the accompanying values from the appropriate column. Here's how to extract the data shown in Figure 2, the 50-to-64-year-old population of the Midwest:

First, open the file USA\_A.WK4 in 1-2-3's MAPDATA subdirectory. Then, select *File • New* to create a new, plain worksheet file. With the cell pointer in cell A1 of this new file, select *Tools • Database • New Query* to open 1-2-3's New Query Assistant. Press the <F3> key to open the Database Name dialog box. Click the arrow next to the In File list, and click USA\_A.WK4. The name DATABASE now appears in the Database Name list box, so click *OK*. You've now selected the table of map data in USA\_A as the database range.

Click the *Choose Fields* button. All 42 of the fields are initially selected, so click *Clear All*, then click *Add* to display a list of the fields. Click *AREANAME*, then scroll down the list until you find P50T06493

(shorthand for "Population aged 50 to 64 for 1993"). Hold the <Ctrl> key and click P50T06493, then click *OK*. You should now see AREANAME and P50T06493 in the list of selected fields. Click *OK*.

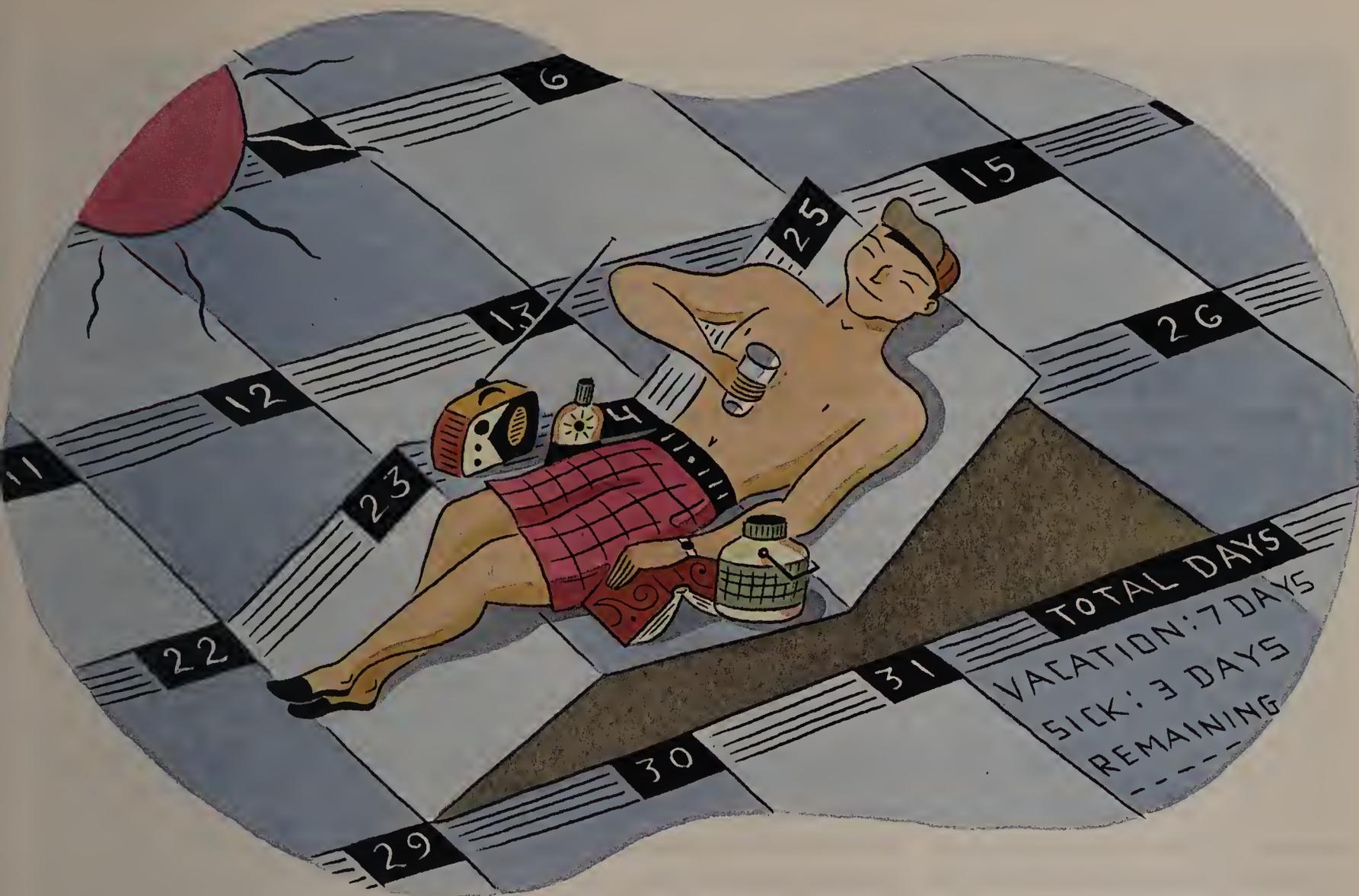
Now click *Set Criteria*. Open the Value list and select *Illinois*; this sets the initial criterion to 'AREANAME=Illinois'. Click the *Or* button; the Criteria box now contains 'AREANAME=Illinois or AREANAME=Illinois'. Click the *Value* box and select *Indiana*. Now the Criteria box contains 'AREANAME=Illinois or AREANAME=Indiana'. Continue in this manner, selecting the following state names:

Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, and Wisconsin.

Click *OK* to return to the New Query Assistant dialog box. The box labeled 'Select location for new query table' should contain the address A:A1 prefaced by the path and name of the current worksheet. Click *OK* to create the listing shown in Figure 2.

Finally, select range A2..B14. You're now ready to follow our steps for turning these figures into an easy-to-understand map.





## LET 1-2-3 TRACK

BY CATHERINE KENNY

# TIME OFF

Tracking vacation and sick leave is probably one of the least glamorous yet most necessary tasks facing managers today, but it's not always that easy to keep an accurate recording of time off. We offer a simple 1-2-3 model for releases 2.3 and higher that helps make this job as painless as possible.

Once you've entered your company's time-off policies, you simply enter the dates you or your employees are out of the office. A summary screen instantly gives you an up-to-the-minute listing of time off for vacation, sick days, and personal days, as well as additional days off for jury duty, bereavement or family leave, or an unpaid leave of absence. The model can also account for half-days.

**RECORD EMPLOYEE VACATION AND SICK LEAVE WITH THIS SIMPLE WORKSHEET.**

	A	B	C
1	Track Time Off		
2			
3			
4	Date	Name	Code
5	01/05/95	Maggie	HV
6	01/05/95	Patrick	S
7	01/06/95	Maggie	V
8	01/09/95	Maggie	V
9	03/02/95	Courtney	P
10	04/13/95	Julie	S
11	04/24/95	Samantha	JD
12	04/28/95	Patrick	S

**FIGURE 1: RECORD EACH EMPLOYEE'S time off in this section of the worksheet.**

### Creating the Worksheet

To build the worksheet, begin by entering the labels in range A1..C4 of **FIGURE 1**. In row 5 and the rows below, enter the date, employee name, and time-off code whenever an employee is out of the office. (For now, enter our sample records.) If you're using DOS release 3.x or higher or Windows release 4.x or 5.0, enter the dates in column A exactly as they appear. If you're working in DOS release 2.x, you must use the @DATE function to enter the dates. In all DOS releases, use the *Range•Format•Date•4* command to assign a date format.

Once you've entered the data, choose *Range•Name* (*/Range•Name•Create* in the DOS releases) and assign the name **timeoff** to range A4..C12. Remember that as you add records to this section of the worksheet, you must expand the Timeoff range to include them.

The next step is to create the table shown in **FIGURE 2**. This table lists the time-off codes and each employee name.

Enter the names of your employees, one name per column, beginning in cell V8. Then enter the time-off codes as shown, beginning in cell U9.

This model uses the following codes: *V* = vacation, *S* = sick day, *P* = personal day, *L* = leave of absence, *C* = compensation time, *JD* = jury duty, *B* = bereavement leave, *HV* = half a day of vacation, and *HS* = half a sick day. If your company offers

additional time off, enter the appropriate codes here. For example, enter *FH* for floating holiday in cell U18. Note that the codes you enter in the database table in **Figure 1** must also be listed in this table.

To generate the time off taken for each employee, we entered an @DCOUNT formula, then issued the What-if command (Data•Table in 1-2-3 for DOS). Enter the labels shown in range U1..V1, and enter @DCOUNT(timeoff,2,U1..V2) in cell U8.

In 1-2-3 for Windows, choose *Range•Analyze•What-if Table*, select 2 in the Number of Variables edit box, and indicate range U8..Z17 as the table range, cell U2 as Input cell 1, V2 as Input cell 2, and click OK. In the DOS releases, choose */Data•Table•2*, and indicate the same range and input cells as above.

To add the borders to the table, highlight range U8..Z17 and choose *Style•Lines & Color*. Select *All* in the Borders section, and click OK. In DOS, choose *:Format•Lines•All* and specify the same range.

The third step in building the worksheet is to create the time-off policy table in **FIGURE 3**. Note that our sample vacation policy is graduated—that is, the number of vacation days is determined by length of service. The values in range Q2..Q6 are lengths of service (in days), and the values in range R2..R6 are the corresponding vacation amounts. In our sample, once you've been with the company for six months (182.5 days) you receive 3 vacation days. After 10 years (3650 days) you get 20 vacation days.

	T	U	U	W	X	Y	Z
1	Code	Name					
2							
3							
4							
5							
6							
7							
8		8	Courtney	Julie	Maggie	Patrick	Samantha
9	V	0	0	2	0	0	0
10	S	0	1	0	2	0	0
11	P	1	0	0	0	0	0
12	L	0	0	0	0	0	0
13	C	0	0	0	0	0	0
14	JD	0	0	0	0	1	0
15	B	0	0	0	0	0	0
16	HV	0	0	1	0	0	0
17	HS	0	0	0	0	0	0
18							

**FIGURE 2: THE CODE SUMMARY TABLE calculates the number of days each employee was out of the office, by type of leave.**

To create the table, enter the labels shown in column P, then enter the values that reflect your company's policies in columns Q and R. In the Windows releases, choose *Range•Name* and assign the name **vacation** to range Q2..R6. In 1-2-3 for DOS, use the */Range•Name•Create* command. Then assign the labels in P8..P9 as names for the adjacent cells in column Q.

The final step is to create the summary table shown in **FIGURE 4**. To do so, enter the labels (substituting the names of your employees) in ranges H1..N4 and H6..I20.

CELL	FORMULA
J7	@IF(@NOW-start<182,5,0,@VLOOKUP(@NOW-start,\$vacation,1))
J8	+V9+(V16*0.5)
J9	+carry+J7-J8
Copy range J7..J9 to range K7..N7.	
J10	@IF(@DATE(@YEAR(@NOW),1,1)>start,\$sick,(@NOW-start)*\$sick/365)
J11	+V10+(V17*0.5)
J12	+J10-J11
Copy range J10..J12 to range K10..N10.	
J13	@IF(@DATE(@YEAR(@NOW),1,1)>start,\$personal,(@NOW-start)*\$personal/365)
J14	+V11
J15	+J13-J14
Copy range J13..J15 to range K13..N13.	
J17	+V12
Copy cell J17 to range K17..N17. Copy range J17..N17 to range J18..J20.	

Enter the label that appears in row 1 in cell H1. Be sure to enter the employee names in row 3 in the same order as they appear in **Figure 2**. Enter each employee's start date in row 4. If you're working in release 2.x, you must use the @DATE function to enter the dates. In all DOS releases, assign a date format with the *Range•Format* command. In row 6, enter any vacation days that an employee carried over from the previous year. Use the *Range•Name* command (*/Range•Name•Create* in 1-2-3 for DOS) to assign the name **start** to cell J4 and the name **carry** to cell J6.

Enter the formulas from the box above.

To center the labels in range J3..N3, highlight that range and choose *Style•*

	P	Q	R
1	<b>Company Policies</b>		
2	Vacation	182.5	3
3		365	5
4		730	10
5		1825	15
6		3650	20
7			
8	Sick	6	
9	Personal	2	

**FIGURE 3: ENTER YOUR COMPANY TIME-OFF POLICIES in this table. The worksheet uses these values to calculate accrued vacation, sick days, and personal days.**

*Alignment.* In the Horizontal section, select *Center*, and click *OK*. If you're using 1-2-3 for DOS instead, highlight range J3..N3 and choose */Range•Label•Center*.

To add the three lines shown in Figure 4 to your worksheet, highlight range I9..N9, hold down **<Ctrl>**, and highlight ranges I12..N12 and I15..N15. Choose *Style•*

*Lines & Color*, select *Bottom* in the Border section, and click *OK*. In 1-2-3 for DOS, choose *:Format•Lines•Bottom* and indicate the same ranges.

Use the *Style•Column Width* command (*/Worksheet•Column•Set-Width* in 1-2-3 for DOS) to set the width of column H to 15. To center the label in cell H1 across columns H through N, highlight range H1..N1 and choose *Style•Alignment*. In the Horizontal section, select *Center* and *Across Columns*, and click *OK*. In 1-2-3 for DOS, highlight range H1..N1 and choose *:Text•Align•Center*. Next, use the *Style•Number Format* command (*/Range•Format* in the DOS releases) to assign the Fixed 1 format to range J6..N20.

Finally, use the *File•Save* command to save the worksheet.

### Using the Worksheet

To track time off, enter the date, employee name, and time-off code in the input section of the worksheet, as shown in Figure 1. For example, to add a new record to our sample database, you would enter the employee data in row 13. Remember, after you enter a new record, you'll have to use the *Range•Name (/Range•Name•Create* in 1-2-3 for DOS) command so the range

name *Timeoff* includes the new records in the database.

To update the summary information table in Figure 4, first make sure automatic recalculation is enabled. To do so, choose *Tools•User Setup*, click *Recalculation*, select *Automatic* in the Recalculation section, and click *OK* twice. In 1-2-3 for DOS, choose */Worksheet•Global•Recalc•Automatic*. Then, to update the summary table, press **<F8>** (the Table key).

Don't be alarmed if the data shown in the summary section of our sample worksheet doesn't match yours exactly. The formulas that return the Accrued values are

You must reset the range named *Vacation* to accommodate any change in vacation policy. In this case reassign the name *Vacation* from range Q2..R6 to cell Q2. Then enter the following formula in cell J7, and copy it to range K7..N7:

```
@IF(@DATE(@YEAR(@NOW),1,1)>start,
(@NOW-@DATE(@YEAR(@NOW),1,1))*0.0274,
(@NOW-start)*0.0274)
```

If your company offers 15 vacation days instead of 10, enter **15** in cell Q2, and substitute **0.041** (15/365) for each 0.0274 in the formula in range J7..N7.

For some companies, vacation days accrue at the rate of one day per month until the maximum number of vacation days is met. If that is the case in your company, enter the total number of vacation days per

**AFTER YOU'VE ENTERED THE TIME OFF FOR EACH EMPLOYEE, PRESS THE <F8> KEY TO PRODUCE AN UP-TO-THE-MINUTE REPORT.**

calculated using the current date (via the *@NOW* function). This function ensures that the information in the table is updated on a daily basis.

### Customizing the Worksheet

If your company does not use a graduated vacation policy, but instead offers a fixed number of vacation days per calendar year, enter that value in cell Q2. For example, if all your employees get 10 vacation days per calendar year, enter **10** in cell Q2. Note:

year in the cell named *Vacation*—for example, **10**—and enter the following formula in J7: *@MIN(@MONTH(@NOW)-1,\$vacation)*. Copy this formula from cell J7 to range K7..N7.

Finally, replace the values in range Q8..Q9 with your own company policies for sick and personal days.

*Catherine Kenny is an associate editor for PC World Lotus Edition. The model from this article is available via PC World Online on America Online and on CompuServe.*

	H	I	J	K	L	M	N
1	<b>Time Off Summary</b>						
2							
3			Courtney	Julie	Maggie	Patrick	Samantha
4	Start Date		07/01/86	03/12/90	08/09/88	08/25/91	12/27/93
5							
6	Vacation	Carryover	5.5	3.0			
7		Accrued	15	10	15	10	3
8		Used	0.0	0.0	2.5	0.0	0.0
9		Available	20.5	13.0	12.5	10.0	3.0
10	Sick	Accrued	6.0	6.0	6.0	6.0	6.0
11		Used	0.0	1.0	0.0	2.0	0.0
12		Available	6.0	5.0	6.0	4.0	6.0
13	Personal	Accrued	2.0	2.0	2.0	2.0	2.0
14		Used	1.0	0.0	0.0	0.0	0.0
15		Available	1.0	2.0	2.0	2.0	2.0
16							
17	Leave	Used	0.0	0.0	0.0	0.0	0.0
18	Comp Time	Used	0.0	0.0	0.0	0.0	0.0
19	Jury Duty	Used	0.0	0.0	0.0	0.0	1.0
20	Bereavement	Used	0.0	0.0	0.0	0.0	0.0

**FIGURE 4: THE SUMMARY shows each employee's accrued, used, and available time off.**

# Protecting Range Names



**A**s we saw last month, range names are invaluable for organizing and manipulating your worksheet data, but they're all too easily corrupted by an accidental deletion, an inadvertent insertion, or a misguided move. And a bad range name that's included in a formula or macro, or that spans several sheets, can wreak havoc in your worksheets. This month we'll discuss some of these dangers and explore some techniques to ensure that your named ranges always work the way you expect.

If you built and saved the worksheet we used in last month's column, retrieve it now, assign the name **first\_qtr** to

range A3..E6, and resave the file. If you haven't created the model yet, follow the instructions below.

Begin by entering the labels shown in **FIGURE 1**. Enter the values in range B4..E6, and assign the Currency 0 format to ranges B4..E6 and B9..B12. Widen the columns as needed.

Assign the name **abacus** to range B4..B6, **slide\_rule** to range C4..C6, **calculator** to range D4..D6, **computer** to range E4..E6, and **first\_qtr** to range A3..E6.

To do this in releases 4.x and 5.0 for Windows, select *Range•Name*, type **abacus** in the Name text box, specify range **B4..B6** in the Range box, and click the *Add* button. Assign the other range names in the same manner. Click *OK* instead of *Add* after you've assigned the last range name. In the DOS releases, select */Range•Name•Create*, type in the name **abacus**, and use the mouse or the arrow keys to specify range B4..B6. Repeat these steps to assign the other range names.

Next, enter the following formulas:

CELL	FORMULA
B9	@SUM(abacus)
B10	@AVG(abacus)
B11	@MAX(abacus)
B12	@MIN(abacus)

Finally, copy range B9..B12 to range C9..E9 and save the worksheet.

### Watch the Outside Corners

Although a named range carries a descriptive moniker, it is defined by two key cells called the range's *anchors*: the cell in the upper left corner and the cell in the lower right corner.

One of the most common ways to corrupt a named range is to move data onto an anchor cell. Let's see what happens when you

do this. Using the *Edit•Cut* and *Edit•Paste* commands in the Windows releases, or */Move* in the DOS releases, move cell A4 onto cell B4 (one of the anchor cells of the range **Abacus**).

Notice that all the formulas that refer to **Abacus** return **ERR**, because the range name is now undefined. (If you had deleted the range name altogether, the reference would revert to the range address B4..B6.)

To repair the damaged formula in the Windows releases and in release 2.x for DOS, first reassign the name to the corrupted range, then edit the formulas so they refer to that range name. In releases 3.x and 4.0 for DOS, just reassign the name; 1-2-3 will automatically update the formulas. (Before repairing the formula in our example, restore the original contents of cells A4 and B4.)

You can also use the Undo feature to fix damaged formulas, but only if you have Undo enabled and you realize what you've done before you make any further changes to the worksheet.

In this example, you can restore the worksheet to its original state by simply loading it again without saving any changes to the damaged version.

Deleting a row or column that contains an anchor cell also destroys a named range. Before you delete a column or row, check the locations of named ranges. In the Windows releases, click the *Navigator* button, then select each name in the list to find its location. In the DOS releases, select *Range•Name•Table* to display a list of range names and their locations.

### Anchors Away

Accidentally moving one of the anchor cells and thereby altering the dimensions of the named range doesn't invalidate the name as it does in the above examples, but it creates problems nonetheless. And it's easy to do. Suppose you realize that the **abacus** and **slide rule** sales figures for March are

	A	B	C	D	E
1	<b>Mathematics-R-Us</b>				
2					
3		<b>Abacus</b>	<b>Slide Rule</b>	<b>Calculator</b>	<b>Computer</b>
4	Jan	\$12	\$25	\$250	\$10,000
5	Feb	\$8	\$15	\$300	\$19,000
6	Mar	\$4	\$10	\$450	\$22,000
7					
8					
9	Total Sales	\$24	\$50	\$1,000	\$51,000
10	Average Sales	\$8	\$17	\$333	\$17,000
11	Maximum Sales	\$12	\$25	\$450	\$22,000
12	Minimum Sales	\$4	\$10	\$250	\$10,000

**FIGURE 1: CREATE THIS WORKSHEET to learn how to avoid corrupting named ranges, and how to repair damage once it's been done.**

transposed. You begin to correct this by moving the contents of cell B6 to cell C6. Without meaning to, you've expanded the named range Abacus to include range C4..C6.

In the Windows releases, click the *Navigator* button just under the menu bar and select *Abacus* from the drop-down list. In the DOS versions, select */Range•Name•Create* and



sheet F, Sales becomes A:A1..E:D10. If you delete column D in sheet E, Sales becomes A:A1..E:C10.

### Protecting Your Good Range Names

1-2-3 releases 4.x and 5.0 for Windows offer two safeguards against corrupting or redefining named ranges: the Delete Selection check box in the Delete dialog box, and the Insert Selection check box in the Insert dialog box. These options tell 1-2-3 to limit the area in which it inserts or deletes columns or rows.

In **FIGURE 2**, range D3..E9 has been assigned the name Test\_data. Suppose you want to delete row 3 in columns A and B but you don't want to corrupt Test\_data by deleting cells D3 and E3.

Highlight range A3..B3 and select *Edit•Delete*. In the Delete dialog box, select the *Delete Selection* check box and click *OK*. 1-2-3 deletes the data in cells A3..B3 (and moves any data below row 3 in columns A and B up one row) without disturbing the data to the right.

### Planning for Growth

Of course, protecting your named ranges doesn't mean you can't expand and contract those ranges as your worksheet changes. Named ranges wouldn't be very useful if they were inelastic.

You can insert or delete columns or rows between the anchor cells without any damage to the named range. When you do this, the range definition expands or contracts to match the changing dimensions of the data.

For example, insert a row between Feb and Mar in Figure 1 by placing the cell pointer on any cell in row 6. In 1-2-3 for Windows, select *Edit•Insert*, select the *Row* radio button, and click *OK*. In 1-2-3 for DOS, select */Work-*

*sheet•Insert•Row* and press **<Enter>**. The range addresses for Abacus, Slide\_rule, Calculator, Computer, and First\_qtr automatically expand by one row, and the range names adjust to include row 7.

If you know you'll be inserting rows or columns to add data to your model, include an extra blank column or row when defining the range so it will be easier to add information later. Let's change the dimensions of Abacus to include row 7.

In the Windows releases, select *Range•Name*, select *Abacus* in the Existing Named Ranges box, specify range B4..B7, and click *OK*.

In the DOS releases, select */Range•Name•Create*, select *Abacus*, press the down arrow key once to expand the range by one row, and press **<Enter>**.

## You can insert or delete columns or rows between the anchor cells without damaging a named range.

select *Abacus* from the menu. In both cases 1-2-3 highlights range B4..C6.

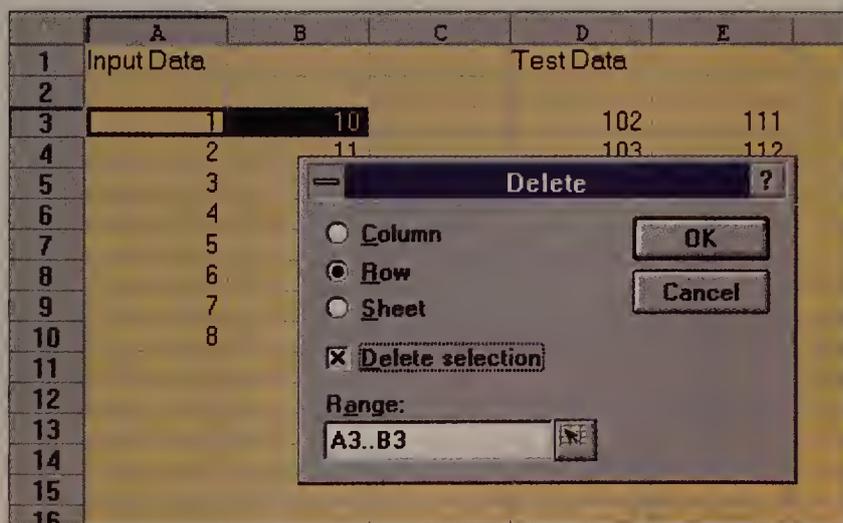
The formulas in range B9..B12 that referenced the abacus sales data now include the sales data for slide rules as well. We've also destroyed the range Slide\_rule by moving data onto one of its anchor cells, forcing the formulas in range C9..C12 to evaluate to ERR.

To remedy this situation, retrieve the original version of the worksheet.

### Manipulating 3-D Ranges

Nearly all the rules that apply to named ranges in 2-D worksheets apply in 3-D as well. The anchor cells in a three-dimensional named range reside in the upper-left corner of the first sheet and the lower-right corner of the last sheet. As in single-sheet named ranges, you will corrupt a multisheet named range if you move the contents of one cell onto an anchor cell. Moving a corner cell of a multisheet named range alters its dimensions, and inserting and deleting sheets in between the first and last sheets causes the named range to expand or contract.

However, there's one key difference between single-sheet and multisheet named ranges: In a multisheet file, deleting a column, row, or sheet that contains an anchor cell doesn't corrupt the range name. Instead, the range is automatically redefined. Say you've defined the range Sales. If you delete



**FIGURE 2: THE DELETE SELECTION OPTION in the 1-2-3 for Windows Delete dialog box limits your deletion to the highlighted area.**

Now, suppose you wanted to enter data for April. In the Windows releases, position the pointer in row 7 and select *Edit•Insert*, make sure the *Row* button is selected, and click *OK*. In the DOS releases, select */Worksheet•Insert•Row* and press **<Enter>**.

Now enter the label **Apr** in cell A7 and the value **20** in cell B7. Notice how the results of the formulas in range B9..B12 increase to include the new amount in cell B7.

**By Cynthia G. Fitzgerald**

*Cynthia G. Fitzgerald is a freelance writer in Natick, Massachusetts.*

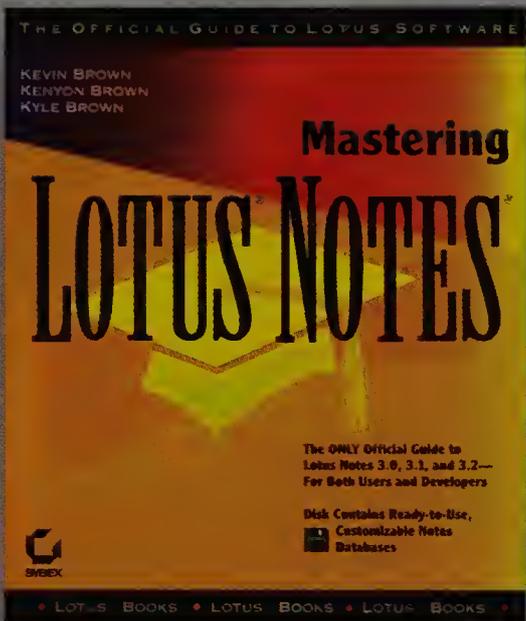
LOTUS BOOKS®

# The Official Guides to LOTUS Software

ENDORSED BY LOTUS PUBLISHING AND LOTUS DEVELOPMENT CORPORATION

## An Insider's Expertise, Courtesy of the Software's Creator

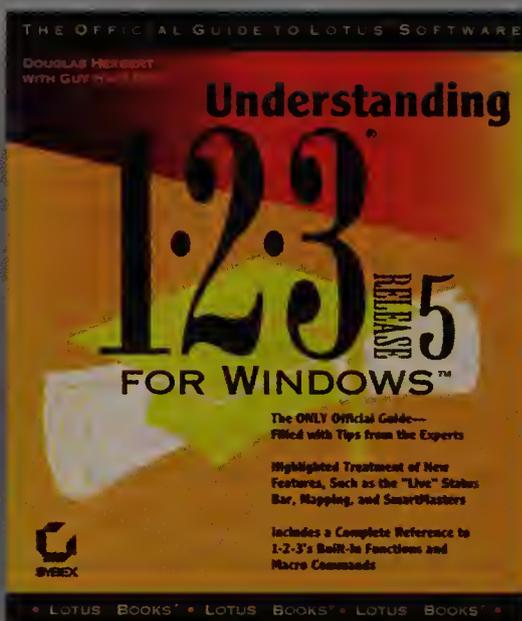
Now Bestsellers, Thanks to Lotus Software Users Like You.



Mastering Lotus Notes

\$34.99

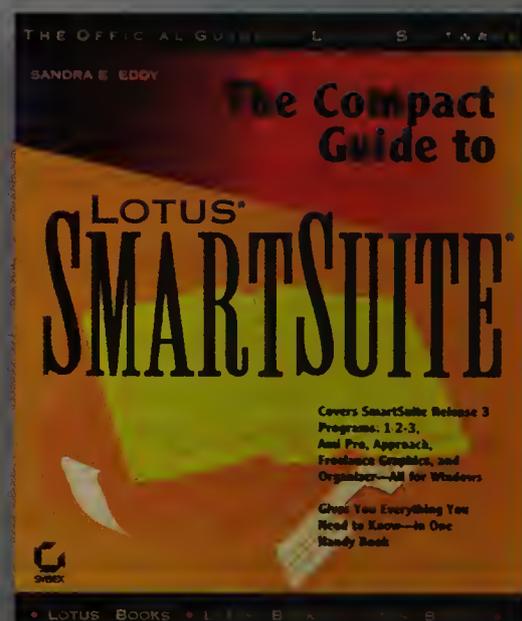
ISBN 0-7821-1302-8



Understanding 1-2-3 Release 5 for Windows

\$29.99

ISBN 0-7821-1579-9



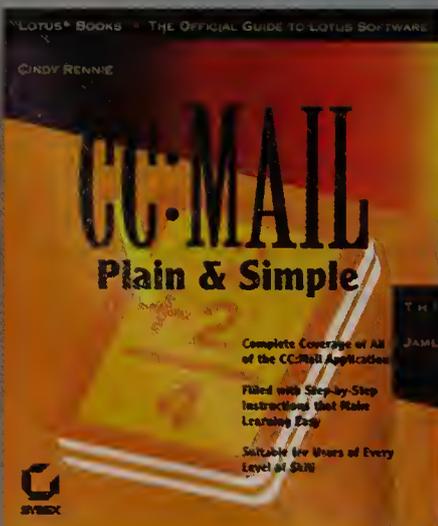
The Compact Guide to Lotus SmartSuite

\$29.99

ISBN 0-7821-1484-9

## Official Guidance and Answers for Lotus Applications

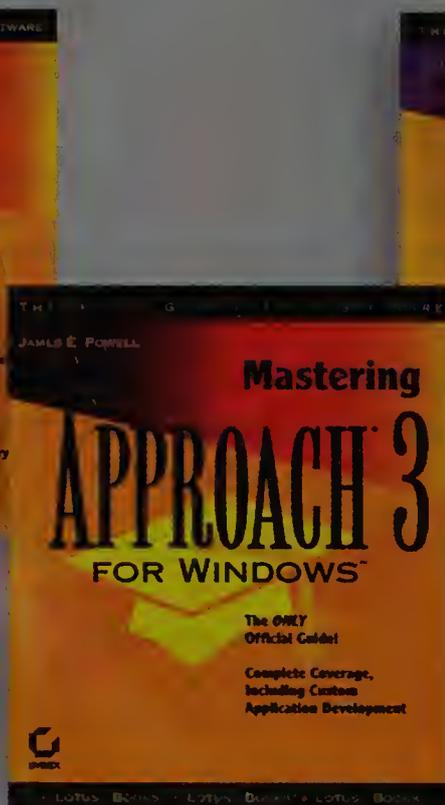
Look for *Mastering Ami Pro, Special Edition*, Coming in June.



cc:Mail Plain & Simple

\$19.99

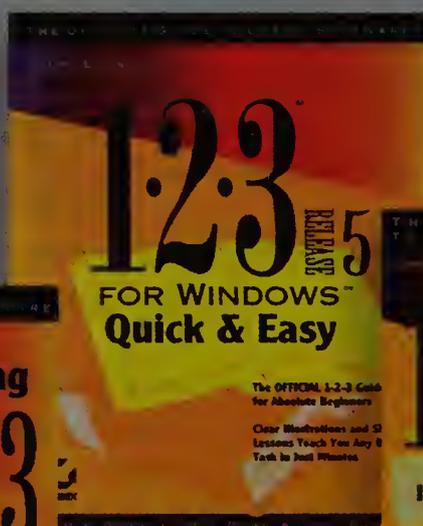
ISBN 0-7821-1553-5



Mastering Approach 3 for Windows

\$29.99

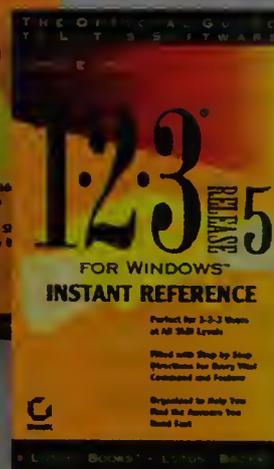
ISBN 0-7821-1306-0



1-2-3 Release 5 for Windows Quick and Easy

\$16.99

ISBN 0-7821-1584-5



1-2-3 Release 5 for Windows Instant Reference

\$9.99

ISBN 0-7821-1583-7



LOTUS BOOKS® are available at major bookstores everywhere. To order now call 800•227•2346

Lotus, Lotus Books, SmartSuite, 1-2-3, Lotus Notes, and Approach are all registered trademarks of Lotus Development Corporation.

cc: Mail is a trademark of cc:Mail, Inc., a wholly-owned subsidiary of Lotus Development Corporation. SYBEX is a trademark sublicensee of Lotus Publishing Corporation, a subsidiary of PC World Communications, Inc.

Circle 97 on reader service card



# Seven Ways to Fight Worksheet Mistakes

**W**hether you're modeling crucial business problems or tracking your personal finances, there's no room for mistakes. Fortunately, 1-2-3 catches some errors on its own—formula syntax errors and undefined range names, for example. But it can't recognize faulty logic or prevent you from overwriting data.

Last May, in "Create Safeguards to Assure Accuracy," we identified ten ways to eliminate common mistakes from your worksheets. This month, we offer seven more error-proofing techniques, including a few advanced tricks for keeping worksheets trouble-free.

**1 Pointing is okay.** When you type a formula, it's easy to use the wrong cell address, and often you won't catch the mistake until much later. To prevent this, enter cell references in your formulas by using the mouse or the cell pointer to point to the actual cells and ranges.

If you're creating a new formula, begin by typing a plus sign (+), minus sign (-), open parenthesis ((), at sign (@), pound sign (#), dollar sign (\$), or decimal point. In the Windows releases, you can also type an equal sign (=). If you're editing an existing formula, start by pressing +, -, slash (/), asterisk (\*), or caret (^), and then pressing the up or down cursor key. (If you press the right or left cursor key, 1-2-3 thinks you want to move within the formula, not to another cell or range.)

You can then point to a cell by clicking it or using the cursor keys to move the pointer to it. To point to a range, drag the mouse across the range. You can also use the cursor keys to move the pointer to the first cell in the range; then press the period key and use the cursor keys to finish highlighting the range. In either case, the pointing ac-

tion ends when you enter the formula or type an operator (such as a parenthesis or a plus sign) to continue the formula. Use this pointing technique as many times as needed to create all cell and range references within a formula.

1-2-3 for Windows also lets you place an existing range name in a formula by pointing: Click the Navigator button in the edit line, and select a range name from the resulting list. 1-2-3 places the range name in the formula; it then allows you to continue with the formula or to enter it in the worksheet.

**2 Break up long formulas.** Spreadsheet enthusiasts may enjoy the challenge of creating a complex formula that includes several nested @functions—especially one that uses nested @IF statements to test for several different conditions—but such formulas are a common source of errors, because it can be difficult to test all the possible outcomes.

If your worksheet returns incorrect answers, look for lengthy nested formulas. When you find one, you can either examine each possible outcome and its impact on the rest of the worksheet, or break it into smaller chunks

**Hiding 1-2-3 columns or sheets is a handy way to prevent accidental changes—not a sign of paranoia.**

that you can test individually. The latter option is preferable, because formulas that contain several layers of nesting can be nearly impossible to debug. In addition, shorter formulas are easier for others to decipher.

**3 Hide things.** Hiding 1-2-3 columns or sheets is not a sign of paranoia—it's a handy way to prevent some accidental changes. Once you've entered constants or constructed formulas that you don't intend to change, there's no need to

leave them visible. Also, hiding unneeded columns can help tighten up a large worksheet, putting more of your active data entry cells within immediate reach.

In the Windows releases, select *Style*•*Hide*, and in the Hide dialog box (shown in **FIGURE 1**), select the *Column* or *Sheet* button. In releases 3.x and 4.0 for DOS, hide columns by selecting */Worksheet*•*Column*•*Hide* and sheets by choosing */Worksheet*•*Hide*•*Enable*. Once you've hidden a column or sheet, the cell pointer skips right over the



**FIGURE 1: PROTECT COLUMNS AND SHEETS** from accidental changes by hiding them. You can hide worksheet areas in both Windows and DOS releases.

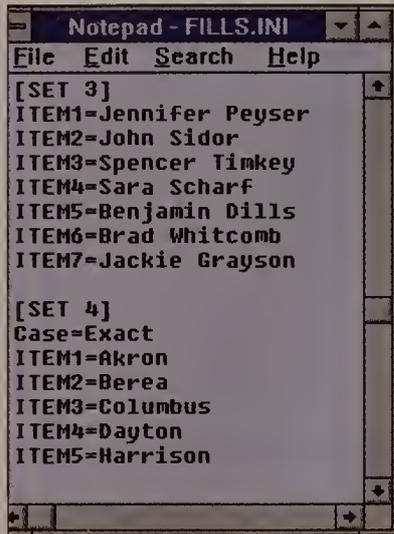
area in question, so you and other users won't even miss it. (In releases 4.x and 5.0 for Windows, you can make hidden sheets especially hard to detect by changing the worksheet tabs from the default alphabetical sequence.)

**4 Check your defaults.** The hidden-column trick has an Achilles' heel in release 4.x for Windows: Unless you seal or protect the worksheet (a technique described in last May's column), you may accidentally overwrite information in the hidden columns—or anywhere else, for that matter—by dragging and dropping data on top of other data.

Release 5.0 for Windows posts a warning dialog box during a drag-and-drop operation, asking you to approve the task before it overwrites data. If your copy of release 5.0 is configured to work without this warning, consider changing it back: Choose *Tools*•*User Setup*, then select the *Confirm drag-*

*and-drop* check box. You'll see the warning dialog box whenever you attempt to drag and drop data over existing entries. Although this is an extra step, the added safety is worth the inconvenience.

Take note of some other useful settings in the User Setup dialog box while you're there. The *Beep on error* and *Undo* check boxes should both be selected. And make sure that the 'Save files every' check box is turned off. If you introduce mistakes into a file, this autosave feature may overwrite the error-free version before you realize what has happened.



**FIGURE 2: FILL BY EXAMPLE in the Windows releases works with standard series or series that you create.**

by Example feature in releases 4.x and 5.0 for Windows: Enter the first item in a series, and 1-2-3 fills in the rest. 1-2-3 automatically recognizes standard series such as days of the week, months,

1-2-3 still prompts you before closing a file that you've made revisions to, so the autosave feature is a bit superfluous—unless your computer has a tendency to crash in the middle of 1-2-3 sessions.

**5 Customize your fills.**

If you enter the same series of items in several worksheets, cut down on typographical errors by taking advantage of the Fill

and numbers, but you can get it to recognize your own custom series as well.

To create a custom series, switch to a text editor, such as the Windows Notepad (in the Accessories group), and open the FILL.S.INI file (in the 1-2-3 for Windows program directory). Go to the bottom of the file, press <Enter> to add a blank line, and type in your series as shown in **FIGURE 2**. Make sure you end each line by pressing <Enter>. Resave the FILL.S.INI file.

In the worksheet, type the first item in the series, select the range to fill, and select *Range • Fill by Example*.

In release 5.0, you can use drag-and-fill to complete the series. Just type the first item, move the mouse pointer to the bottom of the cell until you see four black triangles, and then drag the mouse over the range you want to fill.

Note that 1-2-3 treats the series listed in the FILL.S.INI file as labels rather

# COMPUTERS FOR DEMOCRACY

EAST  
WEST



EDUCATION DEVELOPMENT FOUNDATION

## MAKE A DIFFERENCE TO EMERGING DEMOCRACIES.

Your donated overstock, excess inventory, and outdated computer equipment are recycled by the East West Foundation to institutions that support democracy, where the need is great and where there is no budget to buy.

For information about donating computer equipment and cash:  
East West  
Education Development Foundation  
49 Temple Place, Boston, MA 02111  
(617) 542-1234; fax (617) 542-3333.

than values. While it's possible to use @VALUE to convert the labels into values, that's a convoluted process. To enter a custom series of numbers, it's easier to copy it from an existing worksheet onto the Windows Clipboard, and then paste it where you want it.

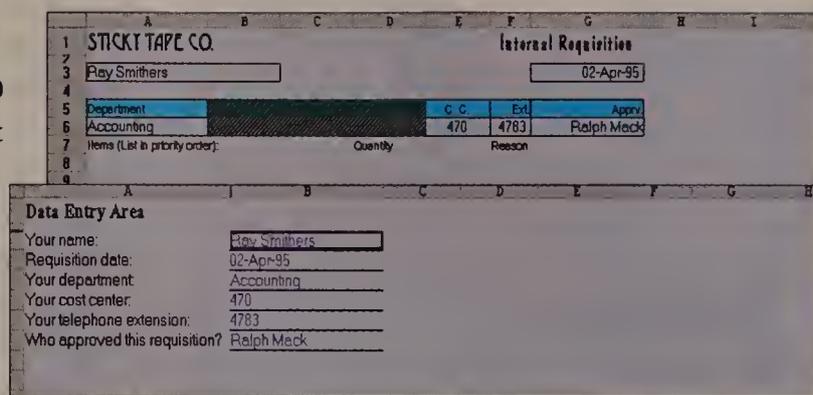
**6 Make forms easy to fill out.** 1-2-3's extensive Wysiwyg capabilities let you recreate nearly any form in a worksheet. But the fancier the form, the more likely users are to miss crucial entries or to enter data in the wrong places.

One alternative is to put data entry cells in a different part of the worksheet (or in another sheet), accompanied by labels that prompt the user for input, as in **FIGURE 3**. In the part of the sheet that comprises the printed form, use simple formulas, such as +A:B3, to refer to the inputs. In Figure 3, the form on sheet B is updated as you

enter values in range B3..B8 of sheet A. After you finish filling in the data entry range, examine the completed form in sheet B before printing.

**7 Use Version Manager to spot changes.** If you don't want to protect or hide a range that contains important information, you can quickly tell whether the data has been changed by using Version Manager. Begin by naming the range that you want to check, and create a version for this range—for example, Final. Then use the @VERSIONCURRENT function to check whether the range is just the way you left it. For example, @VERSIONCURRENT(Constants), where Constants is the range name, returns 'Final' if the

cells in the range have not changed since you created the version. If they have changed, this formula returns



**FIGURE 3: AVOID NAVIGATING A COMPLEX FORM** by doing data entry in another sheet. As data is entered in sheet A (bottom), cell referencing formulas in sheet B (top) update the form automatically.

'ERR', alerting you to the potential for trouble within the worksheet.

—By Kelly R. Conatser

*Kelly R. Conatser is a frequent contributor to PC World Lotus Edition.* ■

# LEXTYLE PUBLISHER

## PUBLISH YOUR DOCUMENTATION IN LOTUS NOTES!

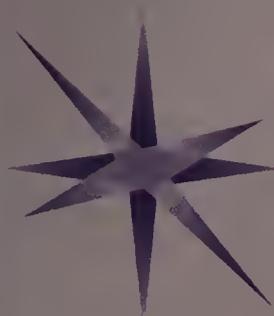
Lextyle Publisher, an intelligent hypertext publisher for Lotus Notes, gives you the ability to publish electronic documentation in almost any format as Notes hypertext databases that can leverage *all* of the features of Notes. Now it is possible to quickly and easily turn passive, paper-based documentation into fully interactive, workgroup-enabled publications that can be transparently distributed and maintained on your existing Notes network.

### FEATURES

- + Removes cumbersome paper-based formatting
- + Reproduces complex tables
- + Creates response document hierarchies
- + Localizes updates to minimize replication
- + Creates hyperlinks and pop-up boxes
- + Publishes from RTF for greatest flexibility

### WHAT BECOMES POSSIBLE

- + Publish documents as discussion databases
- + Implement collaborative authoring
- + Maintain publications from multiple sites
- + Integrate publications with workflow and E-mail
- + Implement security-based views of publication
- + Use publications as context-sensitive help



PANTANO  
GENESIS

**CALL US TODAY TO RECEIVE AN INFO DISKETTE! + 1-800-PAN-GEN1 +**

# Show File Name in Footer



## Include File Name in Footer

**Q** In my workgroup, we include a worksheet's path and file name in its footer. But after placing the name in the footer, we sometimes inadvertently misspell the file name when saving the worksheet, making the name in the footer incorrect. Is there a macro that can accomplish both tasks at once so that we can avoid any inconsistency?

*Linda Maddox, Costa Mesa, California*

**A** You don't need a macro. In releases 4.x and 5.0 for Windows, you can tell 1-2-3 to print the current file name in the footer automatically. Select *File • Page Setup* and click one of the three footer boxes, depending on how you want the footer to appear—left justi-

fied, centered, or right justified. Then click the *File name* SmartIcon—the second icon from the right in the Insert section of the dialog box shown below. A caret appears in the footer box.

If you're working in 1-2-3 for DOS, you can create a formula that uses the @CELL function to return the file name. Then, in the footer, reference the cell that contains this formula.

For example, enter the formula @CELL("filename",A2) in cell A1 of your worksheet. (You can enter this formula in any blank cell. In this example, use cell A2 as the second argument to avoid a circular reference—that is, an error that results when a formula refers to the cell it's located in.) The formula returns the complete path and file name of the current worksheet.

Now let's link this formula cell to the footer. Select */Print • Printer • Options • Footer* and enter \A1. If you're using Wysiwyg, select *:Print • Layout • Titles • Footer*, then enter \A1.

Remember not to include the cell containing the @CELL formula in your print range. Also, make sure you press <F9> (the calculation key) to update the formula before you print the file.

## How Many Digits?

**Q** Is there a formula that returns the number of digits to the left of the decimal point of a value entered in my worksheet?

*Jade Dornfeld, Venice, California*

	A	B	C
1	Value	Digits to the left	
2	0.1	0	
3	1.23	1	
4	12.34	2	
5	123.45	3	
6	1234.56	4	
7	12345.67	5	
8	123456.79	6	
9	1234567.89	7	
10	12345678.90	8	
11	123456789.90	9	
12	1234567890.00	10	

The @IF portion of the formula tests to see if the value in cell A2 is less than 1. If it is, the formula returns 0. If the value in cell A2 is greater than 1, the @STRING function converts the value to a label with no decimal places. Then the @LENGTH function returns the number of characters in the label.

## Wrapping Text in 1-2-3 for Windows

**Q** In the April 1994 Q&A column, Rory Parness asked how to get 1-2-3 to wrap text ["Use a Text Block"]. Your solution, which uses text blocks, does work, but it's not ideal. Aligning the floating text blocks is difficult, and any text you've already entered must be moved into the text block.

Although not a 1-2-3 for Windows command, the Classic */Range • Justify* command does exactly what Parness asked. Can you describe how this command works?

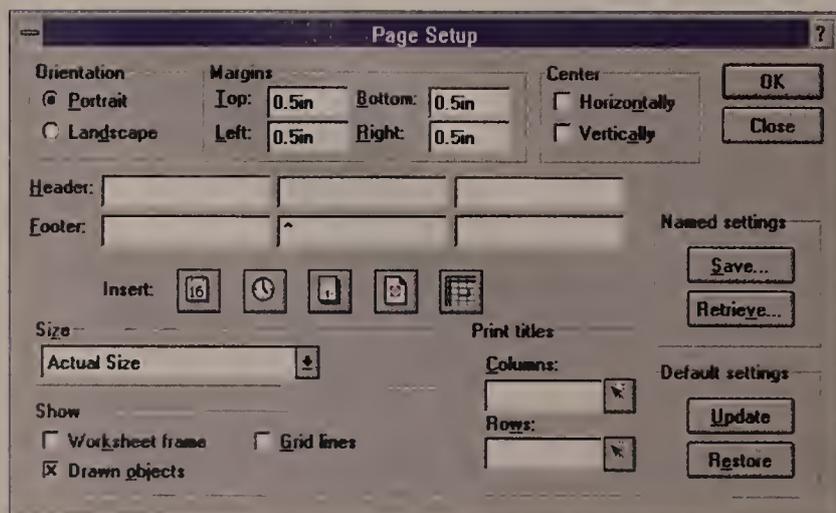
*David M. Pollock, Dallas*

**A** You're right. Getting text blocks to line up with the other data in your worksheet is a challenge, because the text blocks aren't actually in the worksheet's cells. Rather, they "hover" over the worksheet.

The */Range • Justify* command, available in all releases of 1-2-3, offers an easier method. To start, enter several labels in a single cell. Make sure your entry is too long for the column's width, then select */Range • Justify*.

1-2-3 prompts you for the Justify range. The width and depth of the range you specify determines the

**A** Yes, you can use an @LENGTH formula that includes @IF and @STRING terms. To see how it works, first enter the values shown above in column A. Then enter the formula @IF(A2<1,0,@LENGTH(@STRING(A2,0))) in cell B2, and copy that cell to range B3..B12.



length of the justified labels and how data below will be affected. Specify a single-row range if all the cells below the labels are blank or if you don't mind having any data directly below the justified range move down. Select a multiple-row range if you want to keep the data below from being moved. If you don't specify a range that's wide and deep enough to hold all the justified labels, the error message 'Justify range is full or line too long' appears. After you select the range, press <Enter>. 1-2-3 left-justifies the text in that range.

In the worksheet shown below, we entered all of our text in cell A1. Then we selected /Range•Justify and specified range A1..D5.

	A	B	C	D
1	First quarter sales of 1995 have exceeded all			
2	expectations. You have all done an			
3	exceptional job! Bonuses will be distributed in			
4	an informal meeting tomorrow morning.			

### Numbers That Repeat

How can I find the six numbers that appear most often in a given range? For example, I want to find the six most frequent numbers in a range 15 columns wide by 650 rows deep. I use release 2.4 for DOS.

Rusi B. Patell,  
North Bergen, New Jersey

The solution to this problem entails several Data•Query commands, as well as Data•Distribution and Data•Fill. The Data•Distribution command is the one that computes the frequency of all values in the range.

First, a few ground rules: Your range can't contain more than 8191 different values; we'll use a smaller range of values and only integers in this example so we don't have to account for deci-

	A	B	C	D	E	F
1	Value	Frequency		Data Set 1	Data Set 2	Data Set 3
2				45	56	34
3				54	34	40
4				54	45	34
5				34	56	68
6				75	65	54
7				75	54	34
8				34	65	45

mals in the fill range's step value.

Enter the labels that appear in row 1 and the values that appear in range D2..F8 of the bottom figure.

Assign the name **list** to range D2..F8. Select /Data•Fill and specify range A2..B43 as the range to fill. Enter the formula @MIN(list) as the start value, press <Enter> to accept 1 as the step value, and enter the formula @MAX(list) as the stop value. This step creates a list of integers that begins with the minimum value and ends with the maximum value in List.

Select /Data•Distribution. Specify range D2..F8 as the values range, and specify range A2..B43 as the bin range. Press <Enter>, and 1-2-3 fills column B

with numbers that indicate the frequency of each value in column A. Some of the frequencies in column B are 0, which indicates

that the corresponding values in column A are not in the List range.

Let's extract the frequencies not equal to 0, along with their corresponding values, to another range. Copy A1..B1 to ranges D10..E10 (the criteria range) and D13..E13 (the output range). Enter the criterion '<>0' in cell E11. This criterion tests to see which records are not equal to 0. Select /Data•Query•Input, and specify range A1..B43. Next select Criteria, and specify range D10..E11. Select Output, and specify range D13..E13. Finally, select Extract, then Quit. The output range contains only the values and the number of times each appears in List.

To sort the list, select /Data•Sort•Data-Range. Specify range D14..E21 as the range to sort. Select Primary-Key and specify cell E14. Accept the default sort order (D

for descending) and select Go. The first six rows of range D14..E21 now contain the six most frequent values in the List range.

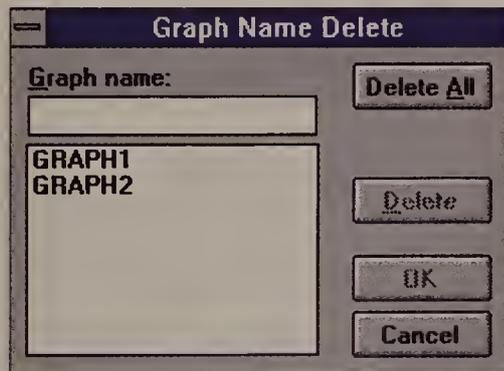
### Deleting Outdated Graphs

At the beginning of every year, I clear the data from last year's budget worksheet so that I can use it as a template for the current year's budget. I would like 1-2-3 to clear the graphs from the worksheet at the same time, but for some reason it won't. Can you help? I'm still working in 1-2-3 release 1.1 for Windows.

Debbie Olmstead, Roscoe, Illinois

In release 1.1 for Windows, you delete graphs in a separate operation, by selecting Graph•Name•Delete. You'll see a dialog box with a list of the graph names associated with the current worksheet, as in the figure below. To erase all the graphs, click the Delete All button and click OK.

Deleting graphs is easier in releases 4.x and 5.0 for Windows. Just click on



a blank area inside the graph frame to select the graph, then press <Delete>. The graph and its associated name are deleted from the worksheet.

In the DOS releases of 1-2-3, select /Graph•Name•Reset to delete all the named graphs in the current worksheet. To erase a single graph in the current worksheet, just place the cell pointer on a cell that contains the graph, then select the Wysiwyg command :Graph•Remove.

### Just Average

I have a worksheet with a long column of numbers that grows by one cell each day. I'm trying to write a formula that will calculate the average of the last ten cells each time I add a new entry. Can you help?

Gary Duhaine, Provo, Utah

**A** Try entering the following formula: `@AVG(@@("A"&@STRING(@COUNT(A1..A8192)-9,0)&"..A"&@STRING(@COUNT(A1..A8192),0)))`.

The formula assumes that column A contains the list of numbers you want to average, that the list of numbers begins in cell A1, and that the list is contiguous. You can enter the formula in any column but A.

Here's how the formula works. The `@STRING` and `@COUNT` terms find the row numbers of the first and last values in the range you want to average. Then each number is concatenated with the letter A to create the range address. The `@@` term returns the contents of that range, which the `@AVG` term then averages.

If your values are in a different column, replace each A in the formula with the letter of the column in which they are located.

**All or Nothing at All**

**Q** How do I make an `@VLOOKUP` formula return NA or 0 instead of ERR whenever it can't find an exact match? My worksheet [shown at right] depicts a small sample of what I'm trying to do. Range A4..B9 contains truck numbers and their associated radio numbers. I want to log the trucks currently available in

	A	B	C	D	E
1	Inventory			Log	
2					
3	Truck No.	Radio No.		Truck No.	Radio No.
4	8421	27			
5	8422	84			
6	8423	80			
7	8425	91			
8	8427	65			
9	8429	21			

column D and have their radio numbers automatically appear in column E.

*L. Scheffler, LaBelle, Florida*

**A** As you discovered, looking up values with the `@VLOOKUP` function can be tricky. The values in the first column of the lookup range must be in descending order, but even then you can get unexpected results. For exam-

ple, if the value you're searching for is smaller than the first value in the first column of the lookup range, then the `@VLOOKUP` formula returns ERR. If

the value you're searching for isn't in the first column, `@VLOOKUP` finds the value closest to but not greater than the value you're searching for.

Looking up labels is more straightforward. When the lookup range consists entirely of labels, `@VLOOKUP` returns ERR if the label you're searching for doesn't have an exact match in the first column of the lookup range.

Thus, the easiest solution to your problem is to first convert the truck numbers in column A from values to labels. Then create an `@IF` formula that tests for the occurrence of 'ERR' and replaces it with 'NA'.

Convert the truck numbers to labels by entering the formula `@STRING(A4,0)` in cell C4 and copying it to range C5..C9. Next, copy the results of these formulas to column A.

**GOOD IDEAS**



**Summing Less Than Everything**

Suppose you want to sum only part of a contiguous range of cells, using 1-2-3's Sum SmartIcon. To understand the situation, consider the top worksheet shown below.

Say you want to sum up ranges C2..E2, C3..E3, and so on, to arrive at a quarterly total. You also want to sum up the expense totals by totaling only rows 3 through 6, using formulas located in row 7. Instead of letting 1-2-3 decide which

rows to sum, you specify the range—and include the cells that will contain the totals in this range specification.

To get the quarterly expense totals, select range C3..F7 and click the Sum SmartIcon. If you want a sum of income from January through March, select range C2..F2, then click the Sum SmartIcon. The results are shown in the bottom worksheet.

*Shane Devenshire, Walnut Creek, California*

	A	B	C	D	E	F
1		Dec	Jan	Feb	Mar	Quarter Total
2	Income	9000	10000	12000	13555	
3	Communication	200	400	100	200	
4	Travel	509	654	321	667	
5	Salary	3900	3700	3500	3800	
6	Benefits	600	600	600	600	
7	Expense Total					

	A	B	C	D	E	F
1		Dec	Jan	Feb	Mar	Quarter Total
2	Income	9000	10000	12000	13555	35555
3	Communication	200	400	100	200	700
4	Travel	509	654	321	667	1642
5	Salary	3900	3700	3500	3800	11000
6	Benefits	600	600	600	600	1800
7	Expense Total		5354	4521	5267	15142



Shane Devenshire is a partner in Mar & Sha Corporation, a consulting firm in database and application design. Devenshire has been using 1-2-3 since release 1A and hopes that his 1A disks and manual will soon become collector's items.

In the Windows releases, highlight range C4..C9, select *Edit•Cut*, move the pointer to cell A4, and select *Edit•Paste Special*. In the dialog box, select *Formulas as values*, and click *OK*.

In the DOS releases, select */Range•Value*, specify C4..C9 as the range to copy from, and specify cell A4 as the range to copy to. Then erase C4..C9.

Now enter some truck numbers as labels in range D4..D7, as shown in the figure below. Then enter the following formula in cell E4 and copy it to range E5..E7: `@IF(@ISERR(@VLOOKUP(D4,AS4..BS9,1)),"NA",@VLOOKUP(D4,AS4..BS9,1))`.

	A	B	C	D	E
1	Inventory			Log	
2					
3	Truck No.	Radio No.		Truck No.	Radio No.
4	8421	27		8422	84
5	8422	84		990	NA
6	8423	80		8400	NA
7	8425	91		8427	65
8	8427	65			
9	8429	21			

### Changing Fonts in Headers and Footers

**Q**I recently upgraded to 1-2-3 release 4.01 for Windows, and I'm trying to figure out how to translate a 1-2-3 for DOS technique to the new environment. I've been using different-size fonts and adding various attributes, such as bold and italic, to header and footer information using special Wysiwyg control codes.

For example, pressing `<Ctrl>-A` and then typing B and the header text assigns the bold attribute to a header. How do I do that in Windows?

*Harold Turchin, Coconut Creek, Florida*

**A**In 1-2-3 for Windows, press `<Alt>-<F1>` and type **ba** to begin an attribute. For example, to create a bold header, select *File•Page Setup*, select one of the Header boxes, press `<Alt>-<F1>`, type **ba**, and type **b**. Then type the text you want to appear as a header, and click *OK*.

	A	B	C	D	E
1					
2			+/-	+/-	
3		Plan	Forecast	Re-Forecast	
4	April	4409	-1000	5409	←wrong
5	May	5849	-800	6649	←wrong
6	June	4359	1000	3359	
7	July	6672	250	6422	
8	August	8236	-807	9043	←wrong
9	September	7630	-1100	8730	←wrong
10	October	7699	600	7099	
11	November	3667	-600	4267	←wrong
12	December	5644	460	5184	

### Printing Long Formulas

**Q**In the August 1994 Q&A column, you described to Chris Willems how to print worksheet formulas instead of their results ["Print Worksheet Formulas"]. Is there a way to get 1-2-3 to print long formulas on more than one line if they don't fit?

*James M. Hopkins, Sioux City, Iowa*

**A**The third method described in the August item does just that. Even though the Cell-Formulas option is a Classic 1-2-3 command, it works in all releases of 1-2-3. Try this out on one of your worksheets.

Select the */Print•Printer•Range* command and specify the range of cell formulas that you wish to print. Now select *Options•Other•Cell-Formulas*. Choose *Quit*, then *Align•Go* to align the paper and print the cell formulas. Select *Page* to advance the paper out of the printer. You'll see that 1-2-3 printed the formulas, wrapping extra formula characters to subsequent lines.

Each month I create a forecast like the one shown in the worksheet below.

### Dealing With Positive and Negative Numbers

**Q**I'm having a hard time figuring out how to make a column of formulas work. Columns B and C contain plan and forecast values. Column D contains formulas that are supposed to calculate

subtracting. If the forecast value is positive, the formula subtracts the forecast value from the plan value.

The worksheet shown above contains the correct reforecast values.

the difference between the plan and forecast values. In cell D4 I entered the formula `+B4-C4`, then copied it down the column.

This formula works whenever the forecast is a positive number. But if the forecast is a negative number, I must manually change the formula so the negative number isn't added to the plan number. When the next month arrives and the forecast number is positive, I have to edit the formula again. There must be a better way.

*Lori C. Basilone, Chicopee, Massachusetts*

**A**Yes, there is. You can add an `@IF` function to the formulas in column D to test whether the forecast values in column C are negative.

Enter `@IF(C4<0,B4+C4,B4-C4)` into cell D4 and copy the formula down column D. Whenever the forecast value is less than zero, the formula adds the negative forecast value to the positive plan value. Adding a negative is the same as

	A	B	C	D
1				
2			+/-	+/-
3		Plan	Forecast	Re-Forecast
4	April	4409	-1000	3409
5	May	5849	-800	5049
6	June	4359	1000	3359
7	July	6672	250	6422
8	August	8236	-807	7429
9	September	7630	-1100	6530
10	October	7699	600	7099
11	November	3667	-600	3067
12	December	5644	460	5184

subtracting. If the forecast value is positive, the formula subtracts the forecast value from the plan value.

The worksheet shown above contains the correct reforecast values.



**Do you have a question about Lotus products, or a favorite technique for using them? Send your letter, including your address and daytime telephone number, to Q&A/Good Ideas, PC World Lotus Edition, 77 Franklin St. #300, Boston, MA 02110, or fax us at 617/426-0235. We will send you \$60 if we publish your letter. Sorry, we cannot acknowledge unpublished materials.**

Introducing PC World's Flash Reports...

# THE TOP 20

by Fax



**When You Have to Know What's Going to  
Be Hot in the PC World Tomorrow...  
...We'll Fax You the News Before We Go to Press.**

The *PC World* Top 20. It's the most authoritative monthly review and rating system for PCs and has become the standard by which managers' PC buying decisions are made. **And now with our "Top 20 by Fax" Flash Reports it can be yours a month before we even go to press!** So when the rest of the world is opening the current issue of *PC World* for the first time, you've already read about who's offering the leanest, meanest, cheapest desktops and mobile systems.

As you already know from reading the **Top 20**, a lot can happen in a month. Especially if you're shopping for a new system, it's critical to have the

absolute latest information before you make a purchase. Call **PC World Connect** and choose from next month's 10-page *Power Desktop Flash Report*, *Budget Desktop Flash Report* or *Mobile PC Flash Report*.

Individual Flash Reports are available for \$9.95. Order yours now and it can be in your hands in just minutes via fax (first day of availability is March

23). Or subscribe to a Flash Report for 12 months for just \$79 (3 months: \$25). Even better, a subscription to *all three Flash Reports* is just \$159 (3 months: \$49). And if you are one of the first 200 persons to subscribe to all three reports for a full year, you'll receive a Microsoft Windows Sound system—complete with 16 bit audio card, microphone and headphones—**absolutely free!**

Now getting the jump on the best buys and the latest PC systems is a whole lot simpler. So don't miss out! Give us a call today and we'll get your Top 20 by Fax Flash Report to you a month early!

**PC WORLD**  
**CONNECT**  
**1-800-434-4495**

Payment by VISA or MasterCard. Touch-tone phone and fax machine required. For individual reports you can also call 1-900-903-2972 and applicable charges will appear on your phone bill.

Circle 155 on reader service card



# Prompt Users Through Your Macros

**W**hy bother with user input commands? The spreadsheet is by nature a large input screen (as well as a repository for data), so why not just let the user enter data directly into the worksheet, then run your macro on that data? Here's why: Input commands shield the user from a large, intimidating worksheet, and they direct input to the right cells, thereby reducing the chances for error.

1-2-3 provides several commands for getting information from the user—for example, {GET-} and {CHOOSE-} in the Windows releases, and {GET}, {GETLABEL}, and {GETNUMBER} in all releases—but each displays a different kind of prompt or elicits a different kind of answer. Before you add any of these commands to a macro, decide what kind of response you want from the user, and how you should ask for it. For example, {GETLABEL} is not the best choice when there is a finite number of valid responses to a question, such as yes/no, male/female, or true/false.

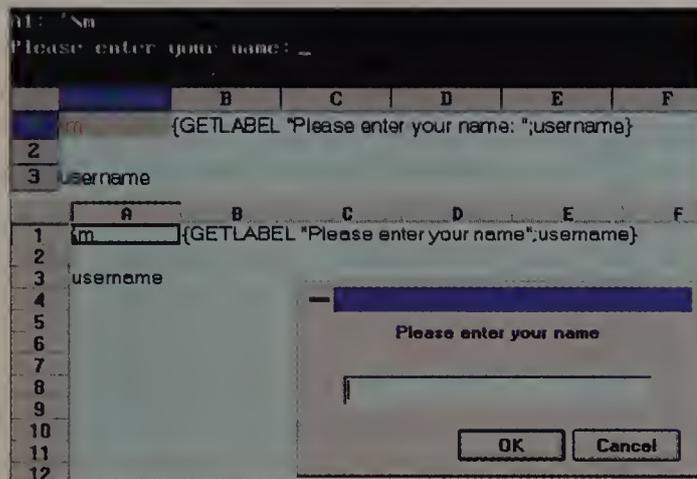
## Simple Prompts

{GETLABEL} is appropriate when the response can be any text string. {GETLABEL "prompt";location} displays in a dialog box (in the Windows versions) or in the 1-2-3 control panel (in the DOS versions) the text you supply for the prompt argument, and it suspends the macro while the user enters a response. When the user clicks OK or presses <Enter>, the entered text is placed as a left-aligned label in the cell specified in *location*.

{GETNUMBER} works the same way, except that it expects the input to be a value (or an expression that can be converted to a value). If you enter 300

in response to {GETNUMBER}, 1-2-3 stores the value 300; if you enter the formula 9+5, 1-2-3 stores 14; if you enter @ROUND(B18,2), 1-2-3 stores the *result* of rounding cell B18 to two places. But if you enter a label or an expression that 1-2-3 can't convert to a value—300x or @ROUND(B18)—it returns ERR in the target cell.

{GETLABEL} and {GETNUMBER} require minimal setup; just assign a name to the cell that's to receive



**FIGURE 1: {GETLABEL} ACCEPTS A STRING in response to its prompt, which is displayed in the control panel in 1-2-3 for DOS and in a dialog box in 1-2-3 for Windows.**

the input label or number. Sometimes you don't even have to do that; you can use @CELLPOINTER("address") as the prompt argument to direct a user's input to the current cell. The upper part of **FIGURE 1** shows the {GETLABEL} command used in a DOS release of 1-2-3, which displays the prompt in the control panel. The lower part of the figure shows the command used in a Windows release, which displays the prompt in a dialog box.

If a user clicks Cancel (in Windows) or presses <Esc> (in DOS) in response to the {GETLABEL} prompt, 1-2-3 stores an apostrophe label prefix in the target cell, as it does if the user clicks OK or presses <Enter> without typing any text. To test whether the user failed to enter a response, follow the {GETLABEL} command with a line beginning with {IF *location*=""}

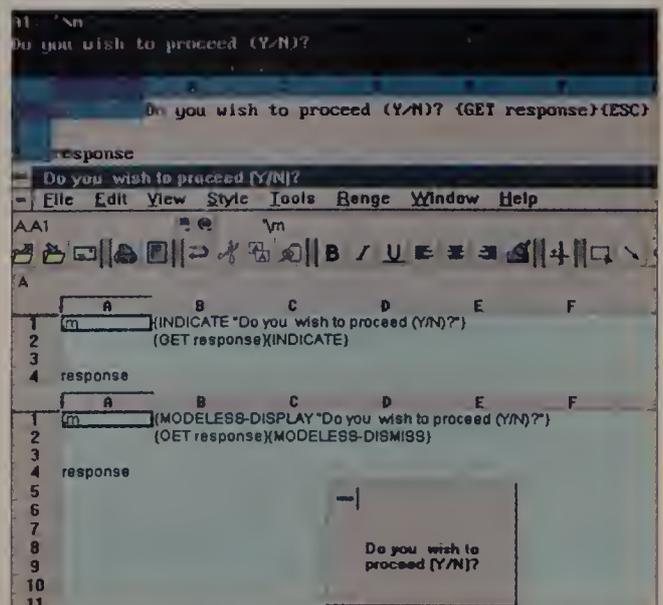
If the user fails to type any text in response to a {GETNUMBER} prompt, 1-2-3 stores ERR in *location*. You can then test for no response with the command {IF @ISERR(*location*)}

Later we'll see how the Windows alternatives {GET-LABEL} and {GETNUMBER} handle nonresponses.

## Press Any Key to Continue

If you want a one-letter response from a user—such as Y (yes) or N (no)—use the {GET} command. {GET} doesn't wait for the user to press <Enter> after responding. It suspends a macro until the user presses any key, stores that key in the cell specified in the location argument, and moves on to the next instruction in the cell immediately below the {GET} command.

{GET} does not accept a prompt argument, but there are ways to create a prompt. A popular approach in the DOS versions is to make the macro "type" a label without entering it, so that the text appears in the control panel but is not entered into the worksheet, then pause the macro with a {GET} command and clear the con-



**FIGURE 2: {GET} CAN DISPLAY A PROMPT in the control panel in 1-2-3/DOS (top) and 1-2-3/W 4.x (middle), and in a dialog box in release 5.0 (bottom).**

trol panel with {ESC}. We used this approach in the top section of **FIGURE 2**, on the previous page.

This trick also works in the Windows releases, but it looks messy because of in-cell editing. The “prompt” appears both in the control panel and wherever the pointer is. In release 4.x for Windows, try using {INDICATE "prompt"} before a {GET} command to display a prompt in the title bar, and {INDICATE} with no arguments after the {GET} command to reset the title bar (as in the middle section of Figure 2). This isn't an ideal solution, because unlike 1-2-3 for DOS users, release 4.x users aren't accustomed to looking for messages at the top of the screen.

In release 5.0 you can precede the {GET} command with the {MODELESS-DISPLAY} command, which displays a prompt in a dialog box in front of the worksheet as it waits for the user to press a key. To clear the di-

How the macro responds to a non-response at a {GET-LABEL} or {GET-NUMBER} prompt depends on which {IF} statements you use after the command. For example, you might assume that a user who clicks Cancel wants to end the macro, in which case you'd follow it with {IF target=""}{QUIT}.

{GET-LABEL} and {GET-NUMBER} support a few additional optional

**If you're creating a macro for all releases, use {GETLABEL} and {GETNUMBER}, but be aware of their many limitations.**

arguments. In **FIGURE 3**, we included a default response to the 'Please enter your country' prompt—'USA'. The user can click OK to accept the default or enter a different response. We also supplied text for the dialog box's title bar—'User Profile'. If you want a title but no default, enter two semicolons between the location argument and the title-bar text argument.

In release 5.0, you can specify precisely where you want the dialog boxes for {GET-LABEL} and {GET-NUMBER} to appear on the screen. After the optional title-bar argument, enter a number to control the horizontal

position of the dialog box's left side, then enter another number to control the vertical position of its top. In most cases, the command {GET-LABEL "Please enter your country";countryname;"User Profile";60;130} puts the {GET-LABEL} dialog box in the top left corner of the worksheet.

If you're creating a macro that must work in DOS and Windows, you can use {GETLABEL} and {GETNUMBER}, but be aware of the limitations of these lower-level commands. If you use {GETLABEL} and {GETNUMBER} for compatibility with earlier releases, you can include any optional ar-

gument supported by {GET-LABEL} and {GET-NUMBER}; the earlier releases will simply ignore what they can't process. For example, the instruction {GETLABEL "Please enter your country: ";countryname;"USA";"User Profile";60;130} works in all releases. Release 5.0 responds to all arguments, displaying the prompt in a dialog box in the top left corner of the frame with the default response 'USA' in the edit box and 'User Profile' in the title bar. Release 4.x displays the same dialog box but in the center of the screen. The DOS releases ignore everything but

the prompt and location arguments, and they display the prompt you supply in the 1-2-3 control panel.

**Windows-Only Commands**

The Windows releases offer two more {GET-} commands that let your macros ask explicitly for two particular types of input: ranges and formulas. As with {GET-LABEL} and {GET-NUMBER}, you need only supply a prompt and a target cell. You can, if you like, provide a default response, title-bar text, and screen coordinates for positioning the {GET-RANGE} dialog box.

In addition to a prompt and an edit box, the {GET-RANGE} dialog box includes an arrow button, which the user clicks to specify the range. For instance, if the user clicks the arrow button, drags the mouse over B2..D8, and clicks OK, 1-2-3 stores the characters 'B2..D8' in the target cell. The user can also type a range address or a range name in the edit box and click OK, and 1-2-3 stores the typed text in the target cell. Nothing in {GET-RANGE} prevents the user from entering an invalid name or address, so it's a good idea to include an @ISRANGE function to test the target cell—for example, {IF #NOT#=@ISRANGE(@@{formatrange})}{BRANCH rangeprompt}.

Unlike {GET-NUMBER}, which converts a formula to its result, {GET-FORMULA} puts the formula a user

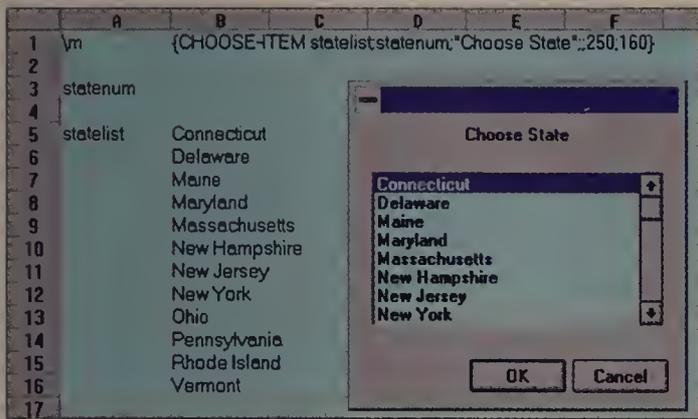


**FIGURE 3: {GET-LABEL} AND {GET-NUMBER} in the Windows releases let you specify a default response and a dialog box title.**

alog box, follow the {GET} command with {MODELESS-DISMISS}, as in the bottom section of Figure 2.

**Get More Options in Windows**

The commands {GET-LABEL} and {GET-NUMBER} in the Windows releases function the same as their unhyphenated cousins, but they can tell the difference between no response and a bad response. If the user responds by clicking Cancel or pressing <Esc>, the macro empties the target cell. (With {GETLABEL} and {GETNUMBER} bad responses and nonresponses both result in an ERR.)



**FIGURE 4: {CHOOSE-ITEM} LIMITS A USER'S RESPONSE to just one item in a dialog box list.**

enters verbatim in the target cell. For example, if the response is @ROUND (B18,2), 1-2-3 stores that formula. In the two years since Lotus introduced release 4.0 for Windows, I've never thought of a good use for {GET-FORMULA}. If you know of one, drop me a note or send an E-mail (Internet: richard\_cranford@pcworld.com; AOL: rcranford; and CompuServe: 72723,40).

### Fancier Commands

To limit the user to a response from a specific list, use the {CHOOSE-} commands in the Windows releases.

{CHOOSE-ITEM} displays a dialog box containing a list box, from which the user selects one item. To use this command, you must enter a list of items in a contiguous column in the worksheet and declare a target cell for the user's selection. (You may also provide an optional prompt or title.) You can assign a range name to the entire list of items and include that name in the {CHOOSE-ITEM} command, or you can include just the address or name of the first cell of the list, as in **FIGURE 4**. {CHOOSE-ITEM} displays the first cell and all entries directly below it until it encounters an empty cell. Although we assigned the name Statelist to cell B5 only, all the entries in range B5..B16 appear in the list box. {CHOOSE-ITEM} stores an offset number in the target cell; if you select the first item, it stores 0; if you choose the second item, it stores 1; and so on.

{CHOOSE-ONE} also limits a user to exactly one choice, but it presents

the choices as radio buttons instead of as items in a list. Selecting a radio button deselects the one chosen before.

{CHOOSE-ONE} requires a definition table and at least four arguments: the upper left cell of the table, an output cell, a prompt, title-bar text, and (in 5.0) screen coordinates.

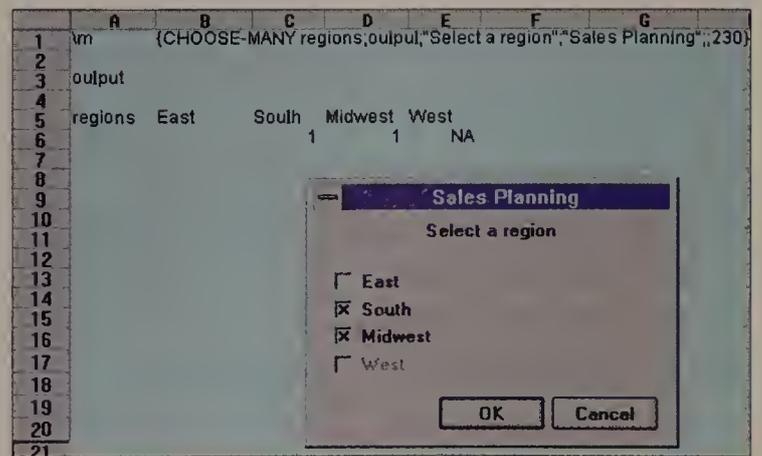
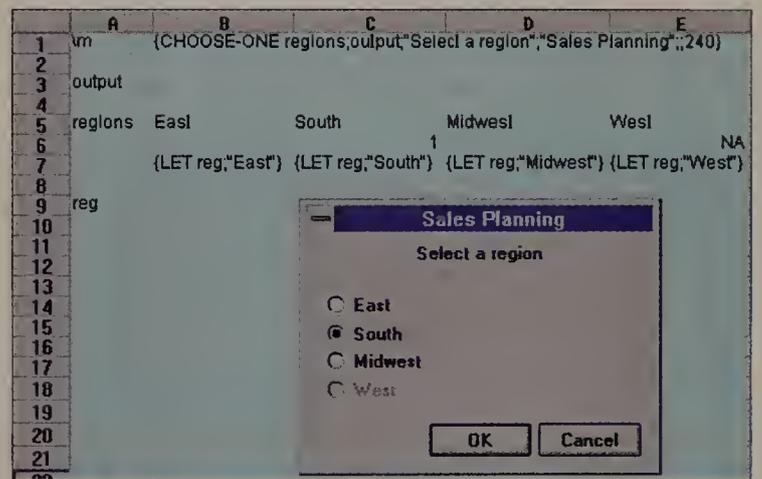
In the upper part of **FIGURE 5**, the top row of the definition table contains the buttons' labels; you can include up to eight. The row below it is often left blank, but you can use this row to preselect a button other than the first; the first label in the top row with a 1 below it (South, in this case) will be selected when the dialog box first appears. You can also dim the radio buttons by putting @NA in the second row's cells. The third row is where you put macro commands that are to be executed when the user clicks one of the buttons. These commands are treated as subroutines: After a set of commands is executed, the macro continues with the command immediately after {CHOOSE-ONE}.

When you want to let the user choose any, all, or none of a set of options, use {CHOOSE-MANY} to display a dialog box with up to eight check boxes. {CHOOSE-MANY} takes the same arguments as {CHOOSE-ONE} and uses a similar table, but the command itself—not the programmer—puts data in the third row.

The {CHOOSE-MANY} command shown in the lower part of Figure 5 refers to a definition table in which South and Midwest are preselected and West is dimmed. You can see the result in the dialog box. If the user selects East, deselects South, leaves Midwest selected, and then clicks OK, the

command puts 1 in cell B7, 0 in cell C7, 1 in cell D7, and 0 in cell E7.

The output cell specified in the {CHOOSE-ONE} and {CHOOSE-MANY} commands records whether the user closed the dialog box by clicking OK or pressing <Enter>, as opposed to clicking Cancel or pressing <Esc>. Clicking OK stores a 1, clicking Cancel stores a 0. If you close a {CHOOSE-ONE} dialog box by clicking Cancel, none of the macro code beginning in the third row of the definition table is executed, and the macro proceeds to the command following {CHOOSE-ONE}. If you click Cancel



**FIGURE 5: {CHOOSE-ONE} DISPLAYS a dialog box with radio buttons. {CHOOSE-MANY} presents choices as check boxes.**

in a {CHOOSE-MANY} dialog box, the macro leaves the third row of the definition table unchanged.

**By Richard Cranford**

*Richard Cranford is a senior associate editor for PC World Lotus Edition and editor of 'The 1-2-3 for Windows Report. The models from this article are available via PC World Online on America Online and CompuServe.*



# Create Organization Charts in Freelance

For many companies, organization charts are a necessary evil. Departmental reporting structures may be etched in every employee's head, but getting them down on paper and keeping them up-to-date can be a real headache, especially if you don't have the right software.

Consider for a moment all the steps required to create an organization chart using a graphics package. First you might draw the boxes and try to fit in the names and titles, then you might draw the connecting lines one by one. When a new person is hired or some-

features of this chart type useful in many other areas—time lines, genealogies, and decision trees, for example. With these multiple uses in mind, let's see how to get the most out of Freelance organization charts.

## Entry-Level Charting

To get started, create a new Freelance presentation or open an existing one. Next, switch to the Organization Chart page layout and click the chart object placement box (or click the *Organization Chart* tool displayed in the Toolbox on the left side of the presentation window).

At this point, Freelance displays the Organization Chart Gallery dialog box, as shown in **FIGURE 1**. This dialog box lets you select the basic style and design options for your chart. For now, just click *OK* to accept Freelance's default settings.

Next you'll see the Organization Chart Entry List dialog box (**FIGURE 2**), where you enter the data for your chart. To move from line to line, press <Enter>. To break a long entry into two lines, press <Ctrl>-<Enter>. Press <Tab> to enter a subordinate's name and title; press <Shift>-<Tab> to enter a superior's name and title.

Before we start entering names, let's collapse the entry list so that we are only prompted to enter names and titles. Choose *View • Names and Titles*. Then enter the data in Figure 2. Note

that you can enter up to 12 levels of information per chart.

When you're finished, click *Preview* to see how the chart will appear.

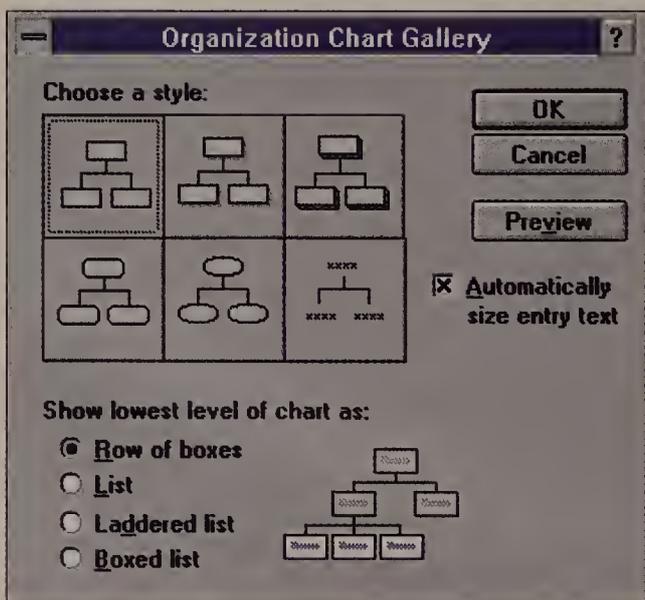
At this point you might want to experiment with the different Gallery options. Click *Change* to return to the Entry List dialog box, and choose *Gallery* from the menu. Select another style from the Gallery dialog box, and click *Preview*. When you're satisfied with the chart style, click *OK* to return to the Entry List dialog box, then click *OK* again to accept the chart and return to the chart presentation page. No matter which chart style you choose, Freelance automatically sizes your chart to fit within the chart placement block.

## Design and Style

Your selection of a chart style is ultimately a matter of personal preference, but there are a few design principles you should consider. If you want your chart to have a more formal and structured look, choose one of the squared-off styles—particularly the 3-D, drop-shadow style on the top right of the Gallery dialog box. For a more casual chart, choose one of the rounded styles.

Another design consideration is the format for the lowest level of data in the chart; it not only determines the way your chart looks, but also plays a part in how the chart is interpreted. Freelance provides four different format options for the lowest level of the chart. The 'Row of boxes' format continues the existing style—including box shape and shading—to the lowest level. This is a good all-purpose selection for a balanced-looking chart.

The 'List' format displays the lower entries as unboxed vertical lists underneath the superior entries. The 'Boxed list' format displays the entries in the

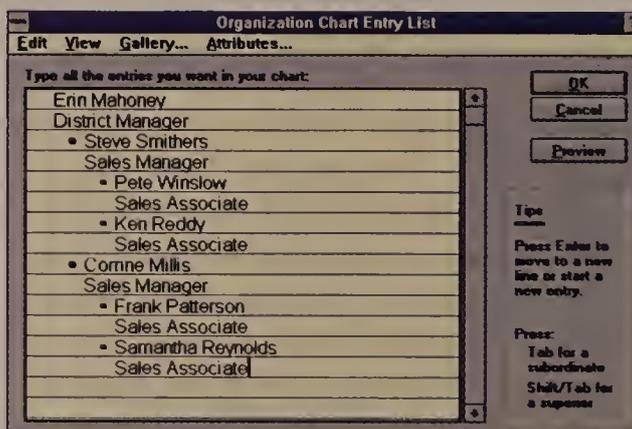


**FIGURE 1: FREELANCE PROVIDES SIX BASIC STYLE OPTIONS for organization charts. You can call this dialog box at any point to change a chart's design.**

one changes jobs, you have to manually move everything around to adjust for the change. To alter one thing—the font, for instance—you must make that change to every element in the chart. Feel a migraine coming on?

Fortunately, Freelance Graphics provides organization-charting tools that relieve the pain. All you do is type in your data, and voilà, Freelance draws a perfect chart. If you change a relationship or try a different design, Freelance redraws the chart to your specifications.

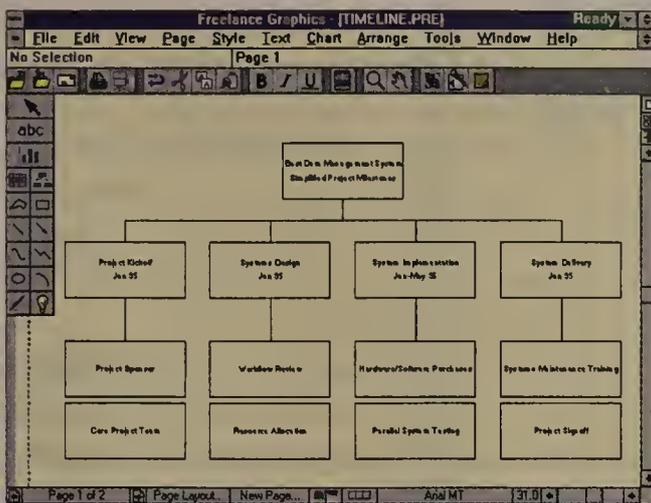
Even if you don't need to draw organization charts, you'll find the design



**FIGURE 2: ENTER EMPLOYEES' NAMES AND TITLES in the Organization Chart Entry List dialog box.**

same manner, but in simple boxes. These formats can be used to illustrate a process or time line horizontally, as in **FIGURE 3**. In this example, the first level of the chart contains the umbrella process or title. The major process steps are placed in the second level, and all of the steps that fall under each major process are grouped within the third level. If you're creating a time line, you could enter the important dates or critical steps for the time period as well.

The 'Laddered list' format shows the same vertical lists but with lines attaching the entries to their superiors. The laddered list is frequently used to represent nonexempt employees (such as clerical staff) in an organization.



**FIGURE 3: CREATE A TIME LINE by using the List format to display the lowest level of a chart.**

### Fine-Tuning the Design

As elsewhere within Freelance, you can fine-tune many of the design details in charts, such as text attributes, colors, and line widths, to suit your own sense of style.

Each organization chart is composed of four elements: text, boxes, connect-

ing lines, and the frame. Freelance allows you to change text and box elements either globally or individually, but you must change connecting lines and the frame globally. For example, you could change the color of just one text box in the chart, but any changes you make to a connecting line will affect all connecting lines in the chart.

To make changes to the chart as a whole, click on any element of the chart and choose *Chart • Attributes* to display the Organization Chart Attributes dialog box. To change the attributes of one element in the chart, double-click the element to select it and open the dialog box. If you're working in the Organization Chart Entry List dialog box, choose *Attributes*.

The first step in the Organization Chart Attributes dialog box is to specify the element you want to change. When you select Text or Box, the sec-

## SUITE MYSTERIES

### Ami Pro's Crossed-Up Cross-References

**Q** In January's *Suite Success* column, you published a tip for creating cross-references in Ami Pro. I followed your instructions but ran into difficulties. The first few pages of my document do not contain page numbers. Page numbering begins on page 3 of the actual document but appears as page 1 in the footer. The cross-reference I create counts those first few unnumbered pages in the document. What can I do?

Janice Monroe, Irving, Texas

**A** Ami Pro is confusing the physical page number of a bookmarked item with the logical page number. You can create a formula that adds or subtracts a value from the PageRef power field so it displays the correct number.

To do so, choose *Edit • Power Fields • Insert*, and enter the following formula in the Insert box:

**PageRef** bookmark - numpages

where *bookmark* is the name of the bookmark you want to cross-reference,

and *numpages* is the number of pages between the first page in the document and the page on which physical numbering begins (in your case, *numpages* is 2). Be sure to type a space on either side of the mathematical sign in the formula. Click *OK*. The correct page number (page 5 - 2 = 3) appears where you inserted the power field.

### Start With a Clean Slate

**Q** I use Freelance primarily to create diagrams, and I don't use the SmartMasters all that often. Is it possible to start Freelance with a blank page instead?

Sandra Jacobs, Sacramento, California

**A** Sure. Choose *Tools • User Setup*, select *Skip the standard dialogs and bring up a blank page*, and click *OK*. Note that when you choose this option

Freelance does not display any start-up dialog box (or the Welcome screen) where you opt to create a new presentation or open an existing one.

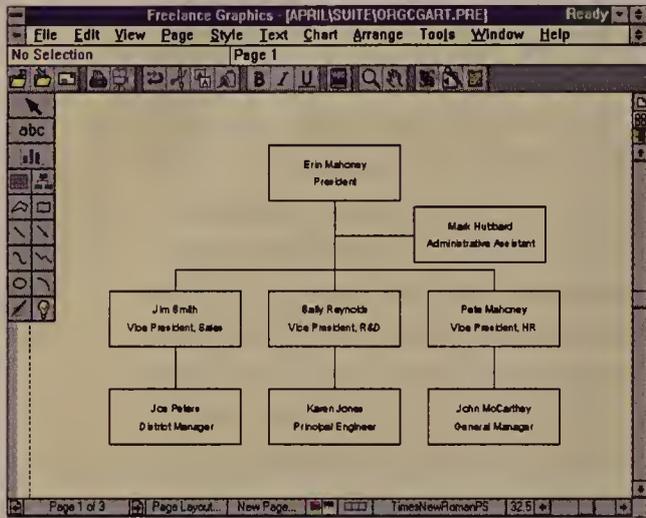
If you'd rather not skip the dialog boxes, follow these steps to open to a blank page: Start Freelance and select *Create a new presentation*. In the Choose a Look for your Presentation dialog box, select the *Blank.Mas* SmartMaster or *SmartMaster with blank background*, then click *OK*.

In the Choose Page Layout dialog box, select *[None]* and click *OK*.

Send your questions to PC World Lotus Edition, *Suite Success*, 77 Franklin Street, Boston, MA 02110; to Cathykenny on America Online; or to 72723,2071 on CompuServe. We pay \$60 for each question that we publish.

**AMI PRO TIP:**  
Update all the  
power fields at  
once with Edit •  
Power Fields •  
Update All.

ond step in the dialog box asks you for the extent of the change. To globally change the text font or the box color, select *All boxes in chart*. To change the text attributes of only the currently selected block, select *Current box*. The



**FIGURE 4: A STAFF POSITION IS BEST DEPICTED as an offshoot from the group's highest member.**

'Current box & subordinates' option allows you to change an entire reporting group at once, while the 'Current box and peers' option applies the changes to all entries in a selected level.

The 'Text line' drop-down list lets you choose which line of text to change—all lines at once, or just the name, title, or comment.

The options at the bottom of the Attributes dialog box depend on the element you selected. Make the necessary adjustments to the attribute settings and click *OK* or click *Preview*.

**Reporting More Complex Organizations**

With the basics mastered, let's explore some of the more advanced features of organization charts.

**Staff position.** Some individuals in your organization—for example, an administrative assistant for a group—may not fit precisely within the structure of the organization chart. In most cases, it's best to show such a staff position as an offshoot of the line from the highest-ranking individual in the group, since the assistant is often the best first contact for the group. Besides, including the position makes the chart more complete.

To add a staff position, click on any element within the chart to select it, and choose *Chart • Edit* or click the *Organization Chart* tool in the Toolbox. Then choose *Edit • Staff* from the menu in the Entry List dialog box. In the resulting dialog box, enter the employee's name and title, add a comment if desired, and click *OK*. Click *OK* again to add the position to the chart and return to the presentation page. **FIGURE 4** illustrates how a staff position is displayed in the chart.

Note that you can include only one staff person in the organization chart. If the president (top level) and the vice presidents (second level) each have assistants, for example, only the president's assistant is allowed on this chart. A common workaround is to create additional charts for each vice president.

**Skipping levels.** You may also find that you need to skip levels in an organization chart without disrupting the rest of the reporting structure. For example, suppose that a district sales manager has three direct reports—two regional managers and one sales analyst—and that each regional manager supervises several sales analysts. By default, Freelance draws the three direct reports to the district manager on the same tier (second level). But a more accurate chart would show all the sales analysts—including the one who reports directly to the district manager—on the third tier, as illustrated in **FIGURE 5**.

Unfortunately, Freelance doesn't allow you to skip levels in this way. So here's another workaround: Create a dummy intermediate position with a blank name. Then, in the Organization Chart Gallery dialog box, change the chart style to the one without box outlines (the lower right choice in Figure 1), so that Freelance won't draw an empty box for the dummy manager position in the chart.

However, this still leaves a minor gap in the line where the dummy manager should be. But you can fill that in later by using the *Line* tool located in the Toolbox. Note that if you later make changes to the chart, you may have to move the added filler.

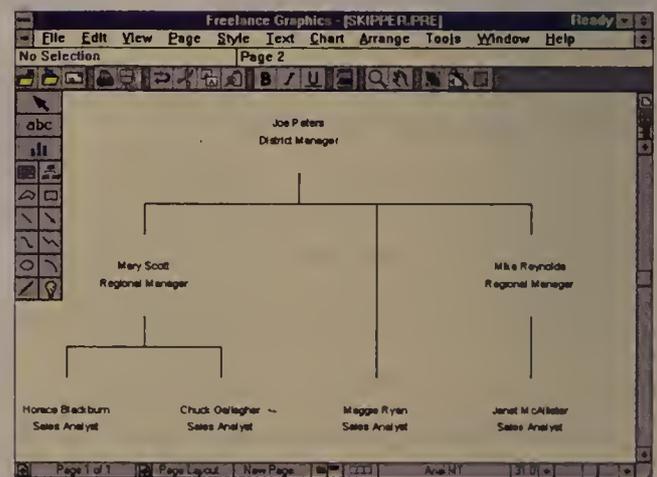
**Dotted-line relationships.** The solid lines in an organization chart illustrate the traditional chains of command. But many vital working relationships form outside these confines. To make your chart more complete, document these relationships with dotted lines.

The only way to incorporate the dotted-line reporting relationship is to draw it in separately once the organization chart is complete. Use the *Line* tool in the Toolbox to draw the line, then use the *Style • Attributes* command to change the line to a dotted style. Note that you may have to move these dotted lines if you make any changes.

**Nontraditional charts.** Some companies are moving away from top-down structures toward network, inverse-pyramid, and other reporting structures. Unfortunately, these structures cannot be illustrated by Freelance's organization-chart tool. You might want to explore dedicated organization-chart software for such alternative reporting structures.

**By Helen Chen**

*Helen Chen is a senior sales analyst for Genentech in San Francisco.*



**FIGURE 5: SKIP LEVELS in a chart by creating a blank placeholder, selecting the unboxed style, then filling in the resulting gap with the Line tool.**

# Need Lotus Notes Applications & Utilities?

GroupQuest Software is the premiere supplier of vertical and horizontal solutions in the Lotus Notes® Environment

We have cost effective, sophisticated products, including:

- Human Resources
- Project Tracking
- ISO 9000
- Customer Service
- Credit Management
- Site Planning
- Sales Force Automation
- Server Management
- Training Ctr. Management
- ...And Much More

**Call 1-800-864-5061**  
for our catalog of solutions



*GroupQuest Software...  
Leading the way in  
Notes Applications and Solutions*

1661 E. Camelback Rd., Suite 265, Phoenix, AZ 85016, Phone 602-234-6949, Fax 602-234-6950

Copyright © 1994 GroupQuest Software. All rights reserved. GroupQuest Software is a registered trademark of GroupQuest Software. Lotus and Notes are registered trademarks of the Lotus Development Corporation.

CIRCLE 79 ON READER SERVICE CARD



Development of custom software

applications for use with

Lotus Notes® and SmartSuite®.

Call the Noted Experts:

**1-800-643-5727**



CIRCLE 173 ON READER SERVICE CARD



## Visual Baler starts where your spreadsheet stops!

"With Visual Baler, anyone who can build a spreadsheet can create a Windows application."

*-Windows Sources  
November 1994*



Ever wish you could distribute tamper-proof, self-running spreadsheet programs? Now you can!

Visual Baler® is the first and only Windows™ spreadsheet for creating run-time business applications. It works like spreadsheets you already know, with an important difference.

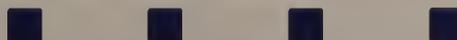
A click of the BALE button transforms your worksheets into secure, .EXE Windows programs complete with your own colorful titlescreen and Windows icon.

Start by importing formulas, formatting and data from all releases of 1-2-3, Excel, and Quattro Pro. Or, use Visual Baler's spreadsheet editor from start to finish.

Features to create stand-alone Windows programs	Visual Baler	Microsoft Excel	Lotus 1-2-3	Quattro Pro
3-D graphical spreadsheet	✓	✓	✓	✓
Reads, writes .WK3/.FM3	✓	✓	✓	✓
Outputs runtime .EXE	✓			
FREE runtime license	✓			
Tamperproof programs	✓			
Create custom help (.HLP)	✓			
Shed spreadsheet look	✓			
Small program files	3 MB	16 MB	15 MB	18 MB



1400 Hicks Road, Rolling Meadows, IL 60008



Create tamperproof, self-running programs with your own menus, tool bars, dialog boxes and on-line help.

Buy Visual Baler today and distribute spreadsheet applications the trouble-free way! Distribute any number of bulletproof programs with no royalties or additional spreadsheet copies needed!

**\$199\***  
(\$358 value)



Order before April 29, 1995 and get Icon Designer™, FREE!

**1-800-327-6108**  
708-506-9700 fax: 708-506-1808

\*\$9 shipping and handling charge per order. \$15 for Canada Baler 6.0 for DOS also available at \$199.

CIRCLE 2 ON READER SERVICE CARD

LOTUS SHOWCASE

# Monarch™ Is Your Key To Unlocking Vital Corporate Data

Are you buried in printed reports but what you *really need* is a way to bring report data into your spreadsheet or database? Monarch makes it happen. Monarch reads spooled print files, extracts the data, and lets you see it, sift it, select it, and send it out to popular PC applications. Now every mainframe report used in your organization is a source of vital data, with no rekeying!



CALL FOR FREE DEMO  
**1-800-445-3311**

**personks**

234 Ballardvale St.  
Wilmington, MA 01887  
508-658-0040 FAX 508-988-0105

CIRCLE 185 ON READER SERVICE CARD

## Data Translation

# The Easiest Way to Get Data into Spreadsheets and Databases!

DataImport 4.0 for Windows lets you translate text-based data from *any source* into over 30 spreadsheet and database formats, including Access, Excel, 1-2-3, Paradox and dBase. Get the data you want out of mainframe reports, print-to-disk files, downloaded information, e-mail, or any other text file on your PC. DataImport makes it easy!



Call for a FREE DEMO: (404) 449-1634

## DataImport™ 4.0 for Windows™

UNIVERSAL  
DATA  
TRANSLATION



\$189 single user

\$495 5-user LAN

30-day money back guarantee  
DOS version also available  
MasterCard, Visa and American Express

Demo available online: Filename: diwtd.zip, CompuServe: GO SPALDING, Lib 2; Anon. ftp: ftp.cica.indiana.edu ~/pub/pc/win3/util • Spalding Software, 154 Technology Pkwy., Ste. 250, Norcross, GA 30092 USA Fax (404) 449-0052 • 950004-DIW401

CIRCLE 136 ON READER SERVICE CARD

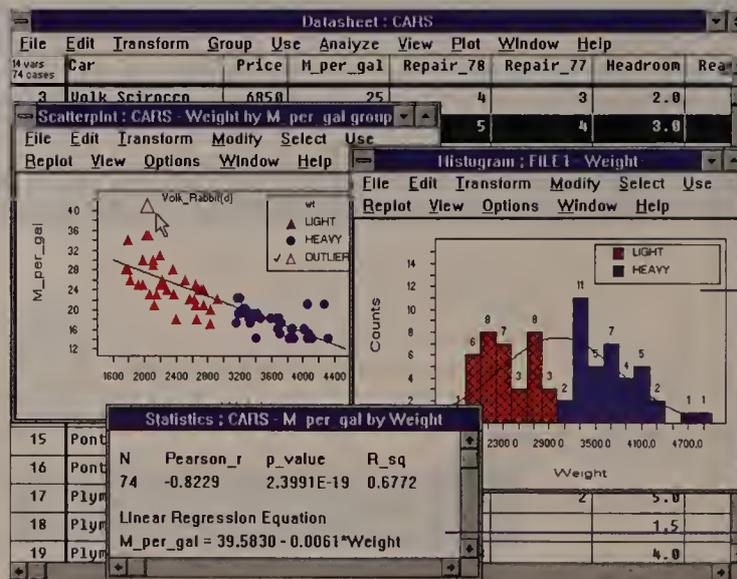
LOTUS SHOWCASE

# Take Your Data Further with BMDP New System

Where spreadsheets and databases leave off, *BMDP New System for Windows* takes your data further. This all-new statistical analysis program gives you the tools to quickly and easily explore your data.

Whether you need to forecast sales, evaluate product performance, study demographic data, or simply crunch statistics, *BMDP New System* is your software solution for quick, effective data analysis.

Any business or technical user who works with raw data will find *BMDP New System* an excellent addition to their software library, alongside their database and spreadsheet.



**Easy-to-Use Data Management**  
*BMDP New System* features a spreadsheet-like data editor for easy data entry. The Import/Export utility supports the most widely-used spreadsheet and database files.

**Wide Variety of Plots**  
*BMDP New System* features several plots and charts, including means comparison charts, bar charts, boxplots, scatterplots, and histograms.

**Most Commonly-Used Statistics**  
Choice of statistical routines include descriptive statistics, t-tests, ANOVA, frequency tables, and simple/multiple regression.

### Special Introductory Offer

You can now get *BMDP New System* at the introductory price of \$195.00 (suggested retail price of \$395). To order, call toll-free: 1-800-238-BMDP.

### New Professional Version

The *BMDP New System Professional Version* package was developed for users who perform more advanced analyses. Call for more information.

**BMDP Statistical Software, Inc.** • 12121 Wilshire Blvd. • Suite 300 • Los Angeles, CA 90025 • Tel: (310) 207-8800 • Fax: (310) 207-8844  
**BMDP Statistical Software** • Cork Technology Park • Model Farm Road • Cork, Ireland • Tel: +353 21 542722 • Fax: +353 21 542822

Offer valid only in the U.S., Canada, and Mexico, and cannot be used with any other offer. Price does not include shipping and handling fees.

CIRCLE 15 ON READER SERVICE CARD

OEM?  
Call for our  
white paper



# SMARTPAD™

Simplify Access to All Applications and Their Features.

Convert any application into a Windows shell

Use any bitmap as button face or combine text and bitmaps

Helpful popup ButtonClues™

Use innovative tab buttons to create multiple button "layers"

Embed or attach custom toolpads on any program window

Create floating pad palettes that pop up automatically or on-demand.

Add a macro recorder, task manager and run... processor to any toolpad

Buttons can launch programs, run recorded macros, send menu/keystroke commands and execute DDE commands



## Embed Customizable Toolbars in Any Application!

- Standardize the look, feel and function across applications from different vendors.
- Create customized shell to replace Program Manager.
- Add BalloonHelp and ButtonClues to any application for ease of use.
- Automate repetitive and complex tasks with macros, DDE, scripts, etc.
- Automate data sharing across Windows, DOS and host-based applications.



**Special Offer!**

STANDARD EDITION	\$89
PROFESSIONAL EDITION	\$199

**30-Day Money Back Guarantee**

### REVIEWS

*"The toolbar utility to end all toolbar utilities"*

- PC WORLD

*"Almost revolutionary"*

- WINDOWS SOURCES

*"Among the most impressive inter-application automation tools for Windows"*

- COMPUTER SHOPPER

*"Stands head and shoulders above anything else of its type in my experience"*

- WINDOWS ON-LINE



**Softblox**

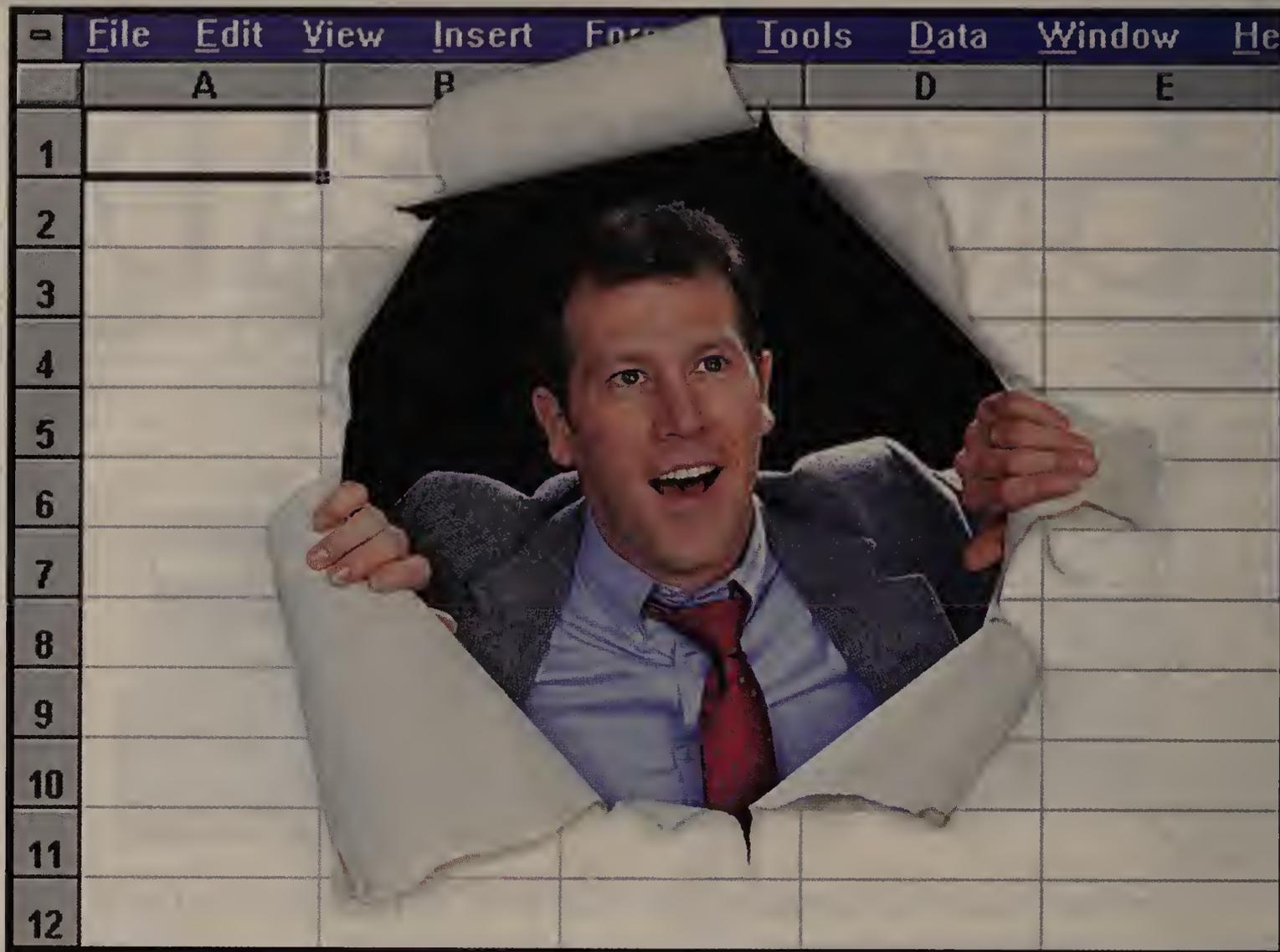
1201 WEST PEACHTREE STREET / ATLANTA, GEORGIA 30309

FAX. 404.892.0981

**Call us today! 800-434-0202**

FOR MORE INFO, CALL OUR FAXBACK LINE 404-892-1309

# Breakthrough.



## GO FIGURE The Problem-Solving Toolkit®

**GO FIGURE** is a completely new way to use your computer to find instant, easy, accurate answers to all your mathematical questions. But, like any breakthrough product, **GO FIGURE** is hard to describe. Let's just say it's a whole lot faster, easier and better than a spreadsheet.

COMPARE FOR YOURSELF

### GO FIGURE

VS.

### SPREADSHEET

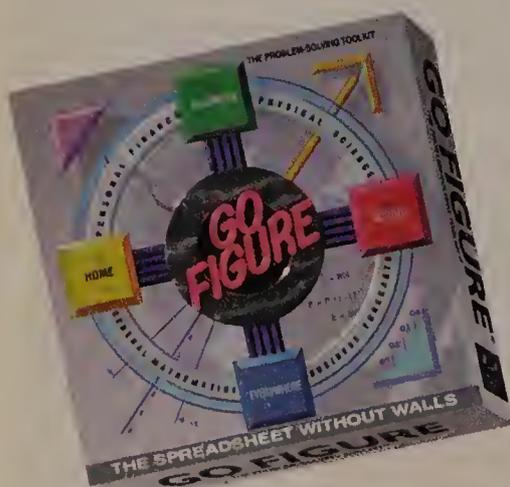
- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>■ No cells.</li> <li>■ Works like a pencil &amp; paper using ordinary words and numbers.</li> <li>■ Easy forward &amp; backward goal-seeking.</li> <li>■ Instant access to Encyclopedia with 12,000 formula entries.</li> <li>■ Ideal for number crunchers and computer novices.</li> </ul> | <ul style="list-style-type: none"> <li>■ Cells &amp; structured, uptight input.</li> <li>■ Loves it when you speak spreadsheet.</li> <li>■ You can't get there from here.</li> <li>■ Requires the brain of Albert Einstein.</li> <li>■ Is this anybody's idea of a good time?</li> </ul> |
|--|--|

### The intuitive spreadsheet alternative™

Break out of your cells with **GO FIGURE**, the breakthrough software for Windows™ that's changing the way everyone gets answers.

**Villa Crespo Software, Inc.**  
1725 McGovern Street, Highland Park, IL 60035.  
For more information, call 1-800-521-3963 or  
1-708-433-0500 or fax 1-708-433-1485.

**GO FIGURE The Problem-Solving Toolkit®**  
For IBM® PCs and all true compatibles. Made in USA.  
**VAR programs and site licensing available**  
©1995 Villa Crespo Software, Inc.



Encyclopedia of  
Formulas  
covers:

- Finance
- General Mathematics
- Physical Science
- Unit Conversions
- Date Driven Problems
- Special Interests and More!

Circle 251 on reader service card

**INCORPORATE  
ONLINE!**

# Form Your Own Corporation

by phone, by fax, online, in any state, in as little as  
8 minutes, as low as \$45

**I**t's amazing, but true. The Company Corporation (TCC) has set up more than 120,000 corporations in the last 23 years.

## Cut out the middleman and save up to 90%

The problem is most folks think you have to go through a law firm, pay \$2,000 to \$3,000, wait six weeks and then be bogged down with mountains of paperwork just to set up a corporation. Not so when you go through TCC. We need as little as 8 minutes of your time... online or over the phone. You can be incorporated the same day and it will cost as little as \$45. (That's right FORTY-FIVE DOLLARS ONLY), plus a state filing fee—usually \$74.

## Advantages of incorporating

- Protect your personal assets
- Get incredible tax breaks
- Deduct health insurance premiums
- Attract investors more easily
- Easy transfer of ownership
- And many more

## Speed, efficiency, low cost

TCC has been doing this for 23 years. That's all we do. No matter where in the world you live, we can incorporate you in

## Here's what our customers have to say:

"I've incorporated several companies through The Company Corporation, and it's great! They've saved me money on lawyer fees, made everything easy and understandable, and the corporations are every bit as real and legal and solid as if I'd paid three times the price to have a local lawyer draw them up. Corporate status is essential to doing business these days, and The Company Corporation makes the setup easy and painless. Their availability on CompuServe is another plus: the process is a snap, and they're available to answer questions. A great product from great people!"

*Thom Hartmann,  
Sysop, Desktop Publishing Forum*

"We incorporated with you and are extremely happy with the services you provided. You took the mystery out of incorporating and made Delaware law work for us. It's also nice to know that whenever we have a question, we can just dial you up (as we did quite a few times when we were filling out those S status filing and EIN application forms!). Thanks again for all your help!"

*Janice and Robert Pfister  
J&R Marketing Incorporated*

"I've now set-up four corporations online with The Company Corporation. Each time it was a pleasure to deal with them—the process was just as fast and easy as promised! Everyone I communicated with was very friendly and knowledgeable. I recommend The Company Corporation to everyone who needs to form a corporation."

*Julian Sorel  
Sorel Data Services*

any state, and are famous for our ability to set you up as a Delaware corporation—the ideal corporate haven.

## We do it all for you

Now we've made it especially easy for first-timers to incorporate. Just get online or call us with your credit card, and we'll do it all by phone, including name reservation. No red tape. No overwhelming legal fees. No hassle.

## If you're still unsure, try this:

We'll send you a FREE copy of HOW TO FORM AND SERVICE A CORPORATION AT VERY LOW COST! This amazing publication will tell you all you need to know to form your own corporation in all 50 states...legally, quickly, and affordably, with maximum protection for your personal assets.

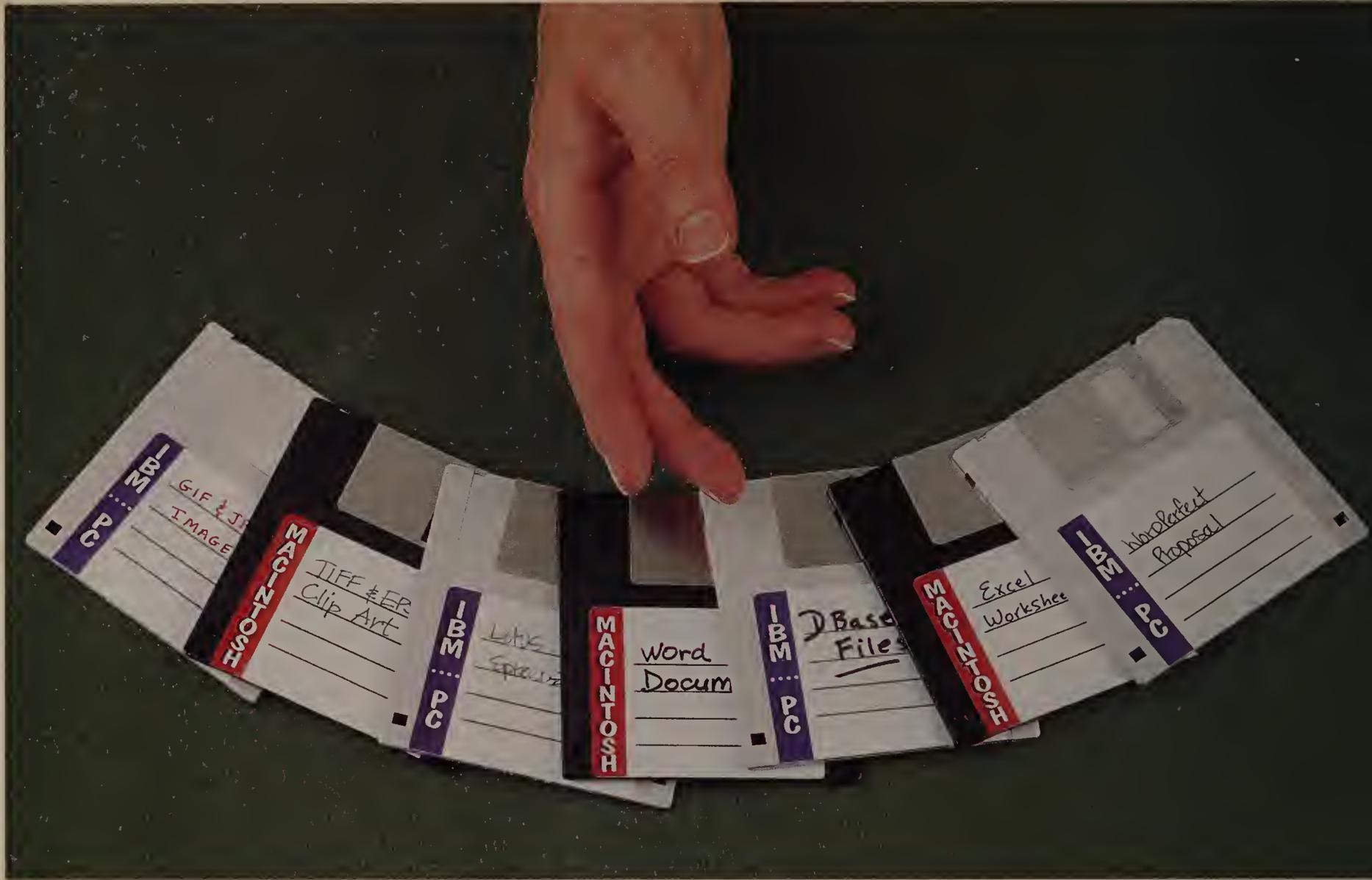
## Control your future

Do yourself, your family and your business a favor. Take about 8 minutes and contact us. We'll incorporate your company on the spot. Or, we'll send you our RISK-FREE publication. Either way it will probably be the smartest call you make this year. Incorporating is a powerful step in controlling your future. Take that step today.

**1-800-542-2677 Ext. 5650 • FAX 302-575-1346**

**THE COMPANY CORPORATION**

**Incorporate Online Through CompuServe—GO CORP  
or Prodigy—JUMP: The Company Corp  
And the Internet—<http://www.incorporate.com/tcc/>**

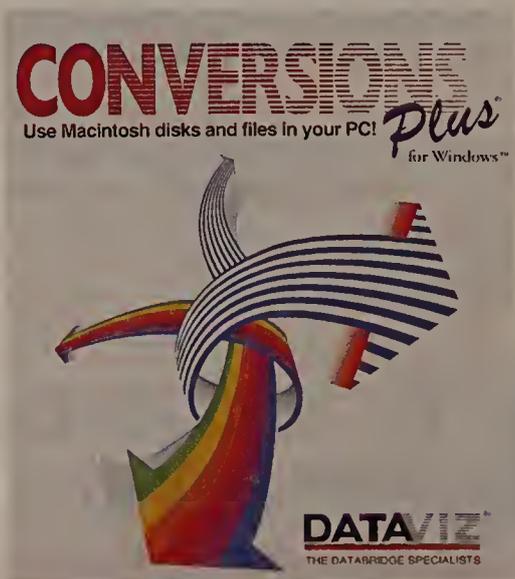


# Pick a file...any file Mac or PC

Conversions Plus lets you read any file on any disk  
and use it in your own software

Now you can work with more files than ever before... no matter what program they were created in or what type of disk you received them on, including word processing files, spreadsheets, databases, and graphic files.

Conversions Plus is the fast easy way to use files created in programs you don't have. It lets you convert, edit, print and



Call now for more information  
and the name of your nearest dealer.

save, all in your own software.

It even retains the original formatting including embedded graphics. And since you can use either a Mac or a PC disk, you can convert and use Mac files just as easily as PC files.

So play your cards right.  
Pick Conversions Plus.

800-335-0828  
**DATAVIZ**  
55 Corporate Drive • Trumbull CT 06611



# As Impressive On Balance Sheets As They Are On Spreadsheets

## Introducing The New Large-Screen Color Monitors From Goldstar

Not only do they give you  
more room to spread out, the  
new Goldstar Monitors deliver

uncompromised quality at an  
incomparable price. Compare  
Goldstar monitors to any other.  
For the perfect balance between  
performance and affordability,  
the bottom-line is get a Goldstar.

# GoldStar

## MONITORS

All The Qualities You're Looking For

LG Electronics U.S.A., Inc.,  
1000 Sylvan Avenue, Englewood Cliffs, NJ 07632 (201) 816-2000



AmeriQuest/NCD 800-222-8272 • Gates/FA 800-332-2222 • Globelle 800-745-7000  
Gram Micro 800-456-8000 • Liuski 800-454-8754 • Merisel 800-MERISEL (637-4735) • Micro United 800-755-8800  
Romart 516-365-9371 • SED 800-444-8962 • Tech Data 800-237-8931

Circle 96 on reader service card

### Model 2010 20 inch Color Monitor

*18.8" viewable image size; digital on-screen controls include RGB, color temperature, zoom and tilt; 30 memory settings (18 user storable); anti-reflection, anti-static coating (AR-ASC); .28mm dot pitch; dynamic focusing; up to 1280x1024 @ 77 Hz, flicker-free; auto-scan to 1600x1280 NI; MPR II compliant; VGA and BNC inputs.*

### Model 1727 17 inch Color Monitor

*FST, 16.1" viewable image size; digital on-screen controls include zoom, tilt and auto diagnostic; 34 memory settings (27 user storable); non-glare, anti-static coating; .28mm dot pitch; dynamic focusing; up to 1024x768 @ 76 Hz, flicker-free; auto-scan to 1280x1024 NI; MPR II compliant.*

### Model 1527 15 inch Color Monitor

*FST, 14" viewable image size; digital on-screen controls include RGB, color temperature, zoom and tilt; 40 memory settings (32 user storable); non-glare, anti-static coating; .28mm dot pitch; up to 1024x768 @ 76 Hz, flicker-free; auto-scan to 1280x1024 NI; MPR II compliant.*

PHOTOGRAPHY BY GIAMPIERO BENVENUTI, ILLUSTRATION BY JIM LUTKE



# BIG

Why buy a 17-inch monitor? For starters, you get two-thirds more Windows work space.

We test 30 of the latest models to find the best values.

# SCREENS

**T**he small monitors that come with most computers are like cramped office cubicles. There's never enough room to lay everything out in front of you. If you want to work with a bunch of documents at once, you need to constantly stack, shuffle, and move things around.

Buying a 17-inch monitor is like moving into an office with nearly twice the space. Those extra square inches of screen let you run Windows comfortably at a resolution of 1024 by 768—giving you nearly two-thirds more Windows work space than you get with 15-inch monitors, which for practical purposes top out at a resolution of 800 by 600.

In this review, we take a close look at 30 of the latest 17-inch monitors with street prices ranging from \$599 to just over \$1400. That's quite a range—and quite a price, compared to the \$300 to \$700 you can expect to pay for a 15-inch model. But if you need to view sev-

eral documents simultaneously, work with monster spreadsheets, or lay out pages, the extra dollars for a 17-incher will be well spent.

## Big-Screen Beauty Contest

The key to choosing a great 17-inch monitor is finding one with great image quality. Unfortunately, it's hard to tell the good from the bad unless you see them side by side, and such qualitative judgments are often a matter of taste. For those reasons, in addition to conducting laboratory tests, *PC World* assembled a panel of judges to compare and rate the 1024 by 768 image quality of the monitors reviewed here. Judges looked at three types of images: text in a Windows word processor, a spreadsheet, and a scanned color photo. We also performed objective contrast, brightness, misconvergence, and geometric distortion tests. Nearly all the monitors produced acceptable test scores. (See "Most

Monitors Make the Grade" for more details.)

When we tallied up the numbers, however, we found only a loose correlation between the subjective and objective results, proving that good numbers don't necessarily mean a good picture. By contrast, the opinions of the panelists—who weren't allowed to disclose their ratings to each other—were relatively consistent. For example, nearly everyone loved the IBM 17P and the Mag MXP17F, the two monitors with highest marks for image quality. And the monitors that fared worst—the Orchestra Tuba and the Mitsubishi Diamond Scan 17FS—got low ratings from the whole panel.

We also discovered that the type of picture tube (also known as the CRT, or cathode-ray tube) was the only specification that consistently reflected what people liked best. Overall, our judges strongly preferred monitors with Sony Trinitron CRTs, giving all but one

**By Eric Knorr**

such monitor very high marks for sharpness and color rendition. In our judges' eyes, the Mag MXP17F—the only monitor with a Toshiba CRT—produced an image as clear and sharp as that of the best Trinitron.

Remember, though, that you are the ultimate judge of a monitor's display quality. If you have to squint to tell the difference between a \$950 monitor we rated excellent and a \$750 monitor we rated good, you may not want to pay the extra \$200. You'll also find significant variation in image quality among monitors of the same make and model. This is because of inconsistent factory adjustments and quality control. We strongly advise you to visit a dealer and have a close look for yourself before deciding what to buy. (See "Tips for Buying and Tweaking Monitors.")

## Screen Size and Dot Pitch

The monitors in this review call themselves 17-inchers, but in fact their average screen size is just 15.8 inches. Monitor vendors defend this exaggeration by proclaiming that screen size denotes the diagonal measurement of the tube itself, not the viewable screen. If you have trouble swallowing that one, you're not alone: In California, the state attorney general's office has been investigating several monitor manufacturers for allegedly deceptive screen size claims in advertisements.

A monitor's dot pitch is a key factor in determining sharpness, especially at high resolution. To create a video image, monitors fire electron beams at tiny red, green, and blue phosphor dots arrayed on the inner surface of the CRT screen; the dot pitch is the distance between the centers of two neighboring phosphor dots of the same color. The monitors in this review had dot pitches ranging from .28mm to .26mm, and overall, the monitors that offered smaller dot pitches made a better impression on our judges. Trinitron CRTs have red, green, and blue vertical stripes instead of an array of dots; the stripe pitch listed in the table is the distance horizontally between the centers of two stripes of the same color.

## The Ergonomic Edge

Computing is hell on the eyes. If you're going to stare at a screen for hours on end, you not only need a monitor that looks good, but one that operates at a high refresh rate—that is,

one that renders an entire 1024 by 768 image at least 70 times per second (abbreviated as 70 Hz). Below 70 Hz, most people perceive a slight flicker that strains the eyes, especially when viewing white document backgrounds.

In fact, 70 Hz is barely adequate. On larger screens, flicker is more perceptible, which is one reason the industry recently established a 75-Hz refresh standard. In Europe, a new 85-Hz standard has been proposed, and eight monitors in this review already accommodate

possible, ask a dealer to set up a demo, and see how the monitor fares for yourself.

While some monitors run at 1280 by 1024 and even 1600 by 128, few users will need these resolutions—Windows text shrinks too much for easy readability. But users of computer-aided design and desktop publishing programs may need the added detail; they should get a monitor with a refresh rate of 70 Hz to 75 Hz at their desired resolution.

Never settle for working at an interlaced

## Best Buys



**We evaluated the monitors in this review based on image quality, price, features, and support policies. Of the 30 units we looked at, three won Best Buys: The Nokia Multigraph 447X, the Mag MXP17F, and the CTX 1785GM.**

**The Nokia Multigraph 447X is the overall winner. With a street price of slightly more than \$1000, it's not the cheapest 17-incher you can buy. But its Trinitron tube delivers images on a par with**

**the best, and its on-screen controls offer more options than any other monitor tested.**

**The Mag MXP17F earns second place. Our judges loved its image quality, and its \$950 price tag is a little easier on the wallet. The front-panel controls are a little hard to use, but if you hook this monitor to your PC with a serial cable, you can adjust your image with a mouse instead.**

**The CTX 1785GM is the low-cost Best Buy. At \$750, this monitor cannot**



it. You might not see the difference between 75 Hz and 85 Hz, but the image feels more stable and paper-like, and you may get fewer headaches.

Some monitors claim to offer refresh rates of 100 Hz or even 120 Hz at 1024 by 768. To achieve these rates, you'll need both a graphics card that reliably produces that many screens and a monitor with a high *video bandwidth* (a number that indicates how many pixels a monitor can render per second). Unfortunately, the video bandwidth can be a difficult spec to obtain: Some vendors fudge the number, while others simply refuse to disclose it. If you want the highest refresh rate

reso-  
lution. When a monitor interlaces, it takes two passes to complete an image. The flicker from interlacing is so bad it makes 60 Hz look great by comparison. All the resolution specifications listed in this article are for noninterlaced operation.

## Adjusting Your Image

Every monitor gives you a few basic image controls—at the very least, contrast and brightness along with horizontal and vertical

size and position. Even if your monitor automatically fills the image to the border of the screen, you still need to tweak the image with basic sizing and positioning controls. Besides size and position, the most common image geometry controls are pincushion and barrel, which respectively cinch and expand the image horizontally until it aligns with the frame. Almost as common are trapezoid and keystone, which adjust the width of an image from top to bottom, respectively. Perhaps

**match the image quality of the other two, although the differences emerge only under close scrutiny. You don't get on-screen menus, but you'll find CTX's button controls sensibly laid out and easy to use. The CTX delivers a class act for a fair price.**



*From left to right: Nokia Multigraph 447X, CTX 1785GM, and Mag MXP17F.*

most important of all is image tilt, which rotates the entire image so that all four edges align with the frame. Another feature, called *degaussing*, zaps away random color swirls produced by the earth's magnetic field. All the monitors reviewed degauss when you turn them on, but a few of them lack a manual degaussing control.

Color control settings, found on all but four monitors, can make a real difference in how pleasing your monitor's image looks. Color temperature controls let you adjust the hue of white to your taste. Most monitors also include individual controls to adjust the amounts of red, green, and blue visible on

screen. The Iiyama, Mag, Mitsubishi, Nanao, and both NECs also offer color-matching software to help you imitate hard-copy hues produced on a color printer—a useful feature for graphic artists and desktop publishers.

The most hyped feature in monitorland is the on-screen menu, which pops up when you punch a button on the front panel of some monitors. Instead of a lot of buttons or knobs to fiddle with, you get just a couple of buttons that move the cursor, plus an on-screen list of controls and visual feedback as you make adjustments. Usually, a menu scheme works better than a dozen or so buttons, but not always. For example, the Best Buy CTX 1785GM's buttons are much easier to use than the Qume QM1791's on-screen menus.

All the monitors reviewed will save adjustments automatically, so when you turn your monitor back on, the settings are as you left them. In addition, you can save and recall additional settings (up to 42 depending on the monitor) for specific applications—or to suit the preferences of different people who share the same PC.

### Plugging and Playing

You can use all the monitors in this article with any standard VGA or super-VGA graphics card. However, some also offer BNC connectors, which let you hook your monitor to a high-end graphics card using separate coaxial cables for red, green, and blue signals. Using a BNC connection produces a crisper image that keeps fine lines distinct—particularly useful in CAD applications.

The Nanao FlexScan T2-17 and both NECs also offer Plug and Play compatibility. You've heard this term in connection with Windows 95, but when it comes to monitors, PnP has nothing to do with software. Instead, PnP enables a monitor to send its specifications to the graphics card, which then automatically adjusts the monitor to its optimum refresh rate for the resolution you've set. To enable this feature, you'll need a PnP video card, which should be available by the time you read this.

Beyond Plug and Play is ACCESS.bus, which enables you to use software to adjust image geometry and color. An ACCESS.bus connection uses a standard telephone cable that runs from your monitor to the system unit. At this writing only a few PCs and one of the monitors reviewed (the NEC Multi-

Sync XP17) have ACCESS.bus jacks. However, the Mag MXP17F and the Mitsubishi Diamond Scan 17FS have serial ports, allowing you to make a serial connection to your PC and enjoy the same control. Install the image control software (which comes with each monitor), and you can use a mouse to tweak your picture ad infinitum.

### Power, Safety, and Service

Every monitor in this review complies with the environmentally conscious VESA DPMS standard, which stipulates that after a period of inactivity, a monitor must sink into a series of three power-saving sleep modes, each deeper than the last. Some monitors require a DPMS graphics card to do this, some can do it with software alone, and many do it either way. However, only about half the monitors reviewed let you set the length of time before a monitor dozes off.

Monitors give off electromagnetic energy, which some studies have linked to miscarriages, leukemia, and disorders of the nervous system. All but one of the monitors in this article comply with Sweden's MPR II guidelines, which set a maximum level for electromagnetic monitor emissions (the Smile offers this as an option); seven also comply with the much stricter TCO guidelines. Monitors also emit radio waves that may interfere with nearby TV and radio reception. An FCC Class B rating, which is found on all but the Hyundai HL-7682P and Tatung CM-17MKR, reduces this problem.

Remember that there's no better indication of a company's confidence in its product than the length and coverage of its warranty. Well over half the monitors in this review come with a three-year warranty, while just three—Apple, Link, and Qume—offer skimpy one-year coverage. IBM and Panasonic have the best policies, consisting of a three-year warranty and free on-site service.

*Eric Knorr is a contributing editor for PC World and the editor and principal author of The PC Bible (Peachpit Press, Berkeley, California, 1995). Testing by Joseph Allotey, Dave Casini, and Susan Silvius; research and support by Anita Hamilton, Arden Hoffman, and Mike Salayko.*

**For more information about all products in this article, circle reader service no. 909.**

## ADI MicroScan 5EP

Estimated street price: \$769

Image quality: Fair

Viewable screen: 15.5 inches

Maximum refresh at 1024 by 768: 76 Hz

Maximum noninterlaced resolution: 1280 by 1024

**O**ur ADI MicroScan 5EP review unit produced a barely acceptable image. The judges felt the color and sharpness were unexceptional, but the main problem was that the Windows desktop was cut off on both sides by about 1/8 inch. This persisted no matter how much we reduced the horizontal size with the monitor's push-button controls—whose relatively large increments made sizing and positioning difficult. If you're looking for a monitor in the \$750 range, check out the CTX 1785GM instead. *ADI, 800/228-0530, 408/944-0100* Reader service no. 775

## Apple Multiple Scan 17

Estimated street price: \$1069

Image quality: Excellent

Viewable screen: 16.1 inches

Maximum refresh at 1024 by 768: 60 Hz

Maximum noninterlaced resolution: 1024 by 768

**T**hanks to its Trinitron tube, the Apple Multiple Scan 17 won an Excellent rating from our judges, even though four remarked that the white backgrounds seemed grayish. A Mac monitor by origin, the Multiple Scan 17 has nonintuitive controls, and it's the only unit that tops out at 1024 by 768. Worse, Apple recommends a refresh rate of no more than 60 Hz at this resolution, which wears on the eyes after awhile. Add a brief, one-year warranty, and we can't recommend this monitor. *Apple Computer, 800/538-9696, 408/996-1010* Reader service no. 776



## Daytek DT-1730

Estimated street price: \$599

Image quality: Fair

Viewable screen: 16.1 inches

Maximum refresh at 1024 by 768: 75 Hz

Maximum noninterlaced resolution: 1280 by 1024

**A**t \$599, the DT-1730 is the lowest priced monitor reviewed, but its fair image quality is no prize. The controls are easy to figure out, but half require a screwdriver to adjust. And our review unit's geometric distortion was unacceptable. Still think the price is too good to pass up? Before you buy, visit a dealer and judge for yourself. *Daytek, 800/329-8351, 214/241-1700* Reader service no. 778

**IF YOU CAN AFFORD to pay top dollar, the \$1299 Nanao FlexScan T2-17 is your best bet. It has high image quality and a full feature set.**

## CTX 1785GM

Estimated street price: \$750

Image quality: Good

Viewable screen: 16.1 inches

Maximum refresh at 1024 by 768: 75 Hz

Maximum noninterlaced resolution: 1600 by 1280



With crisp image quality, a truckload of features, and a low \$750 street price, the CTX 1785GM gives you more monitor for your money than any other unit reviewed. The first thing you notice is an elegant design: The only exposed control is the brightness knob, which sits next to a slick pop-out panel containing all the other controls—in a sensible layout that proves you don't need an on-screen menu to adjust things easily. The automatic fill-to-edges feature reduces futzing with geometry, and the controls for setting red, green, and blue values are instantly decipherable. The image tilt, trapezoid, keystone, and color controls add value to this display. For over \$100 less than the average price of the monitors we reviewed, CTX delivers a class act. *CTX Int'l, 909/598-8094* Reader service no. 777

## Delta Socos 1765 VAF

Estimated street price: \$665

Image quality: Good

Viewable screen: 15.9 inches

Maximum refresh at 1024 by 768: 70 Hz

Maximum noninterlaced resolution: 1280 by 1024

**O**f the six monitors priced under \$700, the Delta Socos 1765 VAF's image quality impressed our judges the most. This unit also offers a nice selection of button-based controls, including color convergence and image tilt. What knocks this monitor out of the running is its relatively low 70-Hz refresh rate at 1024 by 768. *Delta Products, 510/770-0660* Reader service no. 779

## Hyundai HL-7682P

Estimated street price: \$730

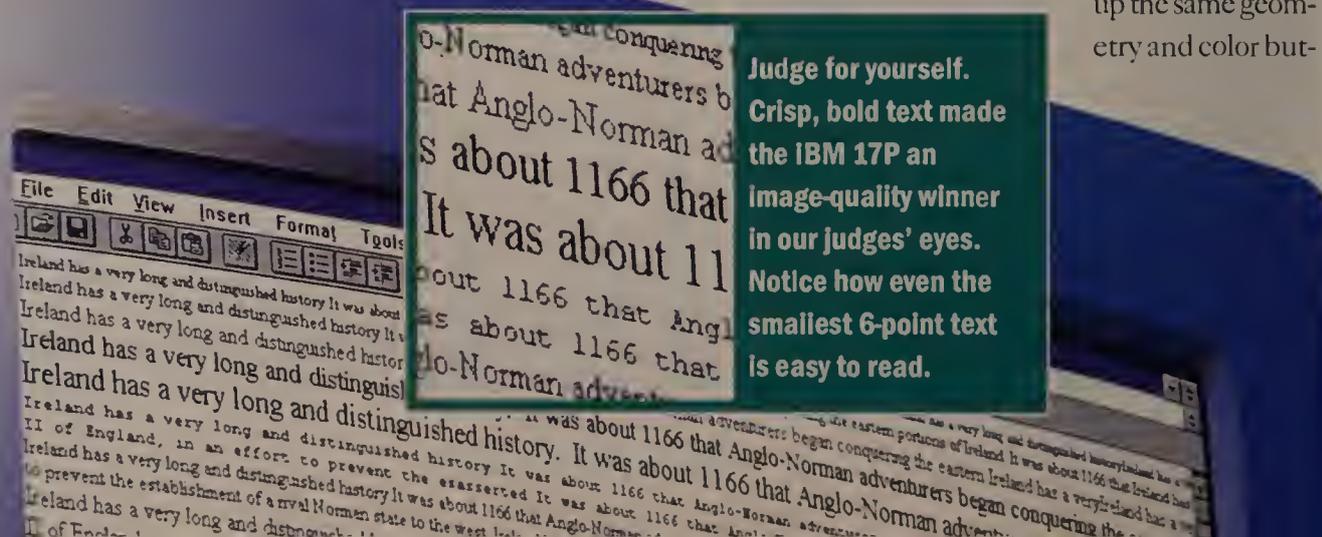
Image quality: Good

Viewable screen: 15.7 inches

Maximum refresh at 1024 by 768: 70 Hz

Maximum noninterlaced resolution: 1600 by 1280

**T**he Hyundai HL-7682P earned the same solid image quality ratings as the similarly priced Best Buy CTX 1785GM. The controls are also alike: A stylish pop-out drawer serves up the same geometry and color but-



**Judge for yourself. Crisp, bold text made the IBM 17P an image-quality winner in our judges' eyes. Notice how even the smallest 6-point text is easy to read.**



## MONITORS 17-INCH

an 85-Hz refresh rate at 1024 by 768, and the Mag MXP17F is well worth its \$950 price. *Mag InnoVision, 800/827-3998, 714/751-2008* Reader service no. 783

### Mitac L1782

Estimated street price: \$689

Image quality: Fair

Viewable screen: 15.9 inches

Maximum refresh at 1024 by 768: 76 Hz

Maximum noninterlaced resolution: 1600 by 1280

**T**he Mitac L1782 is essentially the same monitor as the Link LM-1791WWR, with the same basic specs and an identical on-screen menu system. Likewise, this monitor received a thumbs-down on image quality from our judges. The only major difference between the Mitac and the Link is that the Mitac costs \$160 less on the street. However, the CTX 1785GM costs only \$60 more than this monitor, so there's no need to trade image quality for a low price. *Mitac, 800/285-9874* Reader service no. 784

### Mitsubishi Diamond Scan 17FS

Estimated street price: \$945

Image quality: Poor

Viewable screen: 15.6 inches

Maximum refresh at 1024 by 768: 76 Hz

Maximum noninterlaced resolution: 1280 by 1024

**I**f image is everything, then the Mitsubishi Diamond Scan 17FS is in big trouble. Our judges felt that this monitor produced poor-quality images, and they volunteered such comments as "hazy," "misty," and "out of focus." A major CRT manufacturer, Mitsubishi may be concentrating its efforts on manufacturing its new licensed clone of the Trinitron CRT, the DiamondTron. (Unfortunately, no DiamondTron monitors were ready in time for this review.) Whatever the reason, our review unit was too fuzzy to be taken seriously. *Mitsubishi Electronics America, 800/843-2515, 714/236-6352* Reader service no. 785

### Nanao FlexScan T2-17

Estimated street price: \$1299

Image quality: Excellent

Viewable screen: 15.9 inches



**BUILT-IN SPEAKERS** needn't be unsightly. All you see of the speakers on the Philips 17B are the grilles on each side of the monitor.

Maximum refresh at 1024 by 768: 105 Hz

Maximum noninterlaced resolution: 1600 by 1200

**T**he Nanao FlexScan T2-17 is the monitor to buy if price is no object. Its stunning Trinitron images ranked third in the eyes of our judges, and its one-touch control actually makes adjusting geometry and color fun. A single knob does it all. Select horizontal size, for example, and you rotate the knob clockwise to expand the image, counterclockwise to shrink it—while an on-screen readout tells you where you're at. A maximum refresh rate of 105 Hz at 1024 by 768, Plug and Play, adjustable power-down, full color control, TCO compliance—you name it, the Nanao FlexScan has it. But if you can live without TCO, PnP, and the knob, note that Nokia offers a comparable model—one of our Best Buys—for \$270 less. *Nanao USA, 800/800-5202, 310/325-5202* Reader service no. 786

### NEC MultiSync XE17

Estimated street price: \$1060

Image quality: Good

Viewable screen: 15.5 inches

Maximum refresh at 1024 by 768: 75 Hz

Maximum noninterlaced resolution: 1280 by 1024

**N**EC has a reputation for setting the standard in monitors, and the MultiSync XE17 delivers in one sense: Its on-screen menu system is without peer. Elegant, sensibly organized menus slide past as you select controls and make adjustments with a convenient cursor diamond built into the front panel. The XE17 also has accessible focus controls—great for sharpening up a monitor as it ages—plus TCO compliance, Plug and Play, and automatic fill-to-edges. However,

with a price in the \$1000 range, this monitor should deliver better image quality than it does. *NEC, 800/632-4636, 708/860-9500* Reader service no. 787

### NEC MultiSync XP17

Estimated street price: \$1295

Image quality: Excellent

Viewable screen: 15.5 inches

Maximum refresh at 1024 by 768: 120 Hz

Maximum noninterlaced resolution: 1280 by 1024

**N**early identical in appearance to the MultiSync XE17, but slightly more compact, the MultiSync XP17 duplicates all the XE17's features—the same terrific menus, accessible focus controls, and Plug and Play operation. However, the XP17's much higher bandwidth enables it to deliver a better image, and its unique ACCESS.bus connector—plus superb image control software—give you complete mouse control over color, geometry, and power-down times. (If your PC doesn't support ACCESS.bus—and most don't—you'll need to install an ACCESS.bus parallel port adapter to make the connection.) Impressive as all this is, we found the \$1295 price to be too steep. *NEC, 800/632-4636, 708/860-9500* Reader service no. 788

### Nokia Multigraph 447X

Estimated street price: \$1029

Image quality: Excellent

Viewable screen: 15.4 inches

Maximum refresh at 1024 by 768: 90 Hz

Maximum noninterlaced resolution: 1600 by 1280



The Nokia Multigraph 447X has it all: looks, tons of features, and an attractive price. True, \$1000 isn't exactly cheap, but in exchange you get image quality surpassed only by the Mag MXP17F and the IBM 17P (Nokia makes the latter for IBM). This monitor, which features a Trinitron picture tube, offers the same controls as the 17P plus a few more, all of which you adjust with four buttons and slick on-screen menus instead of the IBM's 29 buttons. For a superstable image, you can boost the refresh rate at 1024 by 768 all the way to 90 Hz. The Multigraph 447X is our high-end Best Buy of the roundup and the smartest choice if you have your heart set on a Trinitron. *Nokia Display Products, 800/296-6542, 415/331-6622* Reader service no. 789



# WHEN

So, what are you really asking for? Just a printer that won't let you down.  
And when it comes to crunch time, you need a printer that can handle more than its share of the load.

# SOONER

Say hello to the QMS® 1725 SLS. Designed to make your day go smoother.  
No muss. No fuss. No excuses.

# ISN'T SOON

A reliable, fast, networkable laser printer that can have you saying hello to higher productivity  
and goodbye to longer work days.

# ENOUGH.

If you've always got your job on the line, get QMS on the line  
at 800 972-6695 Dept. 5016.



**Outperform The Very Best.**

For service on QMS or other products, call 800 762-8894 (U.S.) • Q-Fax 800 633-7213 • Canada 800 263-5508  
QMS and the QMS logo are trademarks or registered trademarks of QMS, Inc. One Magnum Pass, Mobile, AL 36618, 205 633-4300.





Print vibrant, high-end color on office papers for less cost per page than low-end color. They'll snap to attention.

Connect faces and places with photorealistic quality. Welcome to the world of practical color!



# brilliantly practical.

this machine. Reliability? Add 750 sheets of paper and let it run overnight. Now, that's robust. Cost? At \$4,995 there's nothing in its performance range that even comes close. Best of all, it's from Tektronix, a

Fortune 500 leader, that's been making world-class color printers for 13 years. **The Phaser 340 Color Printer.** So practical, it's brilliant.



## Tektronix

Circle 124 on reader service card

For free output sample or nearest dealer, call 800-835-6100, Ext. 1036.

## Optiquest 4000TC

**Estimated street price:** \$849

**Image quality:** Fair

**Viewable screen:** 15.6 inches

**Maximum refresh at 1024 by 768:** 80 Hz

**Maximum noninterlaced resolution:** 1280 by 1024

**T**he Optiquest 4000TC proves that not all Trinitrons are created equal: This one was plagued by fuzziness noted by most of our judges. Like the ADI MicroScan 5EP, it also scanned improperly, leaving a thin vertical strip out of reach on both sides of the image. The Optiquest also lacks trapezoid, keystone, and image tilt controls, and though you get a three-year warranty, labor is covered only for the first year. *Optiquest, 800/843-6784, 909/468-3750* Reader service no. 790

## Orchestra Tuba

**Estimated street price:** \$669

**Image quality:** Poor

**Viewable screen:** 15.9 inches

**Maximum refresh at 1024 by 768:** 72 Hz

**Maximum noninterlaced resolution:** 1600 by 1280

**W**hen we first tested this monitor, faint horizontal streaks across our color test image made us think we had a defective unit. So we tried another—only to find the same problem. This defect, plus dull colors, caused our judges to give this monitor a poor image quality rating. Orchestra promises to have corrected the problem by the time you read this. If so, then the bargain pricing and full complement of controls could make this basso profundo a contender. *Orchestra Multi-systems, 800/237-9988* Reader service no. 791

## Panasonic PanaSync/Pro C-1792P

**Estimated street price:** \$919

**Image quality:** Good

**Viewable screen:** 15.8 inches

**Maximum refresh at 1024 by 768:** 100 Hz

**Maximum noninterlaced resolution:** 1600 by 1280

**A** few of our judges praised the Panasonic PanaSync/Pro C-1792P for its sharpness, but a slight dip in the top border of the image caused unacceptable geometric distortion. Otherwise, this monitor is well designed: The on-screen menus provide easy access to a full set of controls. If you find a unit without

the distortion problem, the Panasonic might be worth considering—were it not for the ViewSonic 17, which costs \$70 less and is virtually the same monitor. *Panasonic, 800/742-8086, 201/348-7000* Reader service no. 792

## Philips 17B Model 1766DC

**Estimated street price:** \$799

**Image quality:** Good

**Viewable screen:** 16 inches

**Maximum refresh at 1024 by 768:** 75 Hz

**Maximum noninterlaced resolution:** 1280 by 1024

**S**omeday, all monitors will come with built-in speakers. For now, the Philips 17B is one of the few such 17-inch models available—and it's a good deal. The price is a bit below average and the image quality a tad above, so you're basically getting the speakers, volume control, and headphone jack for free. The only drawback is the set of controls: There are plenty of them, but cryptic abbreviations

## Tips for Buying and Tweaking Monitors

**E**ven if you find a monitor that looks promising in this review, you still need to inspect the unit yourself to make sure you don't get a lemon. Here are a few things to check as you give a prospective buy the once-over—along with some tips for improving images on the fly.

**Size.** Some monitors have trouble getting the image to fill the frame, although monitors that exhibit this problem in the showroom are usually just poorly adjusted. Before you buy, play with the horizontal and vertical size and position controls to see if you can get the image precisely centered and flush with all four screen edges.

**Geometry.** When a monitor suffers from rough handling during shipping, geometry—the shape of the image—is the first thing to go. The more geometry controls a monitor has, the better chance you have of being able to fix a crooked image. Sometimes the entire image is tilted, which can only be corrected with an image tilt (or image rotation) control. If the sides bow outward or collapse inward, you need pincushion and barrel controls. Trapezoid and keystone controls can correct an image that's too fat or narrow at the top or bottom. However, no control can correct a small bend or ripple on one edge of an image, and controls for eliminating a dip or bow in an image's top or bottom edge are extremely rare.

**Focus.** Sharpness is subjective, but you can usually tell the crisp from the fuzzy when you compare several monitors side by side. Small, dark letters on a light background are a good test of sharpness. Look not only at the center of the screen but also at the corners, to make sure the focus is

uniform. Very few monitors have an adjustable focus control. However, a "focus" problem may in fact be a maxed-out brightness or contrast control: Turned up too high, either one may make a monitor appear fuzzy, so play with these basic controls before you jump to conclusions.

**Glare.** Most monitors use a screen coating to reduce glare from reflected light, which can be harder on the eyes than flicker. Side by side, it's pretty easy to see which monitors handle glare better than others. Note that the less curvature the screen has, the easier it is to eliminate glare when you tilt or swivel the monitor. Trinitron monitors have a completely flat screen, which reduces glare from overhead lighting.

**Color.** Don't like the colors you see on screen? Most 17-inch monitors let you adjust screen hues and even set individual red, green, and blue values. However, if you think one monitor's colors look washed out compared to another's, it may be because the brightness or contrast has been turned up too high. Often, turning down brightness just a tad will suddenly make colors appear rich again.

Note that if you're serious about scrutinizing a monitor before you buy, you might consider DisplayMate, an easy-to-use program that contains a series of test patterns you can use to calibrate as well as evaluate monitors. If you can't use DisplayMate at your dealer, you may want to ensure that you get a money-back guarantee on your monitor—if your tests don't check out, you can always send the monitor back. • *DisplayMate for Windows \$79; Sonera; 800/932-6323* Reader service no. 803

# VROOM.

## Stealth 64 Video. The World's Fastest Multimedia Accelerator.

If you're into multimedia, you need to get a Diamond Stealth 64 Video VRAM into your PC. And treat your eyes to the fastest graphics and smoothest, full-motion video you've ever seen!

Powered by the sizzling S3 968 chip, Stealth 64 Video flies even

faster than our Stealth 64 VRAM.

Add to that 24-bit True Color, 1280x1024 resolution and accelerated full-motion, full screen, 30 frames-per-second video playback and upgradability



to hardware MPEG. For more details, CALL **800-4-MULTIMEDIA** or use our FAX-BACK service at **800-380-0030**. And give your imagination vroom to fly.

All trade names referenced are the service mark, trademark, or registered trademark of the respective manufacturers. All rights reserved. Diamond Multimedia reserves the right to change specifications without notice. 1995 Diamond Multimedia Systems, Inc., formerly Diamond Computer Systems, Inc.

# WITH A VIEW!

*We did it the Diamond way. Nobody can provide faster graphics and video, because of our unique design and the sizzling S3 968 processor, which combines graphics and video on a single chip.*

*Desktop Productivity. InControl Tools software provides an intuitive interface for controlling the advanced graphics and multimedia functions of your Stealth 64 Video VRAM. Control your Windows desktop including video playback and audio, color calibration, and resolution switching on-the-fly.*

*Only a Stealth beats a Stealth. Our Stealth 64 Video VRAM won the title as the world's fastest graphics accelerator. And the new Stealth 64 Video VRAM is even faster!*

*Performance tuned. Everything about Stealth 64 Video VRAM is tuned for speed, including its 64-bit graphics processor and high performance drivers for Windows, NT 3.5, O/S2 WARP and AutoCAD.*

*Look at the big pictures. Stealth 64 Video VRAM gives you smooth, realistic, full motion, full-screen video playback at 30 frames-per-second using X,Y interpolation and color space conversion. And it supports all popular formats, including MPEG, Motion-JPEG, Indeo, Cinepak and Video 1 files. Upgrade to our Motion Video Player Daughtercard for hardware MPEG decode and live video input. It's Hollywood on your PC.*

*Look sharp, be sharp. Stealth 64 Video VRAM gives you a maximum 120 Hz refresh rate for rock-solid, flicker-free, fine-grained images and super-high resolutions up to 1600x1200.*

*Color larger than life. Our advanced 24-bit True Color design gives you the richest, most accurate color possible. Packed pixel mode provides up to 16.7 million colors at 1280x1024 in 4MB for photo-realistic imaging.*

*Great performance for your money. Just \$389 (ERP) for 2MB version. \$559 (ERP) for the 4MB version. You can also add hardware MPEG for only \$299 (ERP)! Plus, you get unlimited support via phone, fax, CompuServe or America Online- and the Diamond 5 year warranty.*



# DIAMOND

MULTIMEDIA  
(Formerly Diamond Computer Systems, Inc.)



Circle 60 on reader service card

viations on the little LED display and an odd menu structure make adjustments unnecessarily difficult. Nonetheless, if you want to hear Justus cackle wildly in *Blown Away*, this is the monitor for you. *Philips*, 800/835-3506, 310/217-1300 Reader service no. 793

## Qume QM1791

Estimated street price: \$635

Image quality: Poor

Viewable screen: 15.9 inches

Maximum refresh at 1024 by 768: 70 Hz

Maximum noninterlaced resolution: 1600 by 1280

The Qume QM1791 is similar to the Link LM-1791WWR and the Mitac L1782, with awkward on-screen menus and an even less attractive image. Here's how to recognize this generic monitor: If you see these four buttons on the front panel—a diamond with a missing left corner, a minus sign, a plus sign, and a bent left arrow—then you should probably run the other way. *Qume*, 800/457-4447, 408/473-1500 Reader service no. 794

## Samsung 17GLs

Estimated street price: \$799

Image quality: Good

Viewable screen: 15.6 inches

Maximum refresh at 1024 by 768: 76 Hz

Maximum noninterlaced resolution: 1280 by 1024

The 17GLs produces a sharp image, but its image quality suffers from slightly dull color rendition. As with the Nanao, you get on-screen controls and a handy knob for making adjustments. The relationship between

### FEATURES COMPARISON The Choice Is Yours: 30 Big-Screen Monitors

Product name	GENERAL FEATURES			SCREEN FEATURES						
	Street price as of 12/1/94	Dimensions (width/depth/height in inches)	Weight (pounds)	Picture tube	Viewable screen (diagonal inches)	Automatic fill-to-edges <sup>1</sup>	Dot/stripe pitch (mm)	Maximum refresh at 800 x 600 (Hz)	Maximum refresh at 1024 x 768 (Hz)	Maximum refresh at 1280 x 1024 (Hz)
ADI MicroScan 5EP	\$769	16.5 x 19.5 x 15.75	40.4	Hitachi	15.5	○	dot .28	100	76	60
Apple Multiple Scan 17	\$1069	16.25 x 18.5 x 16.5	49.6	Sony Trinitron	16.1	○	stripe .25	75	60	n/a
CTX 1785GM	\$750	16.75 x 19.75 x 17.25	48.4	Matsushita	16.1	●	dot .26	75	75	75
Daytek DT-1730	\$599	16.75 x 16.6 x 19	43.8	Hitachi	16.1	●	dot .28	90	75	73
Delta Socos 1765 VAF	\$665	16.75 x 18.5 x 15.5	41.2	Hitachi	15.9	○	dot .26	72	70	60
Hyundai HL-7682P	\$730	16.25 x 19.5 x 16.25	48.4	Hitachi	15.7	○	dot .26	72	70	70
IBM 17P	\$1199	16.25 x 18.25 x 16.75	51.2	Sony Trinitron	15.4	●	stripe .25	76	77	77
IBM 17S/S	\$1410	16.5 x 19 x 17	45.6	Panasonic	16.2	○	dot .27	70	75	77
Iiyama VisionMaster 17	\$790	16.5 x 19 x 16.75	50.2	Hitachi	15.8	○	dot .26	100	100	80
Link LM-1791WWR	\$850	16.75 x 19.25 x 16.75	46	Hitachi	15.8	○	dot .26	76	76	76
Mag MXP17F	\$950	17.5 x 20 x 16.75	53.6	Toshiba	16.1	○	dot .26	120	85	76
Mitac L1782	\$689	16.6 x 19 x 17.25	45.42	Hitachi	15.9	○	dot .26	76	76	76
Mitsubishi Diamond Scan 17FS	\$945	16 x 17.5 x 15.5	39.4	Mitsubishi	15.6	○	dot .28	76	76	74
Nanao FlexScan T2-17	\$1299	15.6 x 18.75 x 16.25	56.2	Sony Trinitron	15.9	○	stripe .25	135	105	80
NEC MultiSync XE17	\$1060	16.5 x 19.5 x 17.25	50.4	NEC	15.5	●	dot .28	120	75	60
NEC MultiSync XP17	\$1295	16.5 x 19 x 16.75	54	NEC	15.5	●	dot .28	160	120	75
Nokia Multigraph 447X	\$1029	16.8 x 18.1 x 16.4	45.8	Sony Trinitron	15.4	○	stripe .25	110	90	75
Optquest 4000TC	\$849	16.25 x 20 x 16.5	54.6	Sony Trinitron	15.6	○	stripe .25	90	80	60
Orchestra Tuba	\$669	16.25 x 19.25 x 17	44.8	Hitachi	15.9	●	dot .26	72	72	75
Panasonic C-1792P	\$919	16.25 x 17 x 17.6	38.2	Matsushita	15.8	○	dot .27	128	100	77
Philips 17B Model 1766DC	\$799	16.5 x 19 x 16.25	42	NEC	16	○	dot .28	75	75	60
Qume QM1791	\$635	16.75 x 19.5 x 17.25	46.2	Hitachi	15.9	○	dot .26	72	70	72
Samsung 17GLs	\$799	16.6 x 17.75 x 17	46.8	Hitachi	15.6	●	dot .26	76	76	76
Samtron SC-728SXL	\$775	16.6 x 18 x 17	48.2	Hitachi	15.6	○	dot .28	75	75	60
Smile CA1718	\$675	16.5 x 17.5 x 16	41.2	Hitachi	16	○	dot .26	80	76	60
Sony Multiscan 17se	\$1049 (list)	16 x 18.75 x 16.25	50.2	Sony Trinitron	15.9	●	stripe .25	100	100	76
Sony Multiscan 17sf	\$999 (list)	16 x 17.75 x 16.75	43.4	Sony Trinitron	15.7	●	stripe .25	80	76	60
Tatung CM-17MKR	\$800	16 x 18 x 17.25	50.8	Hitachi	15.9	●	dot .26	75	75	76
Taxan ErgoVision 880 LR	\$749	16.25 x 16.5 x 16.25	49.4	Hitachi	15.5	●	dot .28	100	80	60
ViewSonic 17	\$850	16.25 x 17 x 16.5	40.4	Matsushita	15.8	●	dot .27	128	101	77

#### Best Buys in red

<sup>1</sup> At 1024 by 768 at 70 Hz.

<sup>2</sup> Two years CRT.

<sup>3</sup> Three years parts, two years labor.

<sup>4</sup> Serial port for field service only.

<sup>5</sup> Optional.

<sup>6</sup> Free.

<sup>7</sup> One year labor.

“Color” and “Hue” is unclear, though, and it takes a while to realize that the “Sel” button toggles between the two rows of settings on the front panel. This monitor is only slightly above average. *Samsung, 800/726-7864, 201/691-6200* Reader service no. 795

## Samtron SC-728SXL

Estimated street price: \$775

Image quality: Fair

Viewable screen: 15.6 inches

Maximum refresh at 1024 by 768: 75 Hz

Maximum noninterlaced resolution: 1280 by 1024

At first glance, the Samtron SC-728SXL appears to be a slightly less expensive version of the Samsung 17GLs. It has a similar shell, uses a knob for adjustments, and provides a nearly identical on-screen control readout—plus, it’s easier to figure out how to select the Samtron’s controls. All this sounds promising, until you see that the Samtron’s image quality ratings fell in the bottom third, making the Samsung a smarter

buy. *Samtron Displays, 800/726-8766, 310/537-7000* Reader service no. 796

## Smile CA1718

Estimated street price: \$675

Image quality: Good

Viewable screen: 16 inches

Maximum refresh at 1024 by 768: 76 Hz

Maximum noninterlaced resolution: 1280 by 1024

If you refuse to pay more than \$700 for a monitor, then the Smile CA1718 is worth

Maximum noninterlaced resolution	Maximum horizontal scan rate (kHz)	Bandwidth (MHz)	USER CONTROLS AND SETTINGS					MISCELLANEOUS FEATURES					SERVICE/SUPPORT	
			On-screen controls	Trapezoid/keystone	Focus/convergence	Image tilt/manual degauss	Color temperature/RGB controls/color correction software	Number of savable user video modes	BNC-5/serial port	Plug and Play/ACCESS.bus	MPR 2/TCO	VESA DPMS/Adjustable power-down	Warranty (years)	One year on-site service under \$100
1280 x 1024	64	85	○	●/○	○/○	●/●	○/●/○	8	○/○	○/○	●/○	●/●	2	○
1024 x 768	64	80	○	○/○	○/●	●/○	●/●/○	3	○/○	○/○	●/○	●/●	1	○
1600 x 1280	85	135	○	●/●	○/○	●/●	●/●/○	15	●/○	○/○	●/○	●/●	3 <sup>2</sup>	○
1280 x 1024	67	100	○	●/●	○/○	○/●	○/○/○	12	●/○	○/○	●/○	●/●	3 <sup>3</sup>	○
1280 x 1024	65	100	○	●/●	○/●	●/●	○/●/○	21	○/○	○/○	●/○	●/○	2	○
1600 x 1280	82	75	○	●/●	○/●	●/●	●/●/○	21	●/● <sup>4</sup>	○/○	●/○ <sup>5</sup>	●/○	2	○
1600 x 1280	82	148	○	●/●	○/●	●/●	●/●/○	17	●/○	○/○	●/●	●/●	3	● <sup>6</sup>
1600 x 1280	82	135	●	●/●	○/●	●/●	●/●/○	8	○/○	○/○	●/○	●/●	3	● <sup>6</sup>
1600 x 1280	86	135	○	●/●	○/○	●/●	●/●/●	27	●/○	○/○	●/○	●/○	3	○
1600 x 1280	82	135	●	●/○	○/○	○/●	○/●/○	6	○/○	○/○	●/●	●/○	1	○
1600 x 1280	82	130	○	●/●	○/○	●/●	●/○/○ <sup>5</sup>	8	●/●	○/○	●/○ <sup>5</sup>	●/●	3	●
1600 x 1280	82	130	●	●/●	○/○	○/●	●/●/○	4	○/○	○/○	●/○	●/○	3	●
1280 x 1024	78	100	○	●/●	○/○	○/●	●/●/○ <sup>5</sup>	10	○/●	○/○	●/○	●/●	3	○
1600 x 1200	85	130	○	●/●	○/○	○/●	●/●/●	10	●/○	●/○	●/●	●/●	3	○
1280 x 1024	65	85	●	●/●	●/○	●/●	●/●/●	28	○/○	●/○	●/●	●/●	3	○
1280 x 1024	75	140	●	●/●	●/○	●/●	●/●/●	42	●/○	●/●	●/●	●/●	3	○
1600 x 1280	82	160	●	●/●	○/●	●/●	●/●/○	23	●/○	○/○	●/○ <sup>5</sup>	●/●	3	○
1280 x 1024	64	86	○	○/○	○/○	○/●	○/●/○	7	○/○	○/○	●/○	●/●	3 <sup>7</sup>	○
1600 x 1280	82	135	●	●/●	○/●	●/●	●/●/○	1	●/○	○/○	●/●	●/○	2	○
1600 x 1280	82	135	●	●/●	○/○	●/●	●/●/○	13	●/○	○/○	●/○	●/○	3	● <sup>6</sup>
1280 x 1024	66	110	●	●/●	○/○	●/●	●/●/○	11	○/○	○/○	●/●	●/●	2	○
1600 x 1280	82	135	●	●/●	○/○	○/●	○/●/○	6	○/○	○/○	●/○	●/○	1	○
1280 x 1024	82	135	●	●/●	○/○	○/●	●/●/○	11	●/○	○/○	●/○	●/○	3	○
1280 x 1024	65	106	○	●/●	○/○	○/●	○/○/○	11	○/○	○/○	●/○	●/○	3	●
1280 x 1024	65	110	○	●/●	○/○	●/●	○/○/○	3	○/○	○/○	○ <sup>5</sup> /○	●/●	2	○
1600 x 1200	82	100	○	○/○	○/●	●/○	●/○ <sup>8</sup> /○	11	●/○	○/○	●/○	●/○	3 <sup>2</sup>	○
1280 x 1024	64	<sup>9</sup>	○	○/○	○/●	●/○	●/○/○	10	○/○	○/○	●/○	●/○	3 <sup>2</sup>	○
1600 x 1280	82	130	○	○/○	○/○	○/●	○/○/○	25	●/○	○/○	●/○	●/○	2	○
1280 x 1024	64	135	●	●/●	○/○	●/●	●/●/○	15	○/○	○/○	●/○	●/○	2	○
1280 x 1024	82	135	●	●/●	○/○	●/●	●/●/○	8	●/○	○/○	●/○	●/●	3 <sup>7</sup>	○

<sup>8</sup> Adjustable hue/saturation/intensity.

<sup>9</sup> Information not available.



con- sidering. Unlike other monitors in this price range, you get a nice, high refresh rate of 76 Hz at 1024 by 768, and good image quality. Our objective tests revealed a noticeably low contrast ratio, but our judges didn't seem to mind. You have to live without color settings and endure downright ugly controls, though. In the under-\$700 category, you can't do better for the price, but why be penny-wise? A mere \$75 more nets you the Best Buy CTX 1785GM. *Smile Int'l*, 800/253-2872, 714/546-0336 **Reader service no. 797**

## Sony Multiscan 17se

**List price: \$1049**

**Image quality: Excellent**

**Viewable screen: 15.9 inches**

**Maximum refresh at 1024 by 768: 100 Hz**

**Maximum noninterlaced resolution: 1600 by 1200**

**T**he Sony Multiscan 17se's image quality impressed our judges, earning this Trinitron monitor high marks for both clarity and color rendition. In addition, the top refresh rate of 100 Hz at 1024 by 768 is among the highest offered. But with trapezoid and keystone missing, you'd either have to live with a misaligned unit or send it back. And the controls are cryptic—to change color temperature, for example, you have to press the control and selection buttons simultaneously. If you want a Sony, the Multiscan 17sf is a better buy. *Sony Electronics*, 800/352-7669, 408/432-0190 **Reader service no. 798**

## Sony Multiscan 17sf

**List price: \$999**

**Image quality: Excellent**

**Viewable screen: 15.7 inches**

**Maximum refresh at 1024 by 768: 76 Hz**

**Maximum noninterlaced resolution: 1280 by 1024**

**D**ue to its lower bandwidth, the Multiscan 17sf seemed slightly less sharp than the

Multi- scan 17se, but our judges barely noticed the difference. The 17sf's button-based control layout is much easier to learn and use. Aside from the superhigh refresh rate, about all you really lose by opting for the 17sf instead of the 17se is 1/8 inch of viewable screen and a BNC connector. If excellent image quality is high on your wish list, this monitor should be your third choice after the Nokia Multi-graph 447X and the Mag MXP17F. *Sony Electronics*, 800/352-7669, 408/432-0190 **Reader service no. 799**

## Tatung CM-17MKR

**Estimated street price: \$800**

**Image quality: Fair**

**Viewable screen: 15.9 inches**

**Maximum refresh at 1024 by 768: 75 Hz**

**Maximum noninterlaced resolution: 1600 by 1280**

**T**he Tatung CM-17MKR has little to distinguish it. Its image quality is just fair, and it doesn't have any trapezoid, keystone, tilt, or color controls. The high bandwidth and 1600 by 1280 maximum resolution are impressive, but otherwise the Tatung CM-17MKR doesn't measure up. *Tatung*, 800/829-2850, 213/979-7055 **Reader service no. 800**

## Taxan ErgoVision 880 LR

**Estimated street price: \$749**

**Image quality: Fair**

**Viewable screen: 15.5 inches**

**Maximum refresh at 1024 by 768: 80 Hz**

**Maximum noninterlaced resolution: 1280 by 1024**

**T**he inexpensive Taxan ErgoVision 880 LR gives you a full set of controls for an attractive price. But our judges didn't like its looks, offering such adjectives as "blurry" and "fuzzy" to describe its image. This unit's poor showing on our contrast test may be part of the problem. Fortunately, you have a great alternative: the Best Buy CTX 1785GM, which costs the same. *Taxan distributors: Avnet Computer 800/426-7999, Hallmark Computer 800/884-5675, Hamilton Hallmark 800/332-8638* **Reader service no. 801**

## ViewSonic 17

**Estimated street price: \$850**

**Image quality: Excellent**

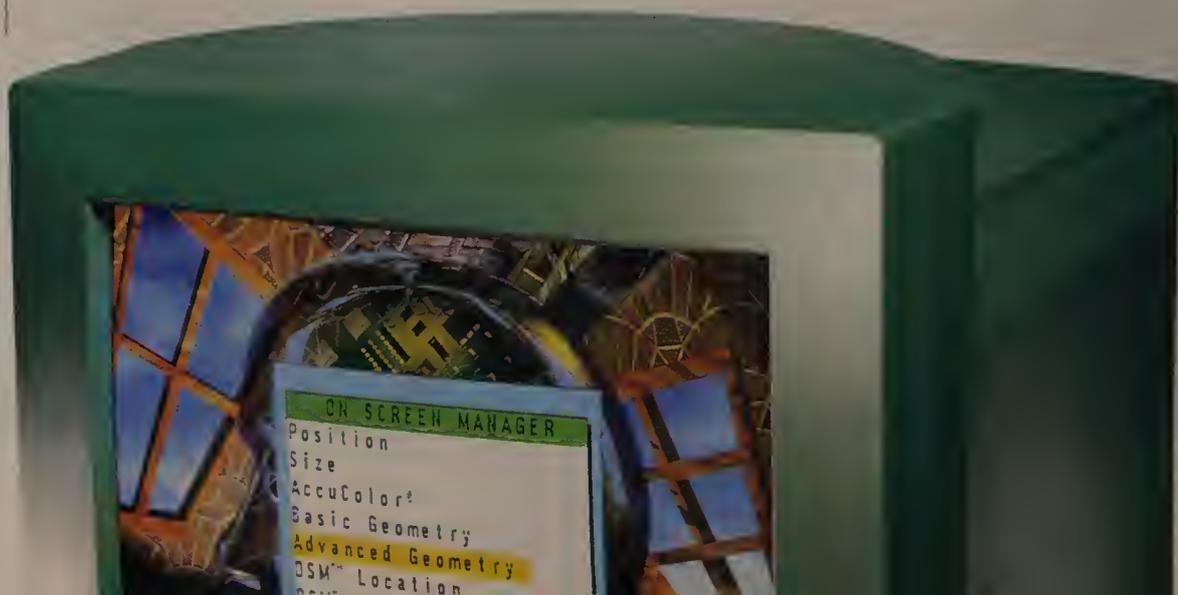
**Viewable screen: 15.8 inches**

**Maximum refresh at 1024 by 768: 101 Hz**

**Maximum noninterlaced resolution: 1280 by 1024**

**M**aximum resolution aside, the ViewSonic 17 has about the same specifications and controls as the Panasonic Pana-Sync/Pro C-1792P and sells for \$70 less. Even better, our judges rated ViewSonic's image quality on a par with that of the much more expensive NEC MultiSyncs. You don't get the MultiSyncs' beautiful on-screen menus, but the ViewSonic's menus aren't too shabby either, offering full geometry control and separate color adjustments. If you want a little better image quality than the Best Buy CTX 1785GM, and can pay an extra \$100, check out the ViewSonic 17. *ViewSonic*, 800/888-8583, 909/869-7976 **Reader service no. 802**

**ADJUSTING YOUR MONITOR'S controls can greatly enhance image quality. Some monitors, such as the Hyundai HL-7682P pictured above, feature button-based controls. Others, such as the NEC MultiSync XE17 below, use on-screen menus instead.**



To enjoy the convenience of AT&T **True Connections**<sup>SM</sup> service, simply call 1 800 TRUE-500, ext. 4307, or return this form.

Yes, please enroll me in AT&T True Connections service. I understand that I will be billed \$1 each month through April 1995, after which the cost is billed at the regular monthly fee of \$5 per month.

I would like to request AT&T True Connections Voice Mail at an additional \$5.95 per month.

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

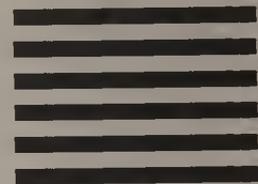
You must be an AT&T dial-1 long distance customer to subscribe to the True Connections service. If you are not currently an AT&T dial-1 long distance customer but would like to sign up for **True Connections**<sup>SM</sup> service, please call 1 800 TRUE-500, ext. 4307.

JXS



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE UNITED  
STATES

**BUSINESS REPLY MAIL**  
FIRST-CLASS MAIL PERMIT NO. 11383 BRIDGETON, MO



POSTAGE WILL BE PAID BY ADDRESSEE

AT&T TRUE CONNECTIONS  
PO BOX 2172  
LEES SUMMIT, MO 64063-9960



# With AT&T, you can talk your way into a Delta companion ticket.

*Sign up for an AT&T 500 number, place or receive \$25 worth of calls, and you'll receive a Delta companion ticket, good for anywhere Delta flies.*

AT&T offers you a new 500 number. Then, just for using it, you receive a Delta companion ticket. What could be easier?

But the best thing about this offer is the 500 number itself.

When you're traveling, family members, friends and business associates can dial it and reach you almost anywhere you go. But *only* if you want them to. Unlike pagers and cellular phones, you control

who calls you, when, and

who pays for the call. It's the perfect way to stay connected with important people.

AT&T calls it *True Connections*<sup>SM</sup> service.

An appropriate name. Because you can forward calls. You can screen calls or send them to Voice Mail. You can place calls from almost any touch-tone phone. And you can permit special callers, like family members or clients, to reverse charges to your AT&T home phone bill.

And if you sign up by May 15, 1995, and place or receive \$25 worth of True Connections calls in the first three months, you'll get a Delta companion certificate from AT&T. It's good for a round-trip ticket between September 1, 1995 and March 31, 1996\* with the purchase of any domestic ticket issued at any applicable published fare of \$379 or more. Or, you can use it with any round-trip international ticket issued at any applicable published first class (F), business class (C), or economy fare booked in Y class. Either way, it's a nice reward for using something you really wanted anyway.



**1 800 TRUE 500, ext. 4307**



**AT&T**

**DELTA AIR LINES**

Lower fares may be available in certain markets and customers should consult with Delta or their travel agent to determine the most economical fare for their itinerary.

**TERMS & CONDITIONS:** 1. All travel must originate in the 48 contiguous United States on Delta Air Lines or Delta Connection<sup>SM</sup> carriers. Delta Connection flights operate with Delta flight numbers 3000-5999 and 7000-7999. 2. Customers must sign up between February 1 and May 15, 1995, and qualify by August 15, 1995. A certificate will be issued to qualifying customers and must be presented to any Delta authorized travel agency or any Delta Air Lines or Delta Connection ticketing location at time of ticket purchase. 3. Only one companion ticket may be issued per certificate. 4. All tickets must be purchased on or before October 31, 1995, or according to rules of fare, whichever occurs first. 5. Certificate can be exchanged for a ticket only by the person whose name appears on the certificate. 6. All travel for purchased ticket and companion ticket must commence on or after September 1, 1995 and be completed on or before March 31, 1996 or according to rules of fare, whichever occurs first. \*Travel not permitted November 21, 22, 26, 27, 1995, December 21, 1995 through January 3, 1996 and February 17, 18, 19, 1996. 7. Both persons must travel together in the same class of service on all portions of the itinerary. 8. © 1995 Delta Air Lines, Inc. © 1995 AT&T. All rights reserved. AT&T and the AT&T logo are registered trademarks of AT&T. 9. See AT&T Delta Companion Certificates for additional rules. 10. You must be an AT&T dial-1 long distance customer to enroll in True Connections service. 11. This offer is good while supplies last. 12. One companion certificate may be issued per billing telephone number. 13. \$25.00 must be spent on one 500 number within the first three months of service to qualify for a companion ticket. 14. Calls to your 500 number which you don't pay for will apply towards your \$25.00 worth of service.

Circle 114 on reader service card

## TEST REPORT Most Monitors Make the Grade

	Brightness uniformity .7 or higher is acceptable	Contrast 200 or higher is acceptable	Geometric distortion 2 or less is acceptable	Misconvergence .45 or less is acceptable
ADI MicroScan 5EP	.95	340	.8	.2
Apple Multiple Scan 17	.86	430	.3	.48
<b>CTX 1785GM</b>	.84	412	2	.16
Daytek DT-1730	.81	279.33	2.4	.09
Delta Socos 1765 VAF	.77	485	1.9	.2
Hyundai HL-7682P	.87	410	1.5	.2
IBM 17P	.88	227.89	.5	.18
IBM 17S/S	.84	444.44	.5	.12
Iiyama VisionMaster 17	.93	440	1.4	.19
Link LM-1791WWR	.83	375.38	1	.09
<b>Mag MXP17F</b>	.85	196.84	.8	.09
Mitac L1782	.87	307.69	1	.22
Mitsubishi Diamond Scan 17FS	.87	321.25	.6	.16
Nanao FlexScan T2-17	.8	364.29	.8	.36
NEC MultiSync XE17	.85	550	.7	.1
NEC MultiSync XP17	.74	560	2	.15
<b>Nokla Multigraph 447X</b>	.75	262	.7	.33
Optiquest 4000TC	.88	393.75	1	.24
Orchestra Tuba	.88	602	.7	.12
Panasonic C-1792P	.83	451.11	2.4	.07
Philips 17B Model 1766DC	.86	565	.7	.31
Qume QM1791	.88	472.35	1.3	.08
Samsung 17GLs	.88	394.55	1	.14
Samtron SC-728SXL	.81	375	.6	.22
Smile CA1718	.84	94.88	1	.19
Sony Multiscan 17se	.94	547.5	.4	.46
Sony Multiscan 17sf	.84	417.5	1	.46
Tatung CM-17MKR	.8	409	.7	.1
Taxan ErgoVislon 880 LR	.91	78.44	.7	.19
ViewSonic 17	.79	305.45	1	.29
<b>Best Buys in red</b>	.7 ▶	200 ▶	◀ 2	◀ .45

Brightness uniformity and contrast are ratios. Geometric distortion is an index compiled from several line measurements. Misconvergence is measured in millimeters.

### Test Methodology

We tested all monitors on a Pentium-based PC configured with a Diamond Stealth 64 PCI graphics accelerator with 4MB of VRAM. Monitors were tested at 1024 by 768 resolution at 256 colors and a 70-Hz vertical refresh rate. We used the DOS-based DisplayMate Professional Setup Display utility from Sonera Technologies to calibrate brightness, contrast, centering, and size.

### Brightness Uniformity

We used a Minolta CRT Color Analyzer CA-100 instrument. We set the contrast control to maximum, then adjusted brightness so that the background raster lines were no longer visible. We measured brightness at the center of the display and in each corner. We then calculated the brightness uniformity as a ratio of the smallest measurement divided by the largest measurement. Margin of error is  $\pm 0.05$ .

### Contrast

We used a Minolta CRT Color Analyzer CA-100. We set the contrast control to maximum, then adjusted brightness so the background raster lines were no longer visible. We used a test pattern that placed one white square in the center of the display and one in each corner and measured the brightness of each of the five squares. We then measured the brightness of the dark area adjacent to each square and reported the worst-case ratio. Margin of error is  $\pm 20$ .

### Geometric Distortion

We used the Screen Distortion Measurement utility included with DisplayMate Professional. We measured a sampling of horizontal, vertical, and diagonal line lengths and computed screen size, aspect ratio, and squareness error; keystone, pincushion, or barrel distortion; bow curvature; and linear error. We distilled the computations into a single screen-distortion index. Margin of error is  $\pm 0.20$ .

### Misconvergence

Misconvergence indicates how precisely a monitor's red, green, and blue electron beams strike the same pixel. Less misconvergence means greater screen image sharpness and truer color. Using a Klein Convergence Error Measurement Gauge, we measured vertical misconvergence at the screen's top center edge and horizontal misconvergence at the right center edge; we then summed the results. Margin of error is  $\pm 0.1$ .

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

WordPerfect and Novell  
have united to create the  
perfect office.



# Makes Microsoft Off



Introducing PerfectOffice.™  
The first network suite.  
Unlike Microsoft Office,  
it doesn't box you in. So you  
can work with other people  
and other information.  
Any time and place you  
want. It isn't just another  
office, it's the perfect  
place to work.™

## NEW PERFECTOFFICE FOR WINDOWS

### The network suite vs. the stand-alone suite.

You don't work alone. Why should your software? PerfectOffice is the first suite designed to work with your network. So you can communicate, collaborate and cooperate with other people. It even makes installing, maintaining and managing software easier. Microsoft Office, on the other hand, is designed to work on your desktop. Alone.

### Complete integration vs. partial integration.

The programs in PerfectOffice have a consistent

interface. So do the programs in Microsoft Office. But PerfectOffice uses more common code and components, reducing system requirements. Plus, it supports Windows technologies like OLE 2.0 in more programs than Microsoft Office. Ironic, isn't it?

### Automatic software vs. manual software.

Only PerfectOffice has QuickTasks™ that do your work for you. So you can do things like create and E-mail a memo simply by clicking a button.

PerfectOffice is so automatic, it even corrects spelling errors as you type. We know, so does Microsoft



	PerfectOffice 3.0 Standard Edition	Microsoft Office 4.2 Standard Edition
Programs have consistent interfaces	YES	YES
Integrated E-mail, calendaring and scheduling**	YES	NO
Workgroup publishing features	YES	NO
Number of applications with OLE 2.0 support	Four	Three
Number of applications with on-the-fly spell checking	Three	One
Automated tasks that work independent of applications	YES	NO
Grammar checker can rewrite entire sentences	YES	NO
Intelligent find and replace	YES	NO
Ability to record scripts (macros) across applications	YES	NO
Supports both Visual Basic & AppWare programming tools	YES	NO
Six months of free, toll-free technical support*	YES	NO

#### WordPerfect 6.1

The world's best-selling word processor, with intelligent new features that make you a better writer.

#### Quattro Pro 6.0

The easiest-to-use spreadsheet, creating more types of charts and graphs than any other.

#### Presentations 3.0

The innovative program that helps you create more effective presentations.

#### InfoCentral 1.1

The Personal Information Manager (PIM) for your appointments, phone numbers, tasks and more.

# ce look like a cubicle.

NOVELL

For WINDOWS

WordPerfect  
Quattro Pro  
Presentations  
InfoCentral  
Envoy  
GroupWise



## PerfectOffice

Office. But only in one program. PerfectOffice does it in three. And our new grammar checker with PerfectSense™ can rewrite your sentences for you. That's not just automatic. It's smart.

### Legendary support vs. Microsoft support.

When you buy new PerfectOffice, you get six months of fast, free, toll-free support.\* With Microsoft, you get stuck with a long-distance phone call (including the time you spend on hold).

If you're a WordPerfect® or Quattro® Pro user, we make the transition to PerfectOffice seamless. No one converts your existing files and macros better than we do.

**PerfectFit™**

with PerfectOffice®

LOOK FOR THIS LOGO ON PRODUCTS THAT WORK WITH PERFECTOFFICE.

So where would you rather work? The perfect office? Or a "cube?" We thought so. For a free tour, visit your reseller, or call 1-800-526-2788.

#### Envoy 1.0

Electronic publishing software that lets anyone view, annotate and distribute documents.

#### GroupWise 4.1

Formerly WordPerfect Office, it's our new integrated E-mail, calendaring and scheduling program.

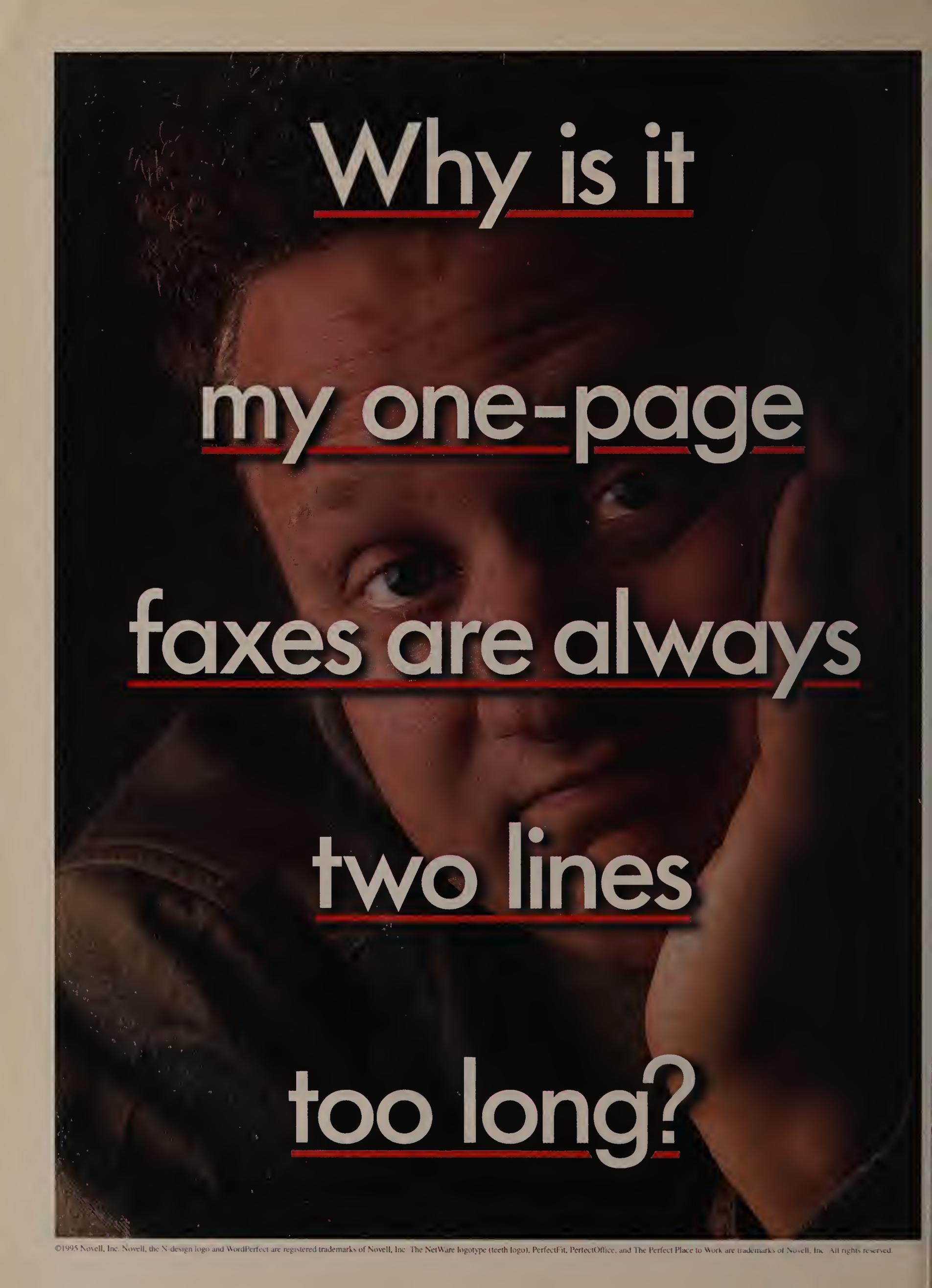
#### Professional Edition

Includes all the products in PerfectOffice Standard plus Paradox® 5.0 database and AppWare 1.0 programming software.

# PerfectOffice™

**NOVELL**

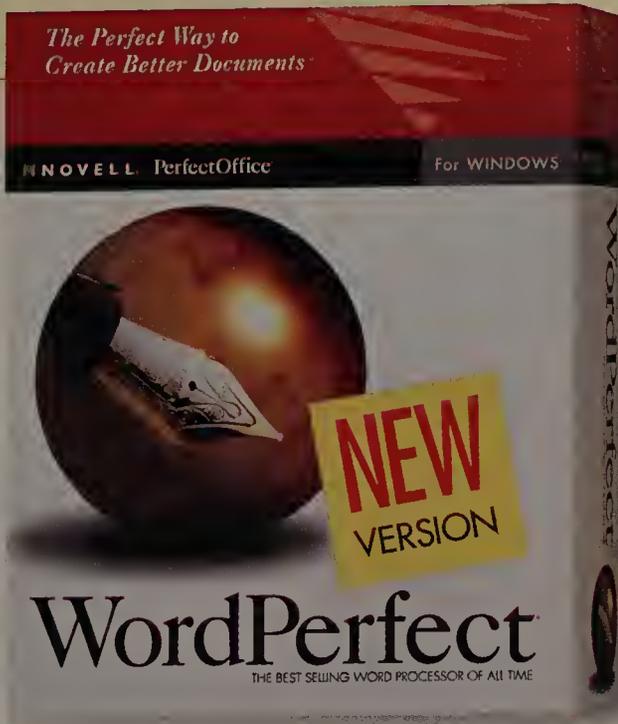
THE PERFECT PLACE TO WORK™



Why is it  
my one-page  
faxes are always  
two lines  
too long?

# Introducing "Make It Fit." One of several new automation tools designed specifically to make your life easier.

NOW YOU CAN AUTOMATICALLY SHRINK (OR EXPAND) YOUR DOCUMENTS AT THE TOUCH OF A BUTTON. NEW WORDPERFECT 6.1 INSTANTLY ADJUSTS THE MARGINS, FONT SIZE AND LINE SPACING FOR YOU.



Have you ever wasted time fiddling with margins, font size and line spacing? Of course you have. But why?

Just to make your document fit a certain number of pages. Right?

We noticed. Hence our new "Make It Fit" feature. It automatically shrinks (or expands) a document to the number of pages you specify. You simply

indicate the attributes you want adjusted. WordPerfect® does the rest. What else would you expect from the world's best-selling word processor?

And WordPerfect has many other work-saving automation tools, too. Like our new Document Experts and Templates. They make creating fully formatted documents as easy as clicking a button. WordPerfect will even look up addresses and fax numbers for you. It's that automatic. And with our new Table Expert, creating and formatting tables is just as easy.



Plus, WordPerfect now integrates fully with the other programs in our new PerfectOffice™ suite. And it's been enhanced to work better over a network. For example, you can access network drives and change printers directly without ever leaving WordPerfect.

So stop asking "Why is it?" about your word processor. And start getting some answers. Pick up new WordPerfect at your local reseller. Or order directly by calling us at (800) 526-5198 today.



# WordPerfect®

NOVELL.

# Now Everyone Can Have The Superior Monitor.



Photo Credit: Yun Vendelm

## If you've always wanted a top performing monitor, now is the time.

With prices now starting under \$900, it's easy to understand why Nanao monitors

are showing up in the most unexpected places. Our new FlexScan F2-15 and F2-17 models, for instance, are fast becoming the monitors of choice among everyday users around the world. And not just because the price is right. These monitors include an exciting new array of advanced technical features that continue Nanao's tradition of superior product innovation and industry leadership. Which means that all the performance features you've ever wanted for

your business graphics, multimedia applications or WYSIWYG desktop publishing projects – like 1024 x 768 resolution at up to 87Hz, PowerManager™ for energy savings, and WideView™ for edge-to-edge image displays – are there for you to enjoy. In the past, you wouldn't expect to see this level of quality – or these sophisticated features – in an everyday 15- or 17-inch monitor. But now, at these great prices, just about everyone can have a Nanao F2-15 or F2-17 on their business or home office desktop. Why settle for less than the top performing monitor you've always wanted? It's available – and affordable – from Nanao.

**F2-15**  
 Dot Pitch 0.28mm  
 Scan Freq. H:30-69kHz, V:55-120kHz  
 Rec. Resol. 1024 x 768 @ up to 87Hz  
 Max Resol. 1280 x 1024 @ up to 66Hz  
 Standards MPR-II, TCO

**F2-17**  
 Dot Pitch 0.28mm  
 Scan Freq. H:30-69kHz, V:55-120kHz  
 Rec. Resol. 1024 x 768 @ up to 87Hz  
 Max Resol. 1280 x 1024 @ up to 66Hz  
 On Screen Control ScreenManager™  
 Standards MPR-II

3-year warranty\*



\*3 year on P & L and CRT. Superior In Every Detail is a registered trademark of Nanao Corporation. All product names are trademarks of their respective companies. ©1995 Nanao USA Corporation.

# NANAo

Superior In Every Detail

NANAo USA CORPORATION  
 23535 Telo Avenue, Torrance, CA 90505  
 (310) 325-5202 Fax: (310) 530-1679

1-800-800-5202

# 50 Spreadsheet

WHAT THE MANUALS WON'T TELL YOU

## TIPS



*What's the easiest way to navigate that 30-sheet workbook in Excel? What's the best way to multiply a range of values in 1-2-3? How do you calculate the last day of a month in Quattro Pro? \**

Don't know? Your spreadsheet does. And it would be happy to tell you, if only you knew how to ask. Sure, you could check the manual, but it won't tell you about the tools you really need to use your spreadsheet effectively. We will. In the following pages, you'll find all sorts of cool stuff—shortcuts, formulas, and crafty new uses for old tools—they left out of the manual. And be sure you look through *all* the tips, even those for apps you don't use: If you see the  icon next to a tip, the formula therein should (with minor modifications) work in any spreadsheet. So ditch that manual and turn the page. (And, oh yeah, for the answers to the questions above, turn the page upside down.)

\* Right-click the scrolling buttons left of the sheet tabs (Tip 1, Find the Right Sheet); use matrix math (Tip 31, Across-the-Board Increases); and calculate the first day of the subsequent month, then subtract one (Tip 46, Finding the End of a Month).

# Excel

## 1 Find the Right Sheet

Workbooks have a way of growing into unwieldy behemoths containing dozens of sheets. To make navigating easier, click the right mouse button on any of the scrolling buttons to the left of the sheet tabs. This will call up a list of the sheets in the workbook.

## 2 Know Where You're Going

Another way to make navigating a big workbook easier: Name a cell or range in each sheet, then use that name in the Go To command. Let's say you're keeping your budget figures in Sheet3 of your main workbook. Name cell A1 of Sheet3 *Bud*. Then, to move to sheet3 quickly, press <F5> and either type *bud* and press <Enter>, or double-click *Bud* in the dialog box.

## 3 If You're a One-Sheet User...

Make your life a little easier (and save disk space) by reducing the default number of sheets in your workbooks. Choose *Tools • Options* and select the *General* tab. Change the number of Sheets in New Workbook to what you like. Note: If you have a workbook template named BOOK.XLT in the XLSTART directory, its settings will override these changes next time you open Excel.

## 4 Delete Safely

Excel can't prevent you from deleting a worksheet on which another sheet depends for values. Your best defense is to open the Auditing tool bar before deleting the sheet (choose *View • Toolbars*, then select *Auditing*). Test significant cells (such as grand totals) in the sheet you're deleting by selecting each in turn and clicking the *Trace Dependents* button. If another sheet refers to the selected cell, you'll see a thin line with a tiny spreadsheet at the end.

## 5 Keyboard Genealogy

You can use the Auditing tool bar to trace dependencies and precedents between cells. But if you don't want to bother fetching this tool bar to check just one cell's precedents, you can press <Ctrl>-] to select the cells to

which the active cell refers. If you also hold down <Shift>, you'll find the cell's *indirect* precedents—all cells that affect the value of the current cell. Similarly, pressing <Ctrl>-] selects cells with formulas that refer directly to the active cell, and <Ctrl>-<Shift>-] selects cells with formulas that refer to the active cell directly or indirectly.

## 6 Keyboard Cutting and Pasting

You probably know how to cut and paste a range with the mouse (highlight the range,



right-click, select *Cut*, right-click the destination, and select *Insert Cut Cells*). But keyboard users have their own shortcut: Select the range you want to move, then press <Shift>-<Delete> or <Ctrl>-X. Next, select the upper-left cell of the destination range and press <Ctrl>-<+> (the plus key on the numeric keypad). Choose *Shift Cells Right* or *Shift Cells Down* as you wish (using R, D, or any cursor key), and your selection will be inserted.

## 7 Tear-Off Palettes

When you're formatting a worksheet or chart, save yourself some time and hassle by dragging Excel's colors, patterns, or borders palettes so that they're closer at hand. Just drag any of the arrows attached to the Borders, Color, or Font Color buttons (on

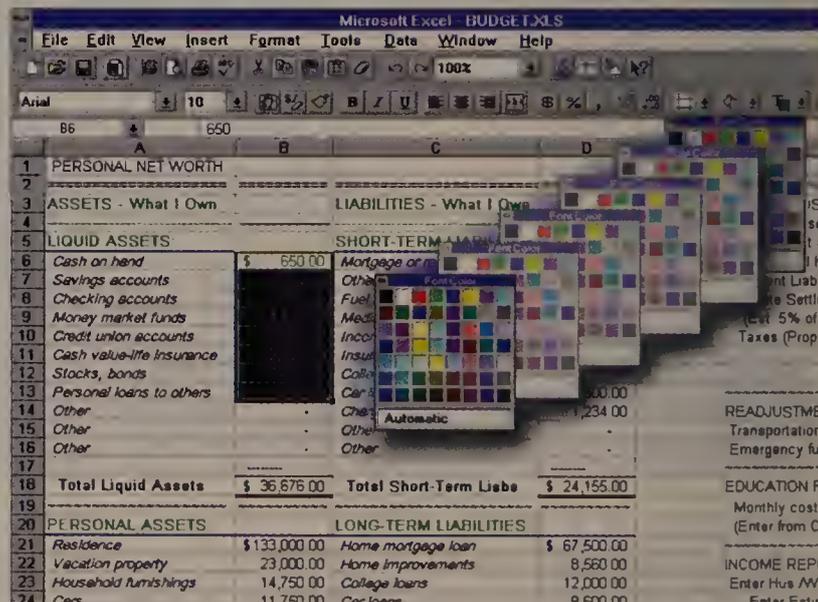
the Formatting tool bar) or the Pattern button (on the Drawing tool bar). The palette will display and move as you drag it. To close, just click the small Control button in the upper left-hand corner of the palette.

## 8 Mice Clear the Range

Many people know you can clear all or part of a selected range by dragging the fill handle back through it. As you drag, the selection goes gray one row or column at a time; when you release the mouse button, the gray area is cleared just as if you'd chosen *Edit • Clear • Contents*. But fewer people know you can use a similar technique to perform the equivalent of *Edit • Clear • All*. Drag the fill handle back through the selected range as before, but this time hold down <Ctrl>. When you release the mouse button, you'll have removed contents, formats, and notes.

## 9 Extending Your Reach

Let's say you've selected a range of cells: How do you make the selection bigger? If the active cell is in the upper left corner of the range, you can extend the selection to the right and downward by holding down <Shift> and using the mouse or the cursor keys. But what if you want to extend it left or up? The answer is to move the active cell: Hold down <Ctrl> and repeatedly press the <Period> key to move the active cell clockwise from corner to corner. To extend the selection upward, move the active cell to one of the lower corners; to extend it to the left, move to a corner on the right. You can also use this technique to shrink a selection.



PUT PALETTES WHERE THEY'RE USEFUL by dragging the arrows attached to the Borders, Color, Font Color or Pattern buttons.

## 10 Double-Function Tool Bar Tools

Excel 4.0 introduced the idea of dual-function tool bar buttons—tools that change function if you hold down <Shift> while clicking. Excel 5.0 has expanded the concept. Using dual-function buttons means you can trim your tool bars; when one button can do the work of two, you don't need as many buttons on tap. Another bonus: two functions—Fill Left and Fill Up—are accessible *only* by holding down <Shift> as you click a button. Some of the handier <Shift>-able buttons are shown in the table at right.

## 11 Faster Auto Fill

Creating auto fills in Excel is getting easier. In version 4.0, you needed two values—say, 1 and 2—in adjacent cells before you could drag the fill handle to fill subsequent cells with 3, 4, and so on. In Excel 5.0, you can get the same results by typing 1 in just one cell, then holding down <Ctrl> as you drag the fill handle. Of course, if you want series with increments other than 1 (such as 5, 10, 15, 20), you'll have to use the original method. Remember, filling also works in reverse for both methods: If you drag the fill handle up or to the left, the series will decrease.

## 12 Smarter Auto Fill

Excel's fill handles are also getting smarter. Let's say you have a two-column worksheet. Column A already contains data, and you want to fill column B with sequential dates, one for each of column A's filled rows. Normally, you'd have to select cell B1 and then drag the fill handle down through all the rows you want to fill (or use the Edit•Fill•Series dialog box). In Excel 5.0, you can simply double-click the fill handle. As long as there's data in each row in the column to the left or right of the one you want to fill, Excel will do the rest.

## 13 The Last Active Hero

Normally, if you want to move to the last non-empty cell in a column, you press <Ctrl>-<Down>. But if there are any blank cells between your current location and that last active cell, this method can be mighty tedious. Instead, move to the first row of the column, select the entire column by clicking its column header or pressing <Ctrl>-<Space> bar. Press <Shift>-<Enter> to move to the bottom of the column, then hit <Ctrl>-<Up> to move to the last active cell in the column.

## 14 Adding Labels

 If you enter numbers followed by a text label (such as '24 ft. '), Excel will treat the whole string as text. But what if you want to add those numbers up? If the text label is the same for all your entries, use an array formula to, in effect, delete the unwanted text label characters. Array formulas perform operations on several cells at once, so what might have taken a series of formulas can be accomplished with just one.

Let's say your text entries are in cells A1:A5; then, in cell A6, type the formula `=sum(1*left(a1:a5,len(a1:a5)-3))`, and press <Ctrl>-<Shift>-<Enter> (to add brackets to make what you've entered an array formula). In this example, the label we're deleting is three characters long; if yours is longer, change the '-3' accordingly.

Of course, the best thing to do is not use a suffix in the first place. Instead, select *Format•Cells•Number* and, in the Code box, enter a customized number format. In this example, you'd type #, a space, ft., and select *OK*. Your numbers will be labeled correctly, and you'll be able to use a simple SUM function instead of the array formula to add them up.

## 15 Unhiding Columns With the Mouse

To unhide a column (or row), people usually select the columns (or rows) on either side of the hidden region and select *Format•Column (or Row)•Unhide*. But there are two lesser-known mouse tricks that will accomplish the same task.

If you position the mouse pointer between the column headings to the left and right of the hidden column, it will change into a solid black line with double horizontal arrows. If you then move the

mouse a bit to the right, the pointer will change into a pair of vertical lines with two horizontal arrows. Drag to the right and the hidden column will reappear. Alternatively, when the mouse pointer changes to the double vertical lines with horizontal arrows, press the right mouse button. This will select the hidden column and summon a shortcut menu from which you can choose *Unhide*.

## DOUBLE-FUNCTION TOOLS

Button	Function	<Shift> function
	File Open	File Save
	File Save	File Open
	Print	Print Preview
	Print Preview	Print
	Undo	Redo
	Redo	Undo
	Insert	Delete
	Delete	Insert
	Clear Contents	Clear Formats
	Clear Formats	Clear Contents
	Paste Formats	Paste Values
	Paste Values	Paste Formats
	Insert Row	Delete Row
	Delete Row	Insert Row
	Ascending Sort	Descending Sort
	Descending Sort	Ascending Sort
	Left Align	Right Align
	Right Align	Left Align
	Center Align	Center Across Columns
	Center Across Columns	Center Align
	Increase Font Size	Decrease Font Size
	Decrease Font Size	Increase Font Size
	Fill Down	Fill Up
	Fill Right	Fill Left
	Zoom In	Zoom Out
	Zoom Out	Zoom In

# NEW PRODUCTS. NEW SAME GREAT COMPAQ 3



Compaq Contura® Aero™

**\$1,599**

Or \$58  
per month\*

At a mere 4.2 lbs., the Contura Aero makes the perfect traveling companion. Though lightweight, it's packed with features you'd never expect in a PC this small, including a 486 processor, a PCMCIA Type II slot, and an integrated trackball.

Aero Features:

- Only 4.2 lbs. and 10.25" x 7.5" x 1.7"
- ◆
- 486SX/33 Processor
- ◆
- 4MB RAM (expandable to 12MB)
- ◆
- 170MB Hard Drive
- ◆
- 3.5" External Diskette Drive
- ◆
- 7.8" Color Backlit STN VGA Display
- ◆
- Integrated Compaq EasyPoint™ Trackball
- ◆
- PCMCIA Type II Slot
- ◆
- NiMH Battery & AC Adapter
- ◆
- Preinstalled MS-DOS® 6,  
MS-Windows® 3.1, & TabWorks®



Compaq Contura 410C

**\$2,499**

Or \$90  
per month\*

The new Compaq Contura 410C is an affordable, lightweight color notebook with such practical features as an integrated centered trackball, wall-mount AC adapter, tilting full-function keyboard, and two PCMCIA slots.

Contura 410C Features:

- 486DX2/50 Processor
- ◆
- 4MB RAM (expandable to 20MB)
- ◆
- 350MB Hard Drive
- ◆
- Two PCMCIA Type II Slots (or one Type III)
- ◆
- 3.5" 1.44MB Diskette Drive
- ◆
- 9.5" Color Dual Scan Display  
(Color TFT available)
- ◆
- Integrated Trackball
- ◆
- Only 5.9 lbs.
- ◆
- Preinstalled MS-DOS 6,  
MS-Windows 3.1, TabWorks,  
& Lotus Organizer



Compaq ProLinea™

» New «

**\$2,949**

Or \$106 per month\*

If you're looking to take advantage of one of the fastest Compaq desktops ever, start here. Configured to deliver real power, you'll have access to a powerful PCI bus combined with an Intel Pentium™ 75MHz processor, plus a 720MB hard drive.

ProLinea Features:

- Intel Pentium 75MHz Processor  
(other models available)
- ◆
- 16MB RAM (expandable to 192MB)
- ◆
- 720MB Hard Drive
- ◆
- 256KB Cache
- ◆
- PCI Local Bus Graphics
- ◆
- PCI Local Bus IDE Interface
- ◆
- Compaq SVGA Color Monitor  
1024 x 768
- ◆
- 5 Drive Bays, 5 Slots
- ◆
- Preinstalled MS-DOS 6,  
MS-Windows 3.1, & TabWorks

\*Leasing is provided by GE Capital Services for a term of 36 months and is subject to approved credit and certain terms and conditions. Call for details. †Restrictions and exclusions apply. Monitors, battery packs and certain options are covered by a One-Year Warranty. Compaq Contura Aero and Contura 410C are covered by a 3-Year Pick-Up Warranty. ©1995 Compaq Computer Corporation. All rights reserved. Compaq and the Compaq Logo Registered U.S. Patent and Trademark Office. Contura is a registered trademark; DirectPlus is a registered service mark; and Aero, ProLinea and EasyPoint are trademarks of Compaq Computer Corporation. Products, prices and programs are subject to change without notice. Other products are trademarks or registered trademarks of their respective companies. Microsoft, MS-DOS and Windows are registered trademarks of Microsoft Corporation. TabWorks is a registered trademark of Xerox Corporation. Pentium is a trademark of Intel Corporation. Offer available in the U.S. only.

The  
Compaq  
3-Year  
Warranty\*

# LOWER PRICES. YEAR WARRANTY.

INTRODUCING  
NEW PROLINEA MODELS.



Compaq ProLinea

» New «

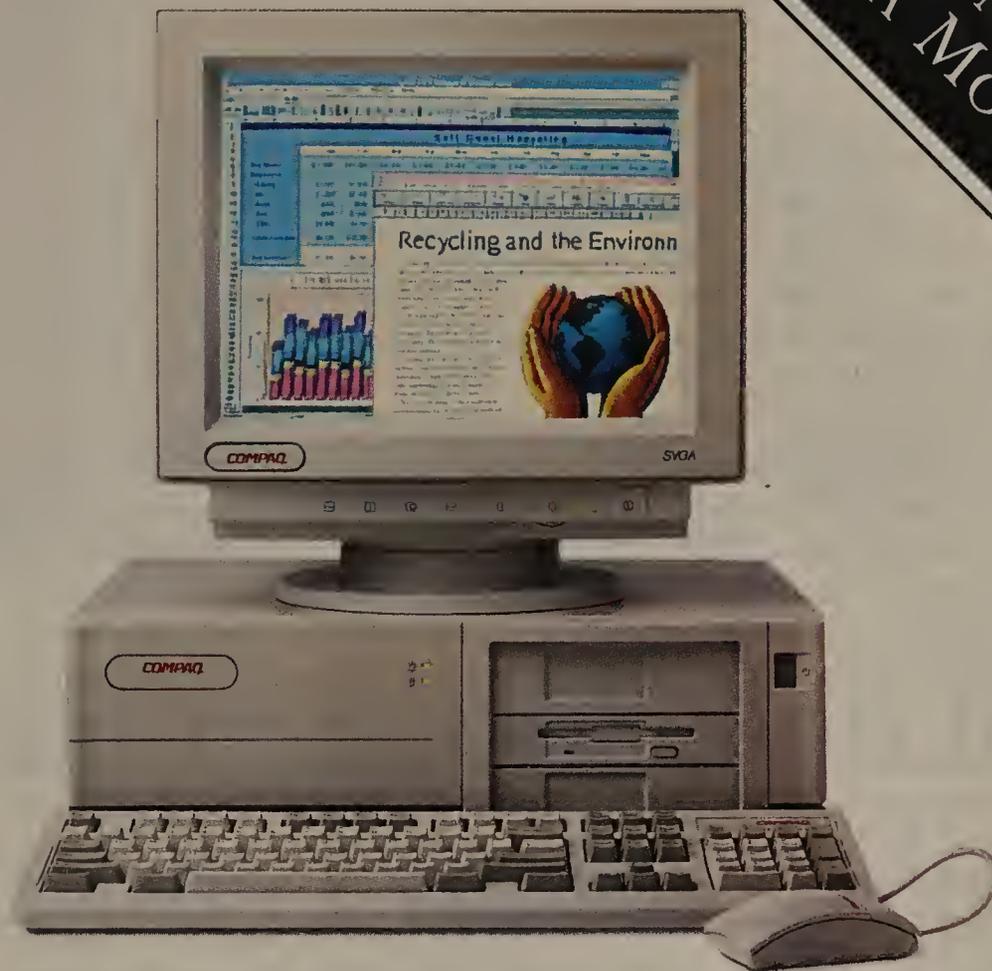
**\$1,829**

Or \$66 per month\*

Power like this usually costs more. Not this time. Loaded with features like a 486 processor, a 420MB hard drive, and pre-installed software, this model merges power with practicality.

ProLinea Features:

- 486DX2/66 Processor  
(other models available)
- ◆
- 8MB RAM (expandable to 132MB)
- ◆
- 420MB Hard Drive
- ◆
- 256KB Cache Optional
- ◆
- PCI Local Bus Graphics
- ◆
- PCI Local Bus IDE Interface
- ◆
- Compaq SVGA Color Monitor  
1024 x 768
- ◆
- 3 Drive Bays, 3 Slots
- ◆
- Preinstalled MS-DOS 6,  
MS-Windows 3.1, & TabWorks



Compaq ProLinea

ProLinea Features:

- Intel Pentium 75MHz Processor  
(other models available)
- ◆
- 8MB RAM (expandable to 192MB)
- ◆
- 420MB Hard Drive
- ◆
- 256KB Cache
- ◆
- PCI Local Bus Graphics
- ◆
- PCI Local Bus IDE Interface
- ◆
- Compaq SVGA Color Monitor  
1024 x 768
- ◆
- 4 Drive Bays, 4 Slots
- ◆
- Preinstalled MS-DOS 6,  
MS-Windows 3.1, & TabWorks

» New «

**\$2,199**

Our popular ProLinea series is better than ever. The essentials include 8MB RAM expandable to 192MB, a complete range of processors and fast PCI video. Plus, you'll get full Plug and Play capability and an easily upgradable design. So instead of just talking about improving, we did something about it — giving you more value for your dollar.

**COMPAQ**  
DirectPlus



**1-800-888-5905**

Weekdays 7-7, Sat. 9-3 CST

Ask for our latest free catalog.

Circle 83 on reader service card

## 16 Selective Unhiding

You've hidden a bunch of adjacent columns; now you want to unhide just one or two. Press **<F5>** and, in the Reference box, specify a cell that's in the hidden column you want to reveal and click *OK*. Once you're in the hidden column, select *Format*•*Column*•*Unhide*.

## 17 Tab Hunting

You can use your mouse or the keyboard to navigate those dialog boxes with multiple tabs (such as the one you get when you select *Tools*•*Options*). If you're a keyboardist, the manual tells you to use **<Ctrl>**-**<Page Down>**, **<Ctrl>**-**<Page Up>**, **<Ctrl>**-**<Tab>**, and **<Ctrl>**-**<Shift>**-**<Tab>**. But you can usually also navigate with the cursor keys or by typing the first letter of the tab's name. If two or more tabs share the same first letter, you may have to type it more than once to reach the tab you want. The exceptions to these navigation tips: Tabbed dialog boxes that don't open with the tab area active (*Insert*•*Object*, for example).

## 18 Easy Navigation

Savvy users take advantage of the *Go To* command to navigate large worksheets. Many use names to make big sheets more manageable. But few users know they can combine these tools to move around their sheets using plain English. Let's say you use a worksheet to keep track of your home expenses. Across the top you have the months, and down the side are the various budget categories—Car Payments, Clothes, Garbage, and so on. To make navigating easier, start by naming each column and row after its heading by highlighting it, then selecting

*Insert*•*Name*•*Define*. With your worksheet prepared this way, press **<F5>** to open the *Go To* dialog box and enter, for example, **Apr Christmas**. Excel will select the cell at the intersection of these two ranges.

## 19 Censoring Bad News

Sometimes you'd rather not face reality. If there are some results in your worksheet that you just don't want to see, use conditional formatting to make them disappear.

Let's say you don't want negative dollar amounts to appear on your sheet. Select *Format*•*Cells* (or press **<Ctrl>**-**1**)•*Number*. In the Category box, select *Currency*, and in the Format Codes box, a format containing a semicolon. In the Code box, replace the code after the semicolon with "" and click *OK*. From now on, your worksheet's negative numbers will be invisible, though they'll still appear in the editing window and will be used in all calculations.

## 20 File Name Formula

Need a formula to return the current file's name? If you want the full path, it's easy: **=info("directory")**. But what if you want just the file name, not the full path? Try **=mid(cell("filename"),len(info("directory))+1,12)**.

## 21 Beyond COUNTIF

You can use Excel's *COUNTIF* function to count the number of values in a range that meet a given condition. Unfortunately, it lets you specify only one condition. For example, if you want to count all the cells in the range A1:A7 with values greater than 2 but not equal to 10, then *COUNTIF* won't be able to do it. But you'll accomplish your goal with the array formula **=sum((a1:a7>2)\*(a1:a7<>10))**. As with all array formulas, don't type the braces that begin and end the formula; instead, enter the formula and press **<Ctrl>**-**<Shift>**-**<Enter>**.



## 22 You Can Have It All

You probably know that you can select a column by pressing **<Ctrl>**-**<Space>** or highlight a row by pressing **<Shift>**-**<Space>**. But what you probably didn't know is that you can select the current region (the block of data surrounded by blank rows and columns) by pressing **<Ctrl>**-**<Asterisk>**.

## 23 Auto Everything

The *AutoSum* button automatically selects and sums the closest contiguous range of values. But why stop there? With the help of some simple macros, you can extend this automatic calculation ability to averages, counts, and other common functions. Here, for example, is how you'd create an *AutoAverage* macro.

Start by selecting *Tools*•*Record Macro*•*Record New Macro*. In the Macro Name box, type **AutoAverage**, then click *OK*. Immediately click the *Stop Macro* button, then select the *Module 1* tab. Move to the end of the line reading 'Sub *AutoAverage* ()', and press **<Enter>**, then **<Tab>**. Now, type **SendKeys "%={enter}"**, press **<Enter>** again, and then type **Application.OnTime Now,"Avg"**. Move to the end of the line reading "End Sub," press **<Enter>** twice, and type the line **Sub Avg()**. Press **<Enter>** again and type the line **Cells.Replace What:="sum",Replacement:="average"**. Press **<Enter>** to end the line and type **End Sub**.

To use the macro, highlight the row immediately below (or the column immediately to

	A	B	C	D	E	F
1	<b>INCOME</b>					
2						
3	HUSBAND	4850.00	4850.00	4850.00	4850.00	4850.00
4	WIFE				6120.00	6120.00
5						
6	TOTAL INCOME				0970.00	10970.00
7						
8						
9						
10	<b>EXPENSE</b>					
11						
12	BABY SITTING				500.00	500.00
13	BIRTHDAYS				100.00	100.00
14	GARBAGE				50.00	50.00
15	CAR PAYMENT				250.00	250.00
16	CAR/TRUCK INSURANCE	50.00	50.00	50.00	50.00	50.00
17	CAR/TRK MAINTENANCE	50.00	50.00	50.00	50.00	50.00
18	TRUCK PAYMENT	330.00	330.00	330.00	330.00	330.00
19	CHRISTMAS	0.00	0.00	0.00	0.00	0.00
20	CLOTHES	200.00	200.00	200.00	200.00	200.00

**MOVE TO THE INTERSECTION OF TWO NAMED RANGES** by typing both names in the *Go To* dialog box.

EnergySmartPC™'s are fully EnergyStar™ compliant

The Alaris™ logo is your guarantee of Made in the U.S.A. quality!

Supports Intel®, IBM®, Cyrix®, AMD® and NexGen™, Microprocessors

Classic Touch™ 101-key keyboard by Lexmark™

Your choice of 14" or 15" SVGA monitor, with accelerated VL-Bus or PCI video

Supports up to 256MB RAM and 1MB level-two Cache

"VIP" multiple bus architecture supports VESA, ISA and PCI peripherals

Includes a genuine Microsoft® mouse



# The First and Only Solution for True 486 to 586 Upgradability

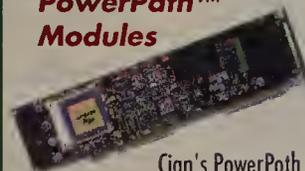
The Cian™ PC family is the first to combine universal processor compatibility, true 64-bit processor upgradability, and multiple bus options for virtually unlimited access to today's peripheral products. Cian gives you 486 performance and pricing today, and an upgrade path to true "fifth generation," 64-bit processors. With Cian you don't have to sacrifice your initial investment as you upgrade to the latest in processor technology.

Cian systems are compatible with Intel's 486 SX, SX2, DX, DX2, and DX4, as well as the Pentium™ P24T and 64-bit P54C processors. They also accommodate Cyrix's 486, AMD's 486, NexGen's Nx586, and IBM's Blue Lightning processors. Support for PowerPC, Cyrix's M1 and AMD's K5 will also be available.

In addition, service and support are greatly enhanced due to the commonality of parts. Using one motherboard as a base platform makes upgrading and servicing faster, easier, and less expensive.

Cian PCs from Alaris are the first systems that let you preserve your hardware investment and take advantage of the latest in processor technology.

## PowerPath™ Modules



Cian's PowerPath plug-in processor modules allow you to upgrade to the CPU you want, when you want it!

Part of the secret to Cian's processor upgradability is its PowerPath™ plug-in processor modules which preserve your original motherboard. They plug directly into the motherboard and make upgrading from a 486 to 586 quick and easy!

They give you more room to grow, and something no other PC can offer -- "freedom of choice". For the first time ever, you are free to choose the processor you want, when you want it, and from whom you want it. Set yourself free and call us at 1-800-317-2348 for more information.



Alaris offers a complete family of computer systems -- from workstations to servers!



**alaris**<sup>®</sup>  
Technology You Can Trust!

Copyright 1994 Alaris Incorporated, 47338 Fremont Blvd., Fremont, CA 94538. All rights reserved. Trademarks and registered trademarks belong to their respective companies. Specifications are subject to change without notice.

Circle 20 on reader service card

the right) of the range of values you want averaged. Select *Tools • Macro*, pick *Auto-Average* from the list of macros, and click *Run*. Even better, assign the macro to a custom tool bar button; that way it will be automatically available in all of your worksheets.

## 26 Dollars and Sense

Entering dollars and cents figures goes a lot faster if you don't have to type the decimal point. Excel has an editing option just for this purpose: Select *Tools • Options • Edit*, check *Fixed Decimal*, and set *Places* to **2**, and the

macro in **FIGURE 1** enables you to toggle between Fixed Decimal and normal modes in a flash. First, select *Tools • Record Macro • Record New Macro*, type **DollarsAndCents**, select *Options*,

between 'Sub DollarsAndCents()' and 'End Sub' in Figure 4. Back in your worksheet, press **<Ctrl>-<Shift>-D** to toggle into or out of Fixed Decimal mode.

# 1-2-3 for Windows

## 27 Weekdays Only

 Want to enter a series of dates that includes only weekdays? A simple formula does the trick. Enter a starting date (weekday or weekend) in cell A1. Then, in cell A2, enter the formula **=a1+@choose (@mod(a1,7),2,1,1,1,1,3)** and copy it down as far as you want. Be sure you format the column to show dates.

## 28 To ERR Is Human

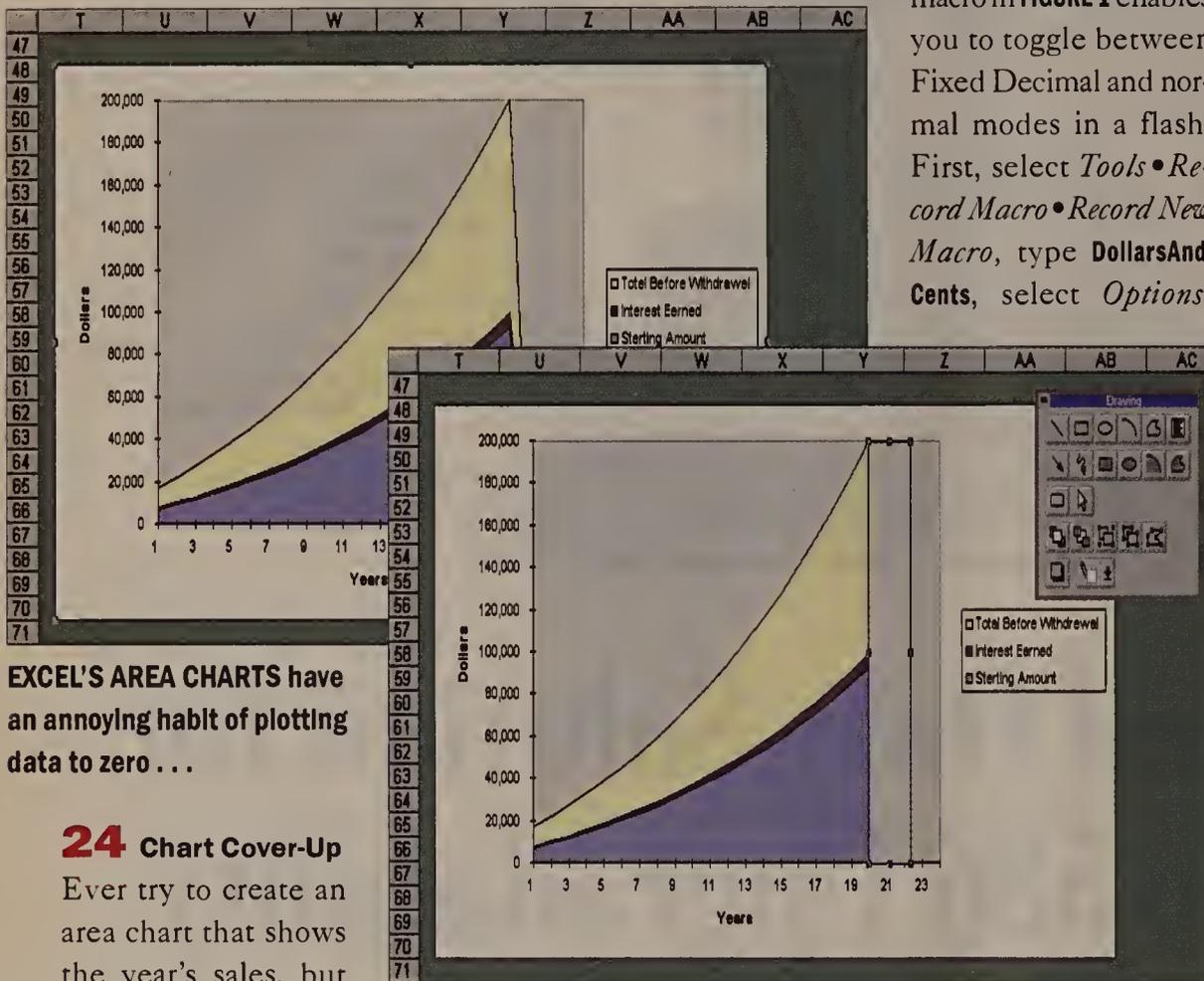
 If one of your formulas divides by zero, 1-2-3 will return an ERR message. Having a lot of ERRs in your worksheet is distracting, so you might be tempted to suppress their display with formulas such as **@if(b5,@sum(a1..a100)/b5,"")**. This tells the worksheet to display nothing if B5 is zero or blank. However, ERR messages are designed to alert you to problems. So, instead of simply hiding them, you should use a formula like **@if(b5,@sum(a1..a100)/b5,"missing data")** to return a more meaningful message.

## 29 More Than Just Status

1-2-3 release 5.0's status bar makes formatting selected cells easier and faster than using the Style menu. (If the status bar isn't showing, select *View • Set View Preferences • Status bar • OK*.) To change numeric formatting, click the leftmost box on the status bar to pull up a list of formats from which you can select. If the format you pick allows decimal fractions, click the next button on the status bar to set the places to the right of the decimal point. If you're using named styles, use the third status bar button to select a style for the selected cells. To change the font, click the fourth status bar button; to adjust the point size, click the next button to the right.

## 30 Improving Your Status

If the list of number formats called up from the status bar is too cumbersome, or if you use only a limited number of formats, you can customize the list called up in the previous



**EXCEL'S AREA CHARTS** have an annoying habit of plotting data to zero . . .

## 24 Chart Cover-Up

Ever try to create an area chart that shows the year's sales, but you have only three months' worth of data (see the screens above)?

Excel plots the data after the third month to zero, leading to an apparent sharp decline. Fortunately, there's a simple work-around.

Create your chart as usual. Then open the Drawing tool bar (*View • Toolbars*, check  *Drawing*, and click *OK*), and click the  Filled Rectangle icon. Draw a rectangle over the declining area of the chart, then double-click the rectangle to open the Format Object dialog box. Click the *Patterns* tab, and set *Border* to *None*.

## 25 Flexible Links

Do you want to link a cell or range from your worksheet to, say, a Word document? Make sure that you name the cell or range you're linking, and then use that name in the link. That way, if you make changes to your worksheet later, the links will adjust themselves correctly.

**... BUT YOU CAN GET AROUND THIS PROBLEM** by using Excel's Drawing tools to cover up the downward slope.

double-click the letter in the Ctrl+ box, hold down **<Shift>** and type **D**, choose the 'Store in' option, and press **<Enter>**. Click the *Stop Macro* button or select *Tools • Record Macro • Stop Recording*. Now, select *Tools • Macro*, click *DollarsAndCents* once, then click the *Edit* button. Type in the lines

```
Sub DollarsAndCents()
  With Application
    If .FixedDecimalPlaces = False Then
      .FixedDecimalPlaces = 2
      .MoveAfterReturn = True
    Else
      .FixedDecimalPlaces = False
      .MoveAfterReturn = False
    End If
  End With
End Sub
```

**FIGURE 1: USE THIS MACRO TO TOGGLE** between Fixed Decimal and normal editing modes.

PRESENTING  
**THE FIRST  
 EXPANDABLE  
 UPGRADEABLE  
 FLEXIBLE  
 AFFORDABLE  
 STEREO  
 MODULAR  
 MULTIMEDIA  
 MACHINE**



Two crisp, colorful displays to choose from. For an excellent value, get the 256-color Dual Scan (standard with Model 550S and 5100S). Or for a screen that rivals any desktop monitor, get the TFT Active Matrix (standard with 5100T).

New TwinTouch™ pointing device, a Slimnote exclusive, is the next step beyond trackballs. Moving the cursor is as easy and intuitive as moving your finger.

Don't settle for tinny 8-bit sound. Slimnote gives you vibrant 16-bit stereo, with two speakers and a microphone built right in. It's the multimedia machine that fits in your briefcase!

The PCMCIA slot, which accepts two Type IIs or one Type III, gives you virtually unlimited expansion.

Get maximum performance from Windows™ with 1 Mb of video on the local bus. Your Slimnote will work beautifully with any VGA monitor, at resolutions up to 1024 x 768.

Want to double your battery life? Simply slide out the floppy-drive module (included with your Slimnote) and replace it with a second battery pack.

You can easily remove the hard-drive module for instant expandability, easy servicing and total data security.

the biggest names in the business. Now we're offering our superior quality and reliability direct to you. And when you buy from us, you're protected by our 30 day money-back guarantee, worldwide ExpressCare™ service, and a lifetime of toll-free technical support from the True Source — the people who actually built your computer.

**ORDER DIRECT AND SAVE!**

**1-800-995-8946**

Monday thru Friday, 8am to 5pm, PDT

**Slimnote 550S. Only \$2,395**

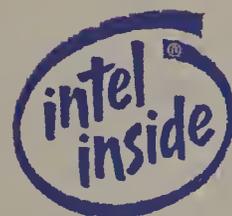
IntelDX2/50; 9.4" Dual Scan color display; 4 Mb RAM; 340 Mb disk hard drive; integrated 25mm trackball.

**Slimnote 5100S. Only \$2,995**

IntelDX4/100; Dual Scan color display; 8 Mb RAM; 340 Mb hard disk drive.

**Slimnote 5100T. Only \$3,995**

IntelDX4/100; 9.4" TFT Active Matrix color display; 8 Mb RAM; 340 Mb hard disk drive.



**FREE CARRYING CASE**

Order now and we'll include, at no extra charge, a custom padded carrying case.

**YES!** Send me the Slimnote 5 Series notebook model I have checked below.

550S  550T  5100T

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

Please add \$29 shipping and handling. CA and NJ residents please add appropriate sales tax.

METHOD OF PAYMENT:

Check enclosed. (Payable to Twinhead Corp.)

Charge to my:



CARD NUMBER \_\_\_\_\_

EXP. DATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_

DAYTIME PHONE \_\_\_\_\_

**Twinhead Corporation**  
 1537 Centre Pointe Drive Milpitas, CA 95035  
 408-945-0808 Fax 408-945-1080  
 Ad code PCW0395



Circle 240 on reader service card

Words can hardly begin to describe the Slimnote® 5 Series notebooks from Twinhead. That's because no other notebook offers you so much.

Thanks to its unique modular design, you can quickly customize your Slimnote to fit your needs perfectly. Even if what you need tomorrow is different from what you need today.

Want to add more RAM, a faster CPU, a bigger hard drive, or update your screen? A modem, network card or extra battery? You can do it yourself in seconds. Just snap in the module you need and you're ready to go.

For even greater flexibility, the optional Docking Station gives you two ISA slots and one drive bay. And the optional I/O Slice adds SCSI II and MIDI/game ports. It also duplicates all ports on the Slimnote, so you can dock with just a single connection.

**MULTIMEDIA TO GO**

If you make presentations on the road, Slimnote is the ideal notebook for you. You get built-in stereo sound, two speakers, a microphone, 1 Mb of video acceleration, plus your choice of two brilliant color displays. Until now, you needed a desktop machine to get multimedia performance as good as this!

**ORDER DIRECT FROM THE TRUE SOURCE™**

For more than a decade, Twinhead has been building computers for some of

© 1995 Twinhead Corporation. All rights reserved. All pricing and specifications subject to change without notice. Twinhead, the Twinhead logo and Slimnote are registered trademarks of Twinhead Corporation. Intel, IntelDX2, IntelDX4 and the Intel Inside logo are registered trademarks of Intel Corporation. All other trademarks acknowledged. Warranty terms and conditions are available from Twinhead; call for details. Prices valid only on systems purchased directly from Twinhead.

tip. First, select *Style • Number Format*. In the Format list, highlight each format you want to appear on the status bar and be sure the *Show in status bar* box is checked.

### 31 Across-the-Board Increases

Suppose you want to look at the impact of an across-the-board, 5 percent increase in costs on your budget. You could write a macro

that would increase all of your line items by 5 percent, but 1-2-3 release 5 has an easier solution. It's called matrix math.

Let's assume your data occupies the range C1..C10. In a blank cell, enter 1.05. Then choose *Range • Analyze • Multiply Matrix*. In the ensuing dialog box, specify A1..A10 as the first matrix, the cell containing 1.05 as the second matrix, and a blank output range for the

resulting matrix; if you want to replace the original values, specify A1..A10 as the resulting matrix. When you click *OK*, the increased values will appear in the output range.

### 32 Self-Adjusting Links

If formulas in several cells of a worksheet refer to a single cell in another worksheet, what happens if you move or

## 34 Connecting With Your Word Processor

Putting spreadsheet data in a word processing document is one of the most common computing tasks, yet it's also one of the thorniest. The problem: With so many options, it's hard to know which to use.

The basic procedure begins simply enough: Open your spreadsheet and word processor, then load your worksheet and document. In the spreadsheet, select the cells or chart you want and choose *Edit • Copy* (or press <Ctrl>-C or click your spreadsheet's Copy tool bar button). Then <Alt>-<Tab> to your word processor, select *Edit • Paste Special*, and ...

That's when it gets tricky. Depending on your word processor, you'll need to choose Paste or Paste Link and select from several different formats, including Spreadsheet Object, Formatted or Unformatted Text, Picture, and Bitmap. Fortunately, in everyday use you'll probably require only a few of the available permutations.

#### Simple Pasting

If your word processing document is a one-shot letter or memo, and the original spreadsheet data probably won't change, a simple paste is all you need. Pasting simply inserts a copy of the spreadsheet data into your word processing document. It's quick, and the imported data won't unduly bloat the document.

If you copied a range, several different format options will confront you in the Paste Special dialog box. But if you're just inserting a table in your document, the only options you need to worry about are *unformatted* and *formatted* text. Pasting unformatted text is the functional equivalent of typing the spreadsheet numbers into your document; if you copied a multicolumn range, the values will be separated by tabs or spaces. Pasting the range as formatted text is more useful: The range appears

in your word processing document as a table that you can then edit using your word processor's table tools.

Whichever format you decide to use, the paste procedure is simple. In Microsoft Word or WordPerfect, choose *Edit • Paste Special • Paste*, and then select *Unformatted text* or *Formatted text (RTF)*. In Ami Pro, use *Edit • Paste Special*, and then select either *Text* or *Rich Text Format*.

If you're copying a chart instead of a range, paste it as a *picture*. In Word and WordPerfect, select *Edit • Paste Special*, click *Paste*, then choose *Picture* from the As list; in Ami Pro, select *Edit • Paste Special* and choose *Windows Metafile*. Double-click the chart to launch your word processor's graphics tools to edit the chart as a *picture*; you won't be able to edit its underlying values.

#### Embedding

Pasting simply inserts a snapshot of the worksheet into your document. If you'll be revising the document repeatedly, and the spreadsheet data is subject to change, use *embedding* or *linking* instead.

If you're the only one editing the source worksheet, you're copying a single range (or chart) from your worksheet into a single document, and you can tolerate some file bloat, use embedding. Like pasting, embedding inserts a copy of the spreadsheet data into your document; unlike pasting, it lets you edit that data using your spreadsheet's editing tools.

On the downside, changes you make in the

original worksheet won't show up in the embedded object, and vice versa. Embedding is unwieldy if you're importing a table or chart from one worksheet into several documents: If you need to change the data, you'll have to do so separately in each document. For similar reasons, embedding can also be impractical if you're importing several ranges or charts into one document. Finally, embedding makes document files huge.

If you decide that embedding is the way to go, it's almost as easy as a simple paste: Just select the range or chart in your worksheet and choose *Edit • Copy*. In your word processor, select *Edit • Paste Special*. In Word or WordPerfect, you then select *Paste* and, in the As list, the appropriate

object; if, for example, you've copied a chart from Excel, you'll choose *Microsoft Excel 5.0 Chart Object*. In Ami Pro, you simply select *OLE Embed*.

After you embed the table or chart, double-click it to start editing. If the source and target apps both support OLE 2.0 In-place editing (Word 6.0, Excel 5.0, Quattro Pro 6.0, and WordPerfect 6.1 do; Ami Pro and 1-2-3 don't), your spreadsheet's menus and tool bars will replace your word processor's. If your apps don't support in-place editing, double-clicking will start the source application itself. In either case, changes in the embedded worksheet are saved in your word processing document, not in the original spreadsheet file.

#### Linking

Linking inserts a pointer from your document to your worksheet file. Unlike embedding, linking keeps the word processing and spreadsheet



rename that second sheet? When you update the references, they're no longer valid and you'll get a bunch of ERRs. You could search and replace for references in all your worksheet's formulas, but there's an easier way: Instead of creating separate links to one cell in an external worksheet, put a formula in cell A1 that links to that external cell: «c:\data\original.wk4»a:a4. Then edit your

other formulas so that they refer to cell A1. If you change the link, all you need to do is edit cell A1; all the other formulas will then update automatically.

### 33 All the Formatting That Fits

In earlier DOS versions of 1-2-3, users could view cell formatting easily because formatting codes were displayed along with the cell

address in the editing box. Unfortunately, the Windows versions of 1-2-3 show only some, rather than all, formatting information on the status bar. To get the rest of the formatting story, you'll have to revert to the Classic or Wysiwyg menus. With the cell you want to know about selected, simply hit /, :, or <. The top line of the resulting menus will then display the formatting codes for the current cell.

data separate. Even if several people are working on the worksheet, their changes will show up in your word processing document. Linking also makes many-to-one or one-to-many connections between worksheet and document manageable; instead of updating each table and chart individually, you can update all of the imported data in one fell swoop. Finally, because linking Inserts a pointer rather than data, your documents won't get that bloated feeling.

If you decide to paste a link, you'll have the same options that you do with regular pasting—text (formatted or not), picture (or bit map or Metafile), and object—and your choices will follow the same rules. For example, to link a single

cell from your worksheet to a Word or WordPerfect document, you'll select *Edit • Paste Special • Paste Link*, choose *Unformatted Text*, and click *OK* (In Ami Pro 3.01, select *Edit • Paste Link*). To import a chart, use the *Picture* or *Metafile* format; for a table or chart you can edit with your spreadsheet's editing tools, select the appropriate object from the format list (In Ami Pro, use *Edit • Paste Special • OLE Link*).

#### After Linking

Once you have established a link, changes in the worksheet are reflected immediately in the document if both apps are open. If your spreadsheet is closed, Word automatically fetches the

current value from the closed spreadsheet file; in WordPerfect or Ami Pro, you have to update the links manually (using *Edit • Links* in WordPerfect or *Edit • Link Options* in Ami Pro). Be aware that if you move or rename the worksheet, the link will be lost; if that happens, select *Edit • Links* in your word processor to reestablish the link path.

To edit the linked object, double-click it. If the spreadsheet and the linked worksheet aren't already open, Windows will launch them; if you make changes to the worksheet while the document is closed, you may need to update the link after you open the document.

—Richard Scoville

## PASTE, EMBED, OR LINK?

Copy a spreadsheet range or chart, switch to your word processor, and select *Edit • Paste Special*. You'll find lots of choices there.

### Unformatted text

#### Paste

Equivalent to typing data into the document; use word processor's standard tools to edit.

#### Paste Link

Inserts values from worksheet into document, like Paste, but any changes made to original worksheet appear in document.

### Picture or Bit map

#### Paste

For charts. Double-click launches word processor's graphics editor; you can't edit chart's underlying data.

#### Paste Link

Links to chart in original worksheet. Double-click opens worksheet in spreadsheet for editing.

### Rich Text Format

#### Paste

Equivalent to creating a table and typing in data; use word processor's table editing tools to edit.

#### Paste Link

Like Paste Link • Unformatted text, but retains spreadsheet formatting when you update link. Edit with word processor's table editing tools.

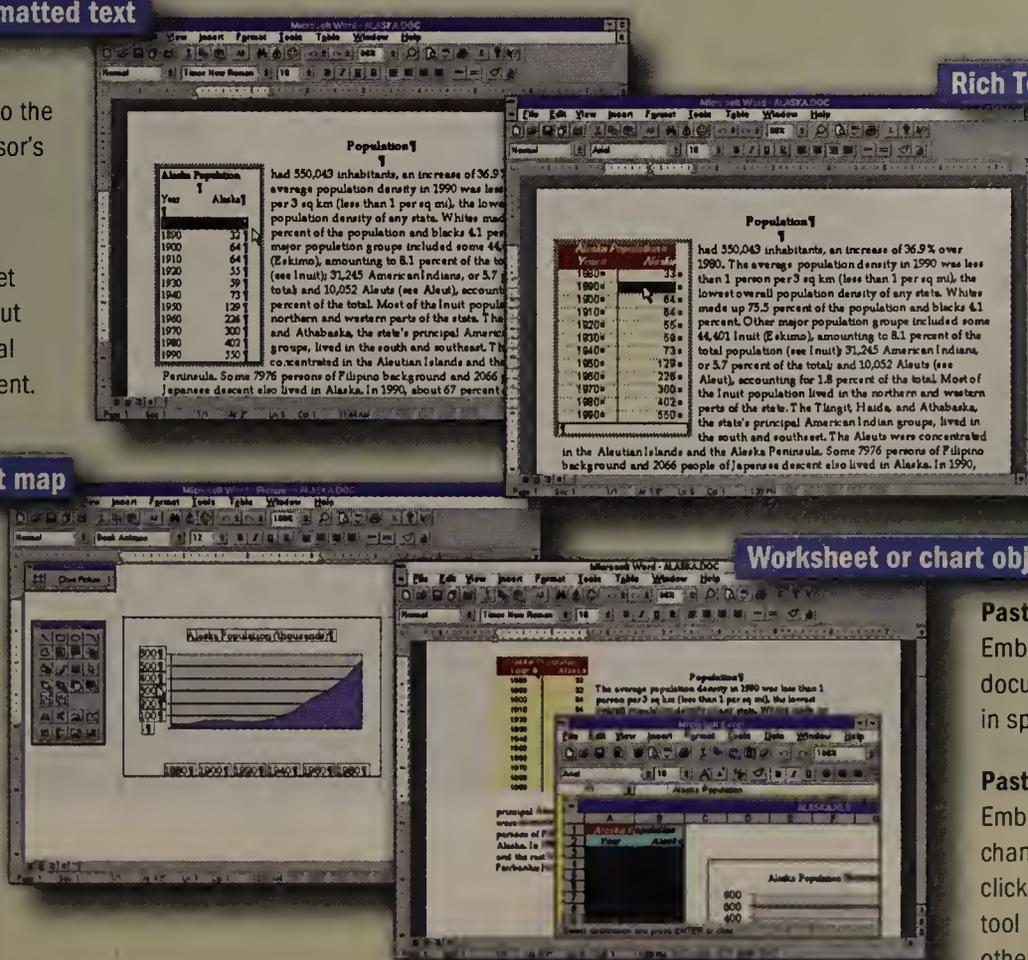
### Worksheet or chart object

#### Paste

Embeds copy of worksheet or chart in document; double-click launches worksheet in spreadsheet for editing.

#### Paste Link

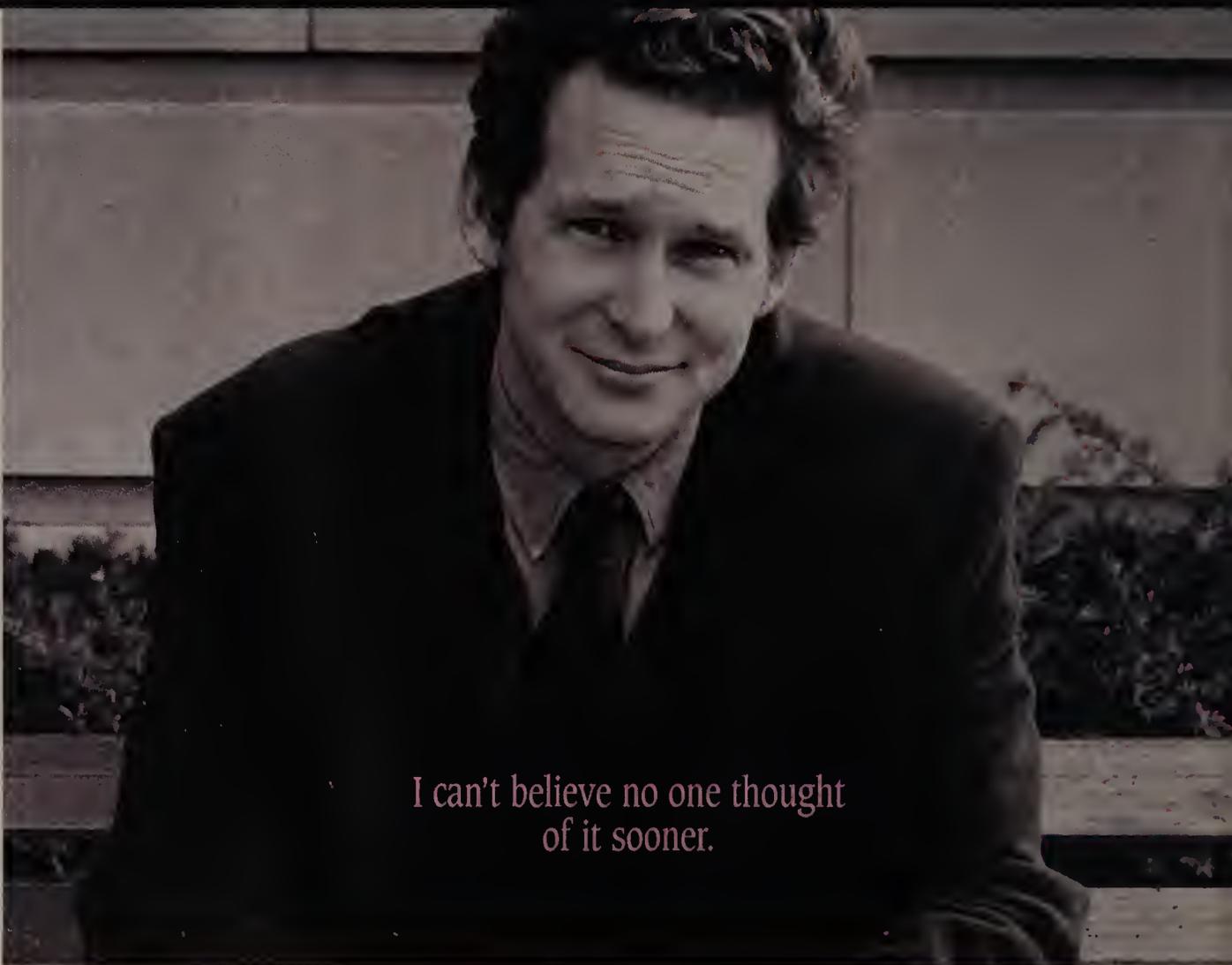
Embeds linked copy of worksheet or chart; changes in original appear in copy. Double-click in some apps replaces word processor's tool bars and menus with spreadsheet's; in others, opens worksheet in spreadsheet.





I instantly felt comfortable with  
my new computer.

# OOBE: Making

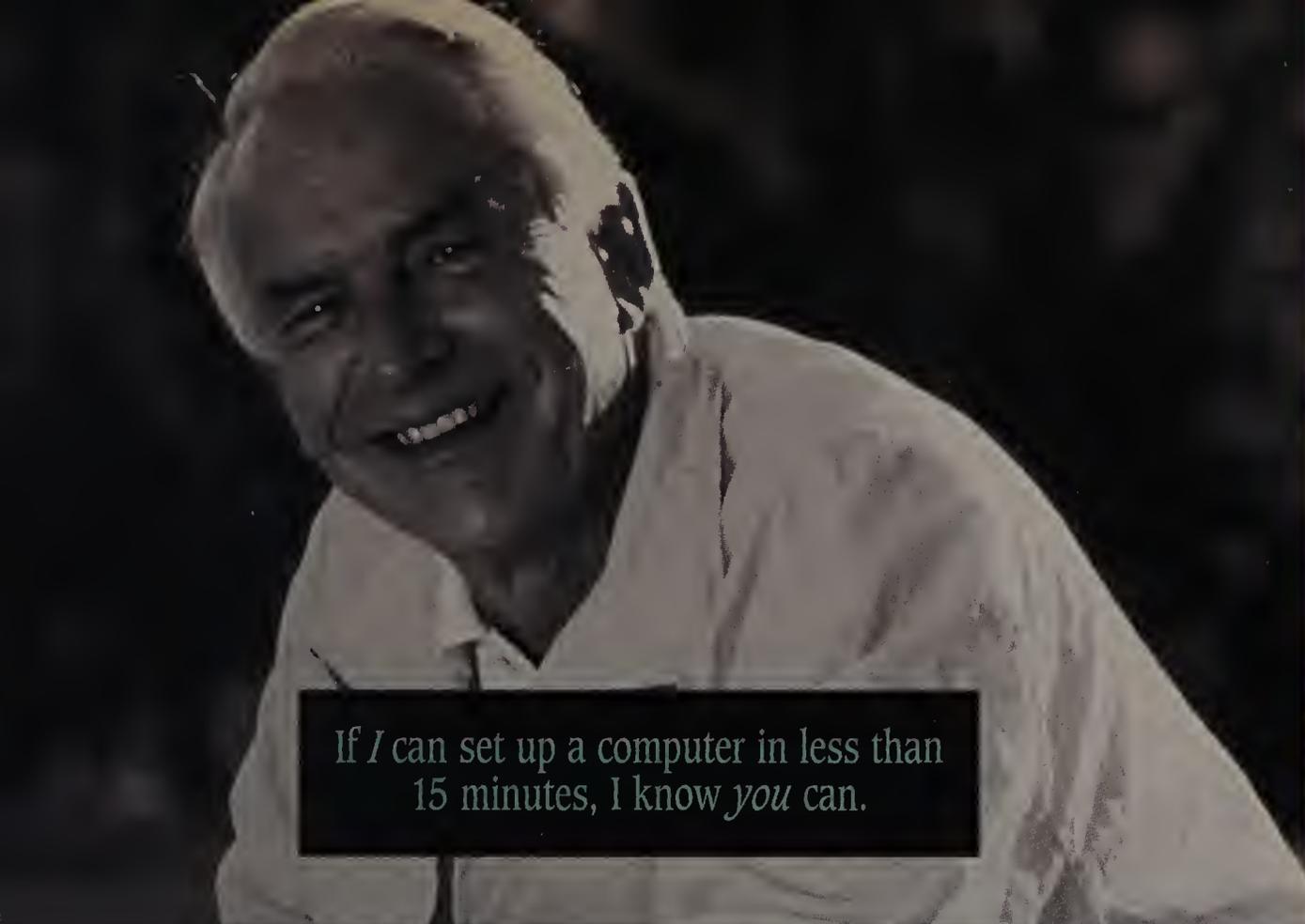


I can't believe no one thought  
of it sooner.



Call **1-800-371-ACER**  
for the Acer retailer nearest you.

Acer and the Acer logo are registered trademarks and OOBE is a trademark of Acer America Corporation and Acer Inc. All other products, brands or company names are trademarks or registered trademarks of their respective companies. ©1995 Acer America Corporation. All rights reserved. PC Magazine quotes reprinted from PC Magazine December 20, 1994. Copyright ©1994 Ziff-Davis Publishing Company L.P.



If I can set up a computer in less than  
15 minutes, I know you can.

# computers easy.

## OUT-OF-BOX EXPERIENCE



OOBE™ (rhymes with ruby) stands for the “Out-Of-Box Experience.” New from Acer, OOBE makes setting up a personal computer faster and easier than you ever imagined. Step-by-step, illustrated instructions. Clearly labeled packaging. Even a toll-free hotline to answer your questions.

And after you're up and running, OOBE continues with A.C.E., the Acer Computer Explorer. A.C.E. is a unique menuing system that works with Microsoft® Windows™ to make Acer computers even easier to use.

OOBE is available in Acer PCs from desktops to Pentium™-processor multimedia minitowers. And it's waiting for you at your local Acer retailer.

---

“...a breeze to unpack. The large instruction sheet explained the assembly process easily.”

*PC Computing, Dec. 1994*

“...A.C.E. Windows front end is one of the best around.”

*PC Magazine, Dec. 20, 1994*

“OOBE is the Holy Grail...”

*PC Magazine, Dec. 20, 1994*

**Acer** 

The Industry Source Means Value.

Circle 102 on reader service card

## 35 Label or Value?

In 1-2-3, you can enter a value as a label by using a label prefix. But what happens if you then want to use that value in a calculation? You may forget you entered it as a label. The trick is to find out which it is. 1-2-3 can tell you by way of a simple formula: `@cell(type,a1)`. This formula will return the values 'l,' 'v,' or 'b' for label, value, and blank, respectively.

	OCT	NOV	DEC	JAN	FEB	MAR	TOT
EXPENSES							
GARBAGE	50	50	50	50	50	50	
CAR PAYMENT	250	250	250	250	250	250	
CLOTHES	200	200	200	200	200	200	
ELECTRIC BILL	50	50	50	50	50	50	
GROCERIES	800	800	800	800	800	800	
HOUSE PAYMENT	2995	2995	2995	2995	2995	2995	8985
HOUSEHOLD ITEMS	400	400	400	400	400	400	1200
MAGAZINE	30	30	30	30	30	30	90
MEDICINE	100	100	100	100	100	100	300
PHONE BILL	100	100	100	100	100	100	300
WATER BILL	60	60	60	60	60	60	180
MONTHLY EXPENSES				685	765	685	11055

1-2-3'S SUM SMARTICON would have a hard time adding up these columns and rows unless you give it some assistance.

## 36 Summing Less Than Everything

Sometimes 1-2-3's Sum SmartIcon isn't so smart. Take the example in the screen above. Let's say you want to add columns U through W and rows 59 through 64. If you select X54:X64 and R65:W65 and click the Sum icon, 1-2-3 will include columns R through T and rows 54 through 58 in its calculations.

The solution: Highlight U59:X65 first and then click the Sum SmartIcon.

## 37 Drag and Fill in Macros

If you're recording a macro in 1-2-3 release 5 and try to use drag-and-fill or drag-and-clear, 1-2-3 won't record it; only the cell selection is recorded. The work-around: Use the menus to fill the range: Select *Range • Fill by Example* or *Range • Fill*. The fill itself will be recorded. If you want to include drag-and-clear, select *Edit • Cut* or *Edit • Clear*.

## 38 Auto Everything II

Like Excel (see tip 23), 1-2-3 has a button—the Sum SmartIcon—that automatically selects and adds up values in a range. And, like Excel, you can use this tool as the basis for customized buttons that automatically calculate averages, counts, and other common functions.

Start by entering `{smartsum}` in a worksheet cell, then enter `{edit-replace-all "sum";"formulas";"avg"}` in the cell below. Highlight both cells, select *Range • Name*, and enter *AutoAverage* in the Name box. To use the macro, highlight the cells where you want the averages (just below or to the right of the range of values), select *Tools • Macro • Run*, and select *AutoAverage* from the list. Even better:

Assign the macro to a custom SmartIcon.

## 39 SmartIcons for Non-Lotus Apps

1-2-3 comes with SmartIcons that can launch other Lotus apps, but what if you want to open a non-Lotus app from inside 1-2-3? Answer: You can do it with a macro, thanks to the Launch command.

Select *Tools • SmartIcons*, then click *Edit Icon*. In the Edit Icon dialog box, select *New Icon* and type in a name for the icon. In the 'Enter macro here' box, type `{launch, a space, and then the path and file name of the application you want to launch in quotation marks (as in launch "c:\wp\wp.exe") followed by another}`. Enter a description in the Description box, then use your mouse to create an icon on the button blow-up—we used the letter L. Click *OK* when you're done. Back in the

SmartIcons dialog box, find your new icon in the Available icons list, then drag it over to whichever SmartIcon set you wish.

## 40 Leading Zeros

Want to fill a column with three-digit numbers from 001 to 999, with leading zeros where appropriate? Select *Range • Fill* to bring up the Fill dialog box. Select *Linear*, and in the Start, Increment, Stop, and Range boxes, enter **1, 1, 999, and A1..A999** (or the desired target range), respectively. Select *OK*. Enter the formula `@right("00"&@string(a1,0),3)` in cell B1 and copy it to cells B2..B999. Note that the numbers in column B are labels, so they won't calculate naturally. To use them in calculations, use the `@VALUE` function.

## 41 Turn Off Bubble Help

Bubble help is a great way to find out what different SmartIcons do. But it can also be irritating when those bubbles pop up every time your mouse pointer rests momentarily over a tool. If you want to suppress these bubbly little helpers, select *Tools • SmartIcons*, uncheck the Show Icon Descriptions check box, and click *OK*.

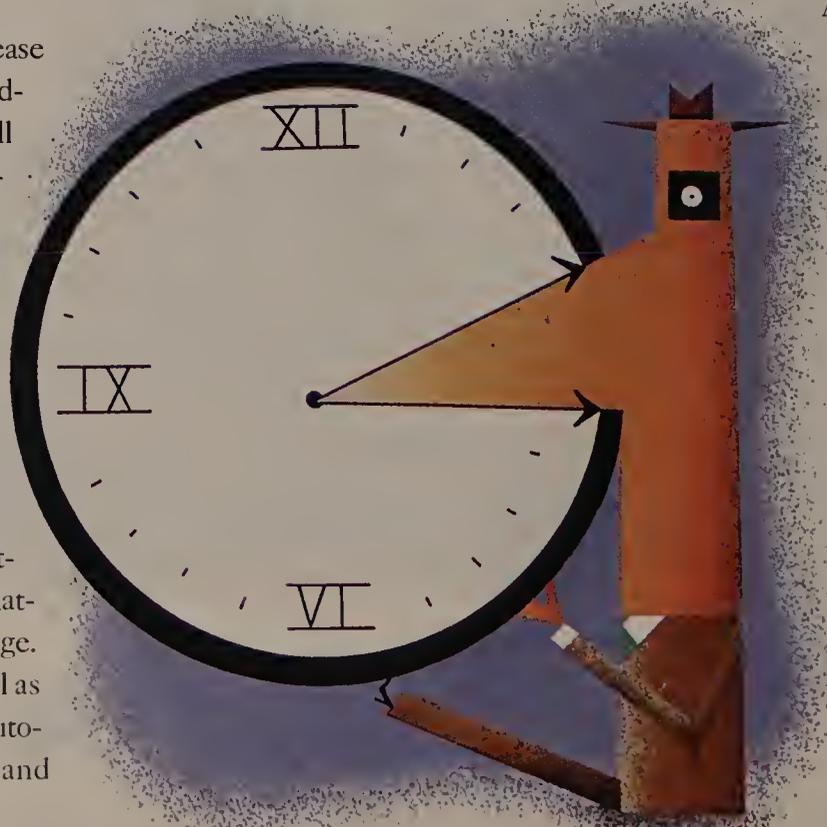
# Quattro Pro

## 42 Hours and Minutes

Need to calculate hours and minutes from decimal values, in order to translate, say, the value 8.75 to '8 hrs and 45 min'? Assuming that the decimal value appears in cell A1, try the following formula: `@string(@int(a1),0)&" hrs and "&@string(@mod(a1,1)*60,0)&" min"`. You can, of course, adjust the text strings as you see fit.

## 43 Keeping the Right DLL In the Right Place

Occasionally, installing Quattro Pro 6.0 for Windows bestows you with multiple copies of the file `BWCC.DLL`. In particular, you may end up with one in the `\WINDOWS` directory and one in the `\WINDOWS\SYSTEM` directory. If this happens, you may get an error message when trying to load QPW 6.0. To fix this problem, make sure that the





Create fancy graphics to improve your image

Use virtually any image anywhere even scary Tifs like this one

Search and find all your images quickly and easily and impress your boss

Glamorize all your images so you look good

Add graphics to all your documents and get noticed

# Looking good ain't easy!

(unless you have a copy of HiJaak Graphics Suite to make your graphics, documents, and presentations look good)

HiJaak Graphics Suite has all of the tools to help you make your graphics and documents "Look Good". Forget those fancy high priced software packages.

HiJaak Graphics Suite gives you more bang for your buck. It's the low-sweat way to get your documents read and acted upon. After all, that's why you create those reports, letters, and presentations, to influence, convince, inform, educate, and persuade your customers to purchase your products or services. HiJaak Graphics Suite gives you a great set of powerful, easy to use graphics programs. Everything you need is included: painting, drawing, enhancing, capturing, converting, and tracing software all tied together elegantly with the finest graphics management system yet, HiJaak Browser. Even if you already own a drawing package, HiJaak Graphics Suite gives you the flexibility you need to easily use, enhance, manage, search and find all your graphics. Also included is 3,000 pieces of quality, pre-keyworded easily searchable art on CD-ROM. It's all ready to customize or use as is, for those of you who can't draw a straight line with a ruler. HiJaak Graphics Suite is here to bring you the success your ideas deserve **at a price that can't be beat (around \$99)!**

## "The Best of 1994"

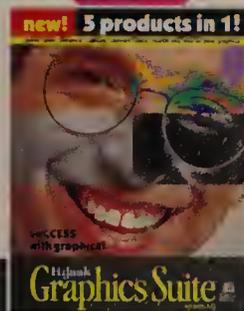
"The search for the perfect grab bag of graphics utilities is never ending... HiJaak Graphics Suite, Version 3.0, offers the closest thing to one-stop shopping on the market."

PC MAGAZINE  
January 10, 1995



Call today for our new booklet filled with computer graphics terms and definitions, "Talk Like a Computer Graphics Geek Without Being One"

**IT'S FREE!**



**paint • draw • enhance • capture • convert  
trace • search and find all your graphics**



71 Commerce Dr.  
Brookfield, CT 06804-3405  
voice 203-740-2400  
fax 203-775-5634

To order or upgrade call  
**800-DR.INSET**  
ext. 9695  
(800-374-6738 ext. 9695)

Circle 116 on reader service card

# HiJaak Graphics Suite

HiJaak Graphics Suite, HiJaak PRO, HiJaak Browser, HiJaak Smuggler, HiJaak TouchMap are trademarks of Inset Systems Inc. All other product names mentioned are trademarks of their respective manufacturers. 1992, 1993, 1994 and 1995 Inset Systems Inc. All rights reserved. "The best of 1994" quote reprinted from "PC MAGAZINE" January 10, 1995 Copyright © Ziff-Davis Publishing Company. P.

BWCC.DLL file in your \WINDOWS-\SYSTEM directory is dated 1/24/94 or later, and delete any other copies of the file from your local hard drive (and from any network directory in your search path). Then exit and reload Windows.

## 44 Adding Suffixes to Numbers

Have you ever tried to add the appropriate ordinal suffixes to a range of numbers (i.e. '1st', '2nd', '3rd', and so on)? It's harder than it looks. The most flexible formula for the job is the following one: `@string(a1)&@choose((@mod(a1,10)<4)*@mod(a1,10)*(@int(@mod(a1,100)/10)<>1),"th","st","nd","rd")`.

## 45 New, Improved File Dialogs

Quattro Pro users have been clamoring for the ability to delete files from within QPW instead of having to use <Alt>-<Tab> to switch to File Manager. While Quattro Pro 6.0 by itself doesn't solve this problem, these poor souls can get what they want by using WordPerfect 6.1 (with shared code version 2.3).

Assuming that you have both products installed, select Quattro Pro's *Property* but-

	A	B	C	D	E	F	G	H
1	Products	Jan	Feb	Mar				
2	Hats	100	200	300				
3	Coats	600	500	400				
4	Shoes	700	800	900				
5								
6								
7	Products	Jan	Feb	Mar				
8	Coats	600	500	400				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

**DYNAMIC GRAPHS IN QUATTRO PRO** change as you move the mouse pointer; the trick is in using the @CELLPOINTER function.

ton, then *Application*•*File Options*, and check the *WordPerfect File Dialogs* box. Subsequently, when you select *File*•*Open* or *File*•*Save*, you'll see WordPerfect's dialog boxes, from which you can perform all sorts of everyday file management tasks, including copying, moving, renaming, deleting, and printing files, as well as creating, removing, and renaming directories.

## 46 Finding the End of a Month

If you need to figure out the last day of any given month—for dating invoices, say—you can use the following formula. Enter any date in the month for which you want to know the last day in cell B1; be sure it's formatted correctly as a date. Then enter the formula `@date(@year(a2)+(@month(a2)=12),@if(@month(a2)<>12,@month(a2)+1,1),1)-1`. The formula adds one month to the current month, finds the date of the first of that month, then subtracts one day (unless it's December, in which case 1 is added to the year and January is set as the month).

## 47 Dynamic Graphing

Have you ever wanted a graph that would chart data dynamically, changing as you selected different ranges? Here is a simple way to do it: Assume your data is laid out in the range A1..D8, as in the screen shown at lower left. Copy the titles in cells A1..D8 to A10..D10. In cell A11 enter the formula `@@(a@string(@cellpointer(row),0))`. Copy this formula to cells B11..D11, changing the 'a' to 'b', 'c', and 'd' in cells B11, C11, and D11, respectively. Finally, to place your chart, highlight A10..D11 and click the Graph Tool. Drag the

mouse to place the chart wherever you want on the worksheet. Now move your cursor to any row of the database and press <F9>. Each time you move to a new line and press <F9>, your graph will change to fit that row's data.

## 48 Save Memory by Sparling Columns

Short on memory? One trick is to store information in as few columns as possible. In Quattro Pro, columns use more

memory than rows, so arranging your data in fewer columns will save some precious system resources.

## 49 Quirky Quattro Currency

Another Quattro Pro bug: Sometimes, when upgrading over QPW 5.0, the QPW.INI file is amended so that instead of displaying currency as '\$1.00', QPW displays it as '\$Quat-

tro1.00'. To fix this, start QPW6.0, then use *Property*•*Application*•*International*•*Currency* and edit the format or choose *Windows Default*.

## 50 AutoAverage III

Quattro Pro's SpeedSum button is one of the program's handiest tools. Wouldn't it be nice to have a similar icon to do quick averages? The macro in **FIGURE 2** will do the trick. Just enter it as written; if you wish, you can use the *Macros* button to pick the commands from a list. Once you've entered the commands, name the first cell of the macro (select *Block*•*Names*, then enter a name like *AutoAverage*). To use the macro, select the range where you want to enter averages and select *Tools*•*Macro*•*Play*, then select *AutoAverage*

```
{Speedsum}
{Search.Reset}
{Search.Block
@property("active_block.selection")}
{Search.Find sum}
{Search.ReplaceBy avg}
{Search.ReplaceAll}
```

**FIGURE 2: USE THIS SIMPLE MACRO** to do quick averages.

from the *Macros/Named Blocks* list. You can also add the macro to a tool bar, spreadsheet button, or custom dialog box.

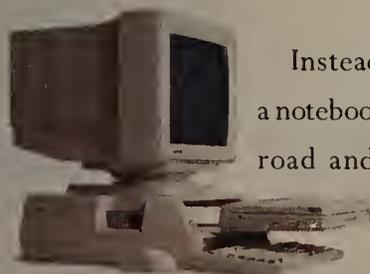
You can use similar macros to create other autofunctions: Just change 'avg' in the fifth cell to any legal function name; you could use count, median, max, min, mode, and std, to name just a few.

*Shane Devenshire is author of Excel Professional Techniques and Using 1-2-3 Release 4 for DOS. Dan Miller is an associate editor and Richard Scoville a contributing editor for PC World. Contributors to this article include Shane Devenshire, Dan Fingerman (author of Using 1-2-3 Release 5 for Windows), Karl Koessel (senior technical editor, PC World), Barry Schnur (Novell NetWire sysop and treasurer of the Phoenix PC User's Group), Ralph Soucie (Excel consultant and author of Making Microsoft Office Work (Osborne/McGraw-Hill), and Cathy Pfeiler (a freelance writer based in Melrose, Massachusetts). Special thanks to Ray Whittemore for sample worksheets.*

# THE COMPAQ LTE ELITE.



*Think Of It As A Powerful  
On-Road/Off-Road Vehicle.*



The optional SmartStation, coupled with an optional Compaq monitor and keyboard, makes it easy to use your LTE Elite as your desktop PC.

It's a high-performance notebook with plenty of power (and fewer total pounds) for the road. And our optional SmartStation™ lets your LTE Elite perform double

Instead of buying a notebook PC for the road and a desktop PC for your desk,

now you can buy a Compaq® LTE Elite™ 4/40CX.

COMPAQ LTE  
ELITE 4/40CX

**\$2,999**  
OR \$108  
PER MONTH\*

duty as your desktop PC. LTE Elite has such convenient features as a built-in AC Adapter, Enhanced EasyPoint™ Trackball, removable hard drive, PCMCIA slots and, of course, our comprehensive Compaq 3-Year Warranty.†

Call now. This may be the only PC you need.

#### LTE ELITE OPTIONS

ADDITIONAL 4MB MEMORY  
(8MB TOTAL)

ADD \$295

340MB HARD DRIVE

ADD \$500

COMPAQ 192 PCMCIA

FAX MODEM

ADD \$169

COMPAQ SMARTSTATION

ADD \$689

#### LTE ELITE 4/40CX FEATURES:

- ◆ 486 DX2/40MHZ PROCESSOR
- ◆ 4MB RAM (EXPANDABLE TO 20MB)
- ◆ 170MB REMOVABLE HARD DRIVE (340MB ALSO AVAILABLE)
- ◆ 3.5" 1.44MB DISKETTE DRIVE
- ◆ 8.4" COLOR VGA TFT DISPLAY
- ◆ LOCAL BUS GRAPHICS
- ◆ TWO PCMCIA TYPE II SLOTS (OR ONE TYPE III)
- ◆ BUILT-IN AC ADAPTER FOR REDUCED BULK AND CARRYING WEIGHT
- ◆ BUILT-IN ENHANCED EASYPPOINT TRACKBALL
- ◆ NiMH BATTERY PACK WITH UP TO 4.5 HOURS BATTERY LIFE
- ◆ PREINSTALLED MS-DOS® 6, MS-WINDOWS™ 3.1, TABWORKS®, MICROSOFT VIDEO FOR WINDOWS (RUNTIME)
- ◆ THREE-YEAR PICK-UP WARRANTY†
- ◆ SLIPCASE

**COMPAQ**  
DirectPlus



**1-800-888-0264**

WEEKDAYS 7-7, SAT. 10-4 CST

ASK FOR OUR NEW FREE CATALOG.

OR FOR THE NAME OF YOUR NEAREST COMPAQ AUTHORIZED DEALER, CALL 1-800-308-7774.

\*Leasing is provided by GE Capital Services for a term of 36 months, and is subject to approved credit and certain terms and conditions. †Restrictions and exclusions apply. Compaq LTE Elite is covered by a Three-Year Pick-Up Warranty. Monitors, battery packs and certain options are covered by a One-Year Warranty. ©1995 Compaq Computer Corporation. All rights reserved. Compaq and the Compaq Logo Registered U.S. Patent and Trademark Office. DirectPlus is a registered service mark of Compaq Computer Corporation. LTE Elite, EasyPoint and SmartStation are trademarks of Compaq Computer Corporation. Prices listed are for products purchased through Compaq DirectPlus. Dealer prices may vary. Products, prices and programs are subject to change without notice. Other products are trademarks or registered trademarks of their respective companies. Microsoft and MS-DOS are registered trademarks and Windows is a trademark of Microsoft Corporation. TabWorks is a registered trademark of Xerox Corporation. Offer available in the U.S. only.



OCTOBER '94  
LTE ELITE  
4/75 CX

Circle 47 on reader service card

*“Digital will extend its winning streak in the desktop business, based on close attention to details in the realms of usability and serviceability”*

IDC, 9/9/94

If you're  
considering  
PCs other  
than ours,

Then get a second opinion, a third and a fourth—the analysts all agree.

Our new PCs really are designed with the users' needs in mind. They're simpler to use. Simpler to customize. Simpler to network. And backed by a service and

support organization (offering a three-year comprehensive warranty) that's simpler to do business with.

Which is why more and more MIS professionals and users are considering—and buying—Digital PCs.

Call 1-800-700-5901 for your nearest reseller. Please



reference JPC when you call 8:30 am - 8:00 pm ET, Monday through Friday.

maybe

you should

consider an

analyst.

"...a degree of flexibility and upgradability rare in today's market ...Digital also shines in our reliability and service survey."

PC World, 9/94



DIGITAL SEEMS TO BE SETTING THE PACE FOR OUT-OF-BOX USABILITY.

Computerworld

**digital**<sup>™</sup>  
**PC**

# CHANGE

**Windows image editors touch up scanned photos and create dynamic graphics for publishing and presentations. Here are our Best Buys for amateurs and pros alike.**

**BY JOHN GODDARD**

# YOUR

Computer graphics have come a long way since the spray-paint can on the Macintosh. Image editing and paint programs are so sophisticated now that you may be surprised at how easy it is to create dazzling visuals that don't look manipulated. Of course, the real measure of these programs is how well they tap your imagination. These powerful tools let you perfect everything from multimedia artwork to business presentations to a photomontage for that hot tell-all cover. To distinguish which programs can do what, we let loose on six PC-based photo manipulation programs priced as low as \$149.

# IMAGE

STUART BRADFORD



**Frill or Feature?**

Which Windows-based image editor serves your needs best? If you're brand-spanking-new to image editing, a high-end program is a bit much for simple touch-up jobs. On the other hand, if you plan to invest time and money in bigger and bigger graphics projects, a bargain-basement package will feel like playing with Crayolas during recess. For beginners, extensive tutorials and an organized, plain-English interface are the best bet. Also essential are easy-to-use features that can touch up—or radically alter—scanned photos without overwhelming lower-end PCs.

Business users should take special note of two programs: Micrografx Picture Publisher 5.0 and Corel Photo-Paint 5 Plus. Both support Windows OLE 2 (object linking and embedding), so you can import and touch up photos directly in popular programs like Freelance, Persuasion, Word, and Excel—no messing with confusing file formats. Graphics professionals, on the other hand, demand precision tools that can produce predictable results quickly for clients.

**Image Editing Layer by Layer**

Your time is limited. To simplify the image editing process, most programs now use a technique called *layering*, which offers an easy way to create a collage on your computer. You select (or *mask*) parts of images and layer them without needing to glue each piece down. Instead, each layer floats independently and can be rearranged anytime you want to try out new ideas. When you are satisfied, either drop all the masked parts down to the background surface or save the image “live,” with floating layers intact, using the program’s own layer file format. All the programs reviewed use various methods to float masked-object layers and allow you to flatten the image so you can save it in a common file format most applications can read. Unfortunately, no standard layer file format dominates the market yet so that you can import and export layered images between these packages.

While creative effects are the glitz of image editing, eventually they can lose their luster from overuse. To counter that, most packages support Adobe’s method of allowing you to plug in new effects. Written by a host of outside graphics experts, these effects can greatly enhance any special-effects arsenal. If you plan to buck the tide with a bevy of fancy imaging effects, it’s smart to invest in an image editor that lets you plug in additional tools (see the sidebar “Creative Resources: Cool Tools and Collections”).

Whatever your image editing needs are—whether you’re working on business presentations or a fancy newsletter, or just trying out your own creative style—one of these programs may be just right for you. To help you pinpoint which program suits you best, we’ve put the pros and cons above each product reviewed, along with a report card summarizing the quality of the components listed in the features table. If you’re looking to illustrate your ideas with images, these powerful tools can help—but the most important resource is your imagination.

*John Goddard is an assistant editor for PC World.*

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

# BEST BUYS



**Adobe Photoshop 3.0** earns our award for high-end photo manipulation. Its full-featured design and creative potential are streamlined with layering. Though the huge 16MB RAM requirement and steep \$895 price may humble beginners, professionals looking for a solid crossplatform graphics engine probably know this program by heart.

At \$595, Micrografx’s **Picture Publisher 5.0** is the best choice for powerful imaging potential on a modest budget. It can manipulate large images without taxing your PC, and it allows you unlimited levels of undo—something no other PC imager is capable of.

Corel Photo-Paint 5 Plus’s robust image editor and ample supply of extras will surprise users looking for lots of tools at a rock-bottom \$249 price (\$99 for the CD-ROM only).



## Adobe Photoshop 3.0 for Windows

**PROS:** Excellent feature interaction, multiple floating layers, zoom-in previews

**CONS:** Expensive, no OLE 2 support, awkward text tool

Photo retouching	A
Image creation	A
Tools and features	A
Output precision	A



Photoshop 3.0 for Windows, a full 32-bit feature-for-feature twin of the Mac version, still reigns as the ultimate photo manipulation tool on the PC. Its well-integrated assortment of powerful tools easily reproduced our test image. Even if you don’t know what you’re doing, a journey down the Effects menu can produce some unexpectedly cool results.

Photoshop isn’t for everyone. If you only need to do casual touch-up jobs, this is overkill. The steep \$895 price and porcine 16MB of



Adobe Photoshop 3.0 for Windows’ masked layers, customizable palettes, and precision output tools are significant upgrade pluses.

RAM recommendation can be daunting. But if you're looking for a cornerstone graphics engine for yourself or your design department, Photoshop is your best choice.

Certainly the most welcome (and requested) addition to version 3.0 is the ability to "float" selected image elements in layers. Before layering was added, only those familiar with Photoshop's underworld of alpha channels could undo unwanted effects. Most of us simply cut and pasted elements, but one step past undo and they were permanent. Layering lets you rearrange or remove elements anytime. This significantly broadens the creative potential of Photoshop, but bear in mind that each new layer dramatically increases memory demands.

Photoshop can also be tailored to work the way you do. Tabbed feature palettes roll up tightly to save screen space, and you can pull a feature from one palette and move it to another. You can also move frequently used commands onto the Command Palette so you have instant access to everyday features.

Special-effects filters are still slow, but Photoshop's filter previews show you what will happen to your graphic if you choose OK. Unlike those of other programs, many Photoshop previews sport a zoom tool so you can scrutinize effects close up or from a distance. And Photoshop's Lighting Effects tool is a quick way to add ambience to a bland background. Photoshop's color printing preview can also save time—and money. It spotted colors on our test image that would not print well, so we used the sponge tool to saturate or absorb the problem colors until the preview indicated it was OK to print.

There are some things to find fault with: You must enter text into a dialog box instead of on screen; you can't record macros; and there's no OLE 2 support. A CD-ROM is included, with sample photographs, fonts, several plug-in effects, and a tutorial. No surprise here: For high-end image editing, Photoshop is a Best Buy. *Adobe Systems Inc.*, 800/833-6687, 415/961-4400 **Reader service no. 805**

## Corel Photo-Paint 5 Plus

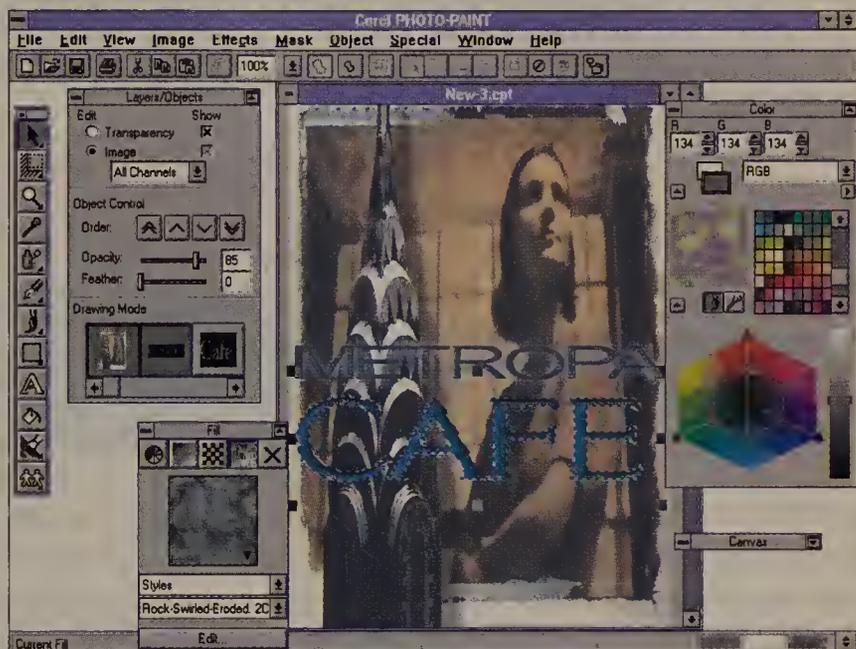
**PROS:** Roll-up palettes, checkpoint undo, texture generator

**CONS:** Can't completely open images larger than 16MB

Photo retouching	A
Image creation	B
Tools and features	A-
Output precision	A



For the same price as Photoshop, CorelDraw's mammoth bundle of graphics programs gives you everything under the sun. But if you just do image editing and painting, Corel's stand-alone Plus version of Photo-Paint 5 may be all you need. It sports all the high-end features: independent floating layers, a variety of masking tools, on-screen text entry and editing, and plug-in support.



Corel Photo-Paint 5 Plus's low price buys a surprising host of high-end features, including object layering, textures, and checkpoint undo.

## THE REAL-WORLD TESTS: ADS AND LOGOS

To test these programs, we re-created two challenging (yet typical) graphics projects and used them to evaluate each program's potential for photo manipulation and image creation. For our image editing test, we designed a modest 15MB photomontage that

could be used for a small business publication or ad. We scanned images, adjusted tonality, touched up flaws, altered areas with special-effects filters, threw a shadow behind text, blended (*feathered*) image edges together, and layered masked portions of other photos into the main image.

Our second test was a simple redesign project so we could gauge each program's capabilities for creating a logo using text and paint tools. During this process, we evaluated how easy it was to find and use each program's features; for instance, were certain features right at the surface, buried in submenus, or simply missing?

We gave points for usability features such as roll-up and user-customizable toolboxes, unlimited undo, and macro recorders, and we



Each program rebuilt this high-resolution ad on a DX2-66 with 16MB of RAM.

knocked off points if the quality and quantity of photo retouching tools were lacking. We were also on the lookout for unique extras, as well as image management and conversion features. Finally, to see if a program supported plug-in filters, we added texture to type using third-party plug-ins. The more features a program offered, the better it succeeded in reproducing our test image.



Before and after: The task was to improve logos without losing the original design.

CorelDraw users will recognize the space-saving roll-up palettes, color ribbon, and color calibration system. It doesn't match Photoshop's or Picture Publisher's power, but for just \$249 (\$99 for the CD-ROM-only version), it comes close. If you're looking for full features on a tight budget, Photo-Paint 5 Plus is a choice low-end Best Buy.

You get a ton of popular plug-in filter effects, over 300 seamless textures, 1000 photos, 10,000 clip-art graphics, 50 floating objects, 100 fonts, Corel Mosaic image organizer, and Corel Capture. You can also create textures, rotate pictures on a 3-D plane, and designate an undo checkpoint in your current imaging session if you think that you will need to undo later changes. There's one big trade-off, however: Photo-Paint only opens a portion of any image exceeding 16MB. Anyone designing full-page, high-resolution images should seriously consider this limitation before investing in this program. But if your projects are more modest, Photo-Paint's rock-bottom price and breadth of features make it a fine Best Buy choice for novices. *Corel Corp., 800/772-6735, 613/728-8200* Reader service no. 806

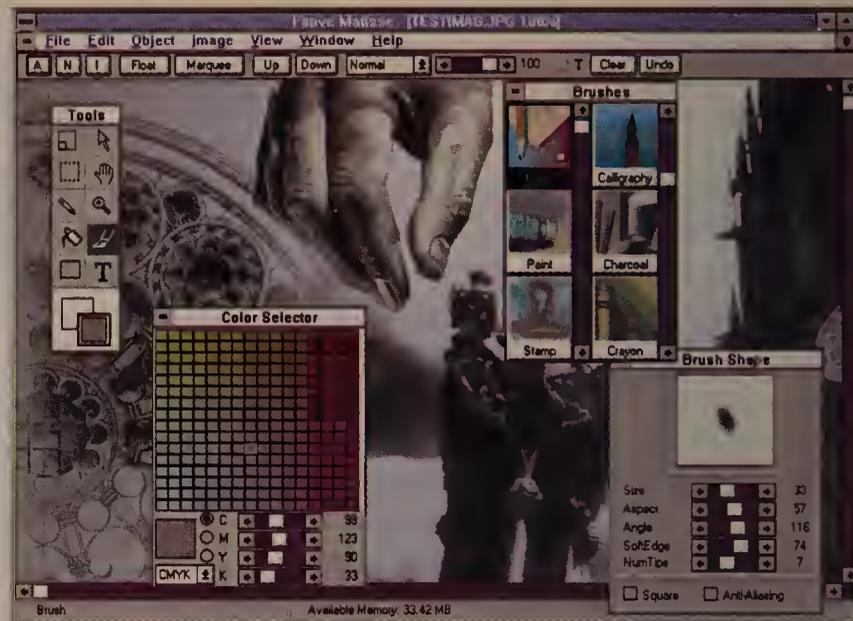
## Fauve Matisse 1.26

**PROS:** Inexpensive, strong paint simulation, floating layers

**CONS:** Uses TrueType fonts only, no floating-layer list

Photo retouching	A
Image creation	B+
Tools and features	B
Output precision	C

In 1908, Henri Matisse described painting as a condensation of sensations. Fauve Matisse causes quite a stir with its dense array of image-enhancement tools and palette of paint simulation features for only



You can touch up images or design your own custom painting style using Fauve Matisse's remarkably full palette of tools and brushes.

\$149. Though this low-price alternative to Fractal Design Painter doesn't compare stroke for stroke in the special effects arena, its basic image-editing tools, file management, and file-format support fill some gaps in Painter.

Matisse's collection of brushes is impressive—it offers pens, pencils, airbrushes, crayons, felt-tip pens, charcoal, watercolors, oils, and pastels—but by far the most vivid brush strokes in this program mimic the pointillist, cubist, and fauve painting styles. All the brushes are customizable, and you can name and save favorite brushes that you've created for specific effects. You can also preview filters and plug in

## GET A GRIP ON GRAPHICS: IMAGE ORGANIZERS

Graphics software may have come a long way, but the road is littered with incompatible file formats. If you've ever had trouble finding or converting an important image, image management tools offer varying degrees of sophisticated cataloging and search techniques, as well as tools to capture, touch up, and convert images to a broad variety of file formats. Most of them also integrate nicely with other Windows programs that use OLE 2 drag-and-drop support. If your image editing needs are light, one of these graphics suites—priced from \$50 to \$249—may be all you need.

**Collage Complete 1.0**, priced at \$149, supports ten file types (bit map only), including JPEG compression. The image editor is lean, but the DOS and Windows capture utility can be timed to

grab transition screens; and the thumbnail manager can convert, print, or resize images in batches. You can also give a slide show from DOS. • *Inner Media, 800/962-2949, 603/465-3216* Reader service no. 811

**FreezeFrame 2**, a \$50 introduction to the world of graphics, is a suite of basic image management, screen capture, photo manipulation, drawing, and desktop publishing programs. More than 40 file formats are accessible, and the AutoTrace tool converts bit-map files to vector drawings. • *DeltaPoint, 800/446-6955* Reader service no. 812

**Graphics Tools** can capture, manage, and convert more than 50 types of media files, and the image editor supports vector, bit-map, and fax file formats. Priced at \$99. • *DeltaPoint, 800/446-6955* Reader service no. 813

**HiJaak Graphics Suite 3.0 for Windows** sports an image librarian that can assign keywords automatically to your vector files. If you're dealing with a long list of obscure file types, this \$169 graphics suite offers access to more than 70 media formats, and it supports Windows OLE 2. HiJaak also has the capability to capture DOS and Windows screens. • *Inset Systems, 800/374-6738* Reader service no. 814

**ImagePals 2** hosts a better-than-average image editor and a media manager that lets you visually organize and convert nearly 50 file formats. You can even use it to edit images inside common Windows business programs using OLE 2. Included in the \$249 program is a CD-ROM that holds a collection of 2000 images. • *Ulead Systems, 310/523-9393* Reader service no. 815



# PC WORLD Savings Certificate

**Yes**, sign me up to receive the next 12 monthly issues of **PC WORLD** and bill me for only \$22.97. Rush me my **FREE Bonus PowerBase\*** Disk, packed with 50 utilities not available anywhere else!

Name (please print) \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

4LKK4

Basic annual subscription price \$29.90. Savings based on annual newsstand price of \$59.40. Please allow 6-8 weeks for delivery of your first issue. Foreign orders add \$46 postage. Canadian orders add \$20 postage plus 7% GST.

**Single Copy Price \$59.40**  
**Your Price \$22.97**  
**YOU SAVE \$36.43**  
**\*61% off!**

## **FREE BONUS Disk with 50 Utilities:**

Invaluable tips, tricks, macros and more for all the best software. Not available in stores at any price, but it's yours **FREE** just for ordering **PC WORLD**.

**Phone 800 825-7595 ext. 501**  
**Fax 415 882-0936 or Mail Today**

# SAVINGS CERTIFICATE\*

## MULTIMEDIA



**YES**, I want to receive the next 12 issues of cutting edge multimedia news and information. Send me a one year subscription to **MULTIMEDIA WORLD** and bill me for only \$17.97.

**Single Copy Price \$47.40**

**YOUR PRICE—A LOW \$17.97**

**YOU SAVE \$29.43**

**\*Over 62% off!**

Name (please print) \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Payment enclosed.

Bill me later.

**Phone 800 766-3294 x 205**  
**Fax 415 882-0936 or Mail Today**

Savings based on annual newsstand price of \$47.40. Please allow 6-8 weeks for delivery of your first issue. Foreign orders add \$46 postage. Canadian orders add \$20 postage plus 7% GST.

4AHA4

**CALL TODAY**

# 1-800-825-7595

**EXT. 501**

**PC WORLD at almost 61% off! It's like getting 7 ISSUES absolutely FREE!**

### **GET YOUR FREE BONUS DISK WITH 50 UTILITIES:**

Invaluable tips, tricks, macros and more for all the best software. Not available in stores at any price, but it's yours **FREE** just for ordering **PC WORLD**.

**YES**, sign me up to receive the next 12 monthly issues of **PC WORLD** and bill me for only \$22.97. Just for ordering, rush me my **FREE Bonus PowerBase\*** Disk, packed with 50 utilities not available anywhere else!

Name (please print) \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Basic annual subscription price \$29.90. Savings based on annual newsstand price of \$59.40. Please allow 6-8 weeks for delivery of your first issue. Foreign orders add \$46 postage. Canadian orders add \$20 postage plus 7% GST.

4LKK4

Like Getting **7** Issues **FREE!**

Like Getting **7** Issues **FREE!**

**FREE Power-Base\* Disk with 50 Utilities**



# PC WORLD

Rush my  
**FREE DISK**  
and first issue!



NO POSTAGE  
NECESSARY  
IF MAILED IN  
UNITED  
STATES

**BUSINESS REPLY MAIL**  
FIRST-CLASS MAIL PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

# PC WORLD

SUBSCRIPTION DEPARTMENT  
P.O. BOX 51833  
BOULDER, CO 80321-1833



### PC WORLD Guarantee

If you are not completely delighted, just tell us, and you will receive a full refund for all unmailed issues.



New **RUSH!**  
Subscription  
Order!



NO POSTAGE  
NECESSARY  
IF MAILED IN  
UNITED  
STATES

**BUSINESS REPLY MAIL**  
FIRST-CLASS MAIL PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

# MULTIMEDIA



SUBSCRIPTION DEPARTMENT  
P.O. BOX 58690  
BOULDER, CO 80323-8690



**SAVE**  
**\$29.43**

Off The  
Cover  
Price of  
**MULTIMEDIA  
WORLD**



**PRIORITY HANDLING**  
Please Rush  
**FREE DISK!**



NO POSTAGE  
NECESSARY  
IF MAILED IN  
UNITED  
STATES

**BUSINESS REPLY MAIL**  
FIRST-CLASS MAIL PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

# PC WORLD

SUBSCRIPTION DEPARTMENT  
P.O. BOX 51833  
BOULDER, CO 80321-1833



**DON'T  
DELAY!**

Call to  
Receive  
Your Free  
Disk  
Today!



# CREATIVE RESOURCES: COOL TOOLS AND COLLECTIONS



Even the best special effects look canned after a while. If the creative spark dims when you're in the middle of your new project, try rekindling it with these imaging extras. Here's our pick of eight creative resources to boost your imagination, for as little as \$59.

## CD-ROM Collections

**Everyday Objects** Sometimes clip art just doesn't cut it. If your design needs a more realistic-looking metaphor, such as a black sheep, piggy bank, or kitchen sink, each \$99 CD-ROM contains 100 royalty-free photographed objects. • *CMCD, Inc.*, 800/664-2623 Reader service no. 816

**Art Textures & Backgrounds** Looking for an artsy backdrop for presentations or publications? Each \$349 CD-ROM has 100 photographed backgrounds you can crop to fit your designs. • *FotoSets*, 800/577-1215, 415/621-2061 Reader service no. 817

**Photo/Graphic Edges** Some darkroom effects are tough to simulate digitally. This \$199 CD-ROM for Photoshop contains more than 650 photographic borders you can apply to digital images for a darkroom-developed look. • *Digimation Corp.*, 800/839-2008, 603/430-8373 Reader service no. 818

**PhotoGear** Each \$59 volume contains more than 80 high-resolution photos of backgrounds, skies, mountains, and fabrics. A \$99 volume offers images of 85 everyday objects that come premasked and with drop shadows. • *Image Club Graphics, Inc.*, 800/661-9410 Reader service no. 819

**ClipPix** This \$149 CD-ROM has 500 stock photos of people, scenes, and backdrops for on-screen projects. For printing, 17 subject-specific volumes—each below \$299—offer high-quality images ranging from Americana to world trade and Italian art. • *PhotoDisc*, 800/528-3472 Reader service no. 820

## Special Effect Plug-Ins\*

**Gallery Effects** Each \$149 volume contains 16 painterly filter effects, such as fresco, texturizer, film grain, and plastic wrap. • *Adobe Systems*, 800/628-2320, 206/622-5500 Reader service no. 821

**Kai's Power Tools 2.0 for Windows** This \$199 set of powerful plug-in tools is a must for any special-effects arsenal. Give logos a metallic sheen or a worn texture as you explore, design, and preview textures and color gradients. • *HSC Software*, 805/566-6200 Reader service no. 822

**KPT Convolver** If special effect filters lose their luster, this \$199 tool lets you explore and design your own. The sleek interface, quick preview window, and 200 levels of undo make filter creation fun. • *HSC Software*, 805/566-6200 Reader service no. 823

\*Editor's note: Plug-in tools work only with programs using Adobe's plug-in standard.

more effects. The painting tools are one of Matisse's most outstanding features, especially if you pair the program with a pressure-sensitive graphics tablet (prices for Wacom, Kurta, and Hitachi tablets range from \$199 to \$299).

On the plus side, we liked Matisse's logically organized tool bars, icons, and menus, and its JPEG file compression. On the downside, it doesn't show you a list of image layers; you can only use TrueType fonts; and it doesn't support Windows OLE 2.

Despite these few rough edges, Matisse is a terrific bargain that offers many high-end features found in pricier programs. *Fauve Software*, 800/898-2787, 919/380-9933 Reader service no. 807

## Fractal Design Painter 3

**PROS:** Incredible special effects, strong layering, animation

**CONS:** Limited file-format support, meager color calibration, no cropping tool

Photo retouching	A-
Image creation	A
Tools and features	A-
Output precision	B

If you fancy yourself a creative left-brain type swimming against the tide, Painter 3 for Windows may be your kind of program. For starters, when you pop open the can (it doesn't ship in a box), you're greeted with the aroma of enamel. Painter's variety of natural-looking brush strokes—such as airbrushes, watercolors, oil paints, and colored

pencils—are so sophisticated you can mimic the methods of famous artists like Van Gogh and Seurat, as well as apply gallery lighting, paper textures, and glass surfaces on existing images. Painter also floats objects separately and lets you preview special effects quickly.

At \$499, version 3 sports a friendlier, drawer-based interface and includes more than 50 new features. For example, Painter can now



With just one stroke of Painter 3's Image Hose brush, we sprinkled clover leaves over our test image for a spectacular visual nuance.

## Windows Image Editing: Powerful Photo Manipulation Tools

4 = excellent  
3 = very good  
2 = average  
1 = below average  
0 = not available



	<b>Adobe Photoshop 3.0</b>	<b>Corel Photo-Paint 5 Plus</b>	<b>Fauve Matisse 1.26</b>	<b>Fractal Design Painter 3</b>	<b>ImageWare ImageWizard 1.03</b>	<b>Micrografx Picture Publisher 5.0</b>
<b>Price/system requirements 15% weighting<sup>1</sup></b>						
List price	\$895	\$249 <sup>2</sup>	\$149	\$499	\$199	\$595
Recommended RAM (MB)	16	8	4	8	4	8
Disk space required (MB)	20	16	7	11	18	15
<b>Photo retouching tools 20% weighting<sup>1</sup></b>						
Magic wand color selector	4	4	3	2	3	4
Color masking	4	4	3	3	3	3
Mask selection pointer	4	4	3	3	3	4
Bézier selector	4	4	3	4	0	4
Crop	4	3	2	0	0	2
Clone	4	4	3	3	2	4
Dodge and burn	4	3	3	4	0	3
Blur	4	3	3	3	2	4
Fill	4	4	2	3	2	3
Magnify	4	4	2	4	2	3
Text	2	4	2	3	2	4
Paintbrushes	2	2	3	4	1	2
<b>Creative effects 15% weighting<sup>1</sup></b>						
Lighting tool	4	0	0	3	0	0
Seamless texture	3	4	2	4	0	3
Color gradient generator	1	4	2	4	2	1
User-designed effects	4	3	2	4	0	3
Instant drop shadows	0	0	0	4	0	0
Distortion	4	3	3	4	2	3
Morphing	4	0	0	2	2	3
Animation	0	0	0	4	0	0
<b>Help and tips 10% weighting<sup>1</sup></b>						
Tutorial	4	3	1	3	4	3

<sup>1</sup>Weighting in overall scores. <sup>2</sup>For CD-ROM and floppy versions; \$99 CD-ROM only.

### Help and tips (cont'd)

Documentation	
Online help	
<b>Interface features 20% weighting<sup>1</sup></b>	
Object layering	
Effects preview	
Macro recording and playback	
Icon clarity	
Custom command palettes	
Screen real estate for palettes	
Menu organization	
Hot keys	
Undo	

### Professional features 10% weighting<sup>1</sup>

Color calibration
Custom color palette support
Color printing preview
EPS read/write
Filter speed
Support for third-party plug-in effects
Prepress separations

### Image management features 10% weighting<sup>1</sup>

Image file manager
File conversion
JPEG image compression
OLE 2 support

### Overall weighted score

open and enhance QuickTime and Video for Windows files using all the same tools that you would use on still images. An "onionskin" option lets you see up to five transparent frames at once so that you can plan animated sequences smoothly. This is a great tool for creating animated sequences or for painting video clips with Painter's complete studio of effects.

Another cool tool in Painter is the Image Hose brush, which sprays a series of graphical objects (called nozzles) on screen, the way a brush applies paint to a canvas. An included CD-ROM offers a library of extra Image Hose objects—such as coins, arrows, clover leaves, and seaweed—to add distinctive nuances to your designs and presentations. You can create your own nozzles from still images or even use frames from QuickTime and AVI movies. If you're searching for new ideas, a swipe of this tool can get you started.

Painter's new drawer interface reduces the prior version's 14 palettes to just eight, but some minimized palettes still eat up screen space. Though you can tear favorite tools from the palettes, you can't create

or mix palettes as in Photoshop or Picture Publisher. However, Painter's VCR-like controls let you record and play back tricks you've mastered, and you can create your own multicolored brushes, lighting effects, papers, and texture weaves.

Painter's simulated painting effects can look remarkably real, especially when the program's paired with a pressure-sensitive pen-tablet. And to make painting more comfortable, users can rotate images quickly to work with elements at any angle.

Painter mastered our tests with style, but it had some quirks: For starters, it couldn't recognize the TrueType font in our logo redesign. It also has limited color calibration options and lacks JPEG image file compression, a simple cropping tool, and Windows OLE 2 support.

These limitations aside, Painter is one of the most creative (and fun) painting and animation applications available, though it doesn't take top honors. You'll optimize its design potential if you use it in tandem with a full-scale image editor. *Fractal Design Corp.*, 800/297-2665, 408/688-8800 **Reader service no. 808**



Adobe Photoshop 3.0	Corel Photo-Paint 5 Plus	Fauve Matisse 1.26	Fractal Design Painter 3	ImageWare ImageWizard 1.03	Micrografx Picture Publisher 5.0
4	3	2	3	2	2
4	4	3	3	3	4

4	3	2	3	2	3
4	3	2	3	2	2
0	0	0	4	0	4
4	3	4	3	2	3
4	0	0	1	0	4
4	4	2	2	2	3
4	3	4	3	2	3
4	3	3	3	1	3
2	3	2	3	2	4

4	4	2	1	0	4
4	4	2	4	2	2
4	1	0	3	0	3
4	4	1	1	0	4
3	3	3	2	2	4
4	3	3	3	0	3
4	4	2	4	0	4

2	4	3	1	3	4
4	4	3	1	2	4
4	4	4	0	4	4
0	4	0	0	2	4

39	44	35	38	31	42
----	----	----	----	----	----

## ImageWare ImageWizard 1.03

**PROS:** Low price, object layering, good image management

**CONS:** No support for plug-in special effects, limited manipulation tools

Photo retouching	C
Image creation	C
Tools and features	D+
Output precision	C

This \$199 program is a playful introduction to image editing for a young person or anyone who's just dabbling—launch it and you're greeted by a band of waddling penguins and a bearded wizard.

ImageWizard's tool bar icons are very colorful but a little hard to decipher at first glance. Other basic features, such as crop, dodge, and burn tools, and plug-in support, are missing, but to its credit you can preview filter effects, layer multiple objects, and use it with other Windows OLE 2 apps. It also sports a robust thumbnail-oriented image management utility. Image Wizard's 11MB animated tutorial and online manual is comic-book material, but it does an impressive job of

showing you around the block with the program.

Though we had a rough time reproducing some advanced effects in our test image, ImageWizard can do the basic tasks a novice would expect of a low-priced photo manipulation package. *ImageWare Software Inc.*, 800/842-4199, 619/673-8600 Reader service no. 809

## Micrografx Picture Publisher 5.0

**PROS:** Proxy editing sessions, unlimited undo, user-defined toolboxes and macros

**CONS:** Cropping tool cuts too hastily, buried icons

Photo retouching	A
Image creation	B+
Tools and features	A
Output precision	A

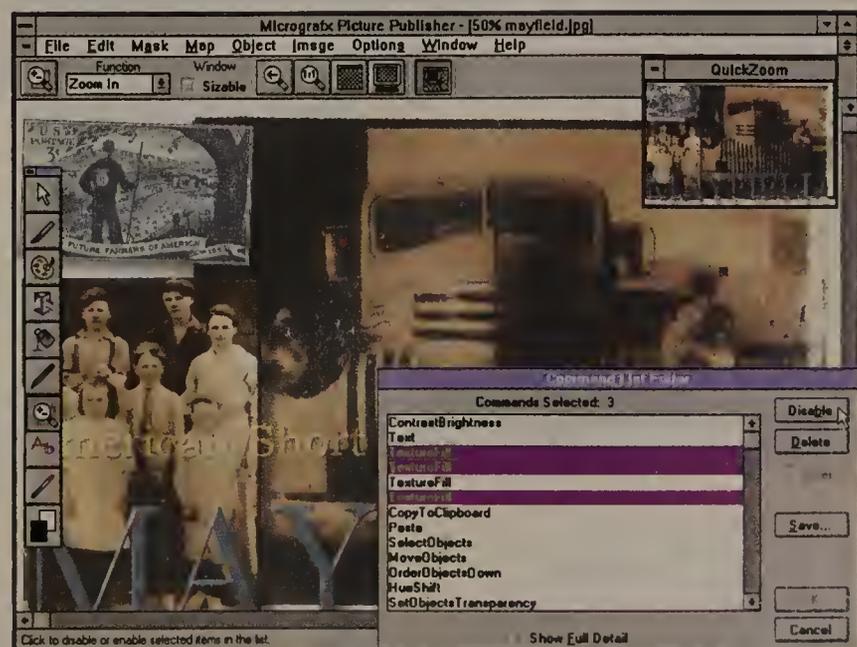


It's unusual for someone to mention Micrografx Picture Publisher without referring to Adobe Photoshop in the same breath. At \$595, Picture Publisher 5.0 costs \$300 less than Photoshop, and for the second version in a row, it beats Photoshop to the punch with cutting-edge features. The previous version of Picture Publisher introduced floating mask layers; this one offers multiple levels of undo and proxy image editing so you can edit large images faster.

We quickly knocked around a low-resolution (proxy) copy of our test image while the program recorded all our actions in a list of commands. Anytime during the session, we could edit, undo, or move any listed command. When we perfected the session we played it back to build our high-resolution image.

Picture Publisher is strong in the ease-of-use department: You can group and save favorite tool sets, as well as record, edit, and play back tricks you've mastered. Another strength is text: Unlike Photoshop, Picture Publisher lets you edit, resize, or switch type styles right on screen. We liked how we could select specific colors from our image with the Chroma Mask tool. The program also supports Windows OLE 2 and Kodak's color correction and calibration system.

We have just two gripes: The cropping tool cuts before you can resize the area, and many icons are hard to find. Otherwise, Picture Publisher is the most forgiving program in this review, making it an excellent midrange Best Buy choice for both casual and serious users. *Micrografx, Inc.*, 800/676-3110, 214/234-1769 Reader service no. 810



You can undo any command anytime and edit huge images quickly using low-resolution substitute images with Picture Publisher 5.0.



WHAT OUR ENGINEERS  
HAD IN MIND  
WHEN WORKING  
ON OUR  
NEWEST SCANNER.



*Introducing the  
Agfa StudioScan II.*

Push a button, make a scan.

Is it really that simple? With the new Agfa StudioScan II, it can be.

That's because StudioScan II was designed for simple operation. Two levels of scanning software are built in — easy-to-use Agfa FotoSnap and comprehensive Agfa FotoLook. Plus, our exclusive, 42-page *Introduction to Digital Scanning* will guide you through the scanning process.



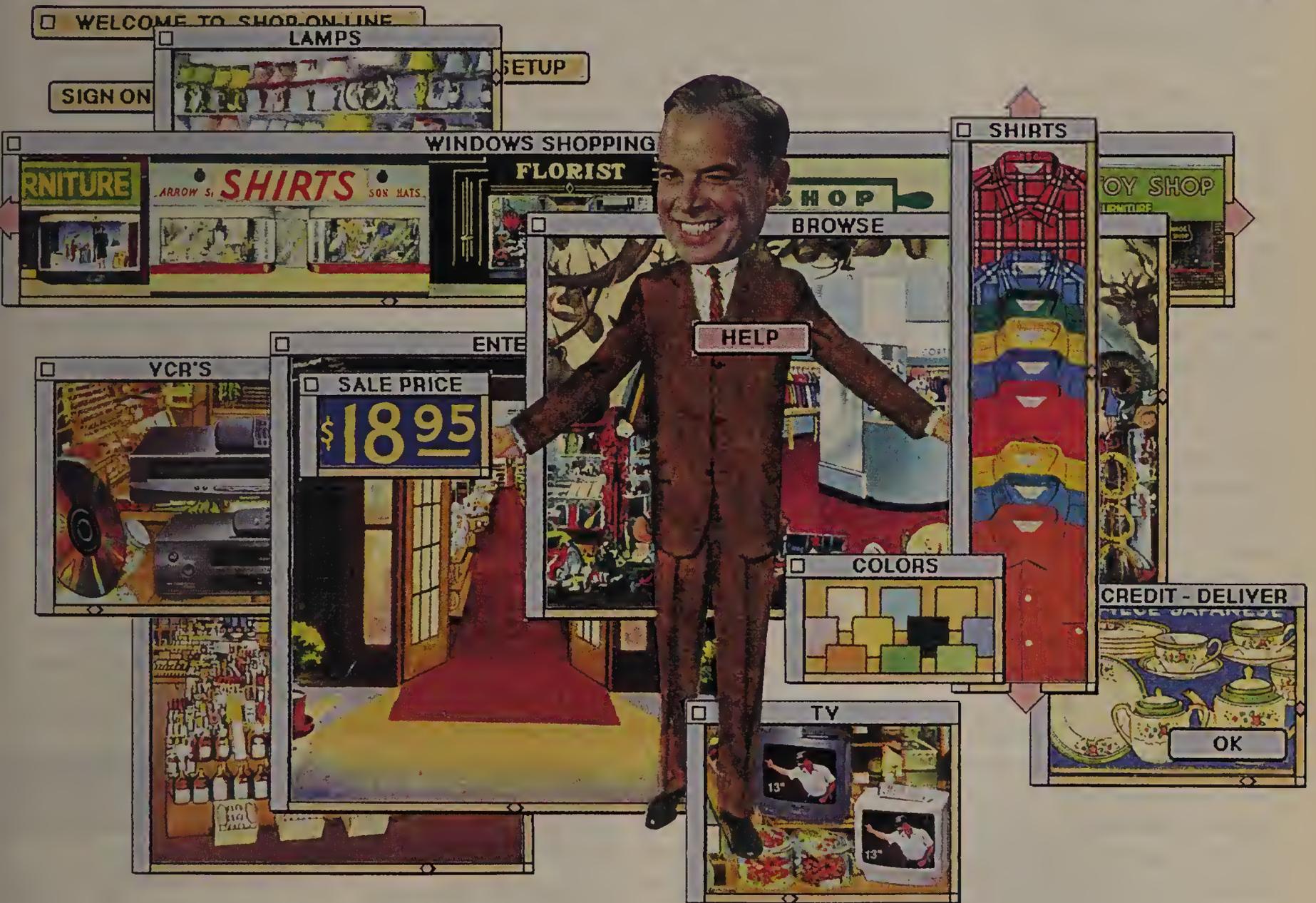
What's more, every StudioScan II comes complete with Agfa FotoTune color management software and our IT-8 reference target, along with Adobe PhotoShop™ LE and OmniPage Direct™ OCR software. All in a 400 x 800 ppi, 30-bit, one-pass scanner. And all for about \$1,000.

So if you want an easy way to bring a scanner into your office, all it takes is the new StudioScan II. And your finger. Call 1-800-685-4271, ext. 2719 to find out more information on Agfa's new scanners.

**AGFA**   
The complete picture.

# The Merchants of Cyberspace

Hundreds of stores are setting up shop online, hawking everything from PCs to pj's. But if you think your modem will replace the mall, read on before you log on.



I needed a VCR but hated the idea of spending hours studying *Consumer Reports* and heading, otherwise defenseless, into the dens of hungry salespeople at my local electronics stores. So, from the safety of my desk, I tried the online route.

I logged on to America Online and searched the *Consumer Reports* database for recommended models. A few keystrokes brought up the information I need-

ed. Feeling confident, I signed up for a membership with Shoppers Advantage, an online shopping mall containing more than 250,000 household items, so I could buy my VCR right from my computer. The Shoppers Advantage interface was little more than a series of text screens, but those screens were packed with information. I answered some questions about what I wanted: four heads, stereo capabili-

ty, and VCR Plus, on a budget of \$350 or less. In seconds, I had a list that suited me perfectly. No parking hassles, no fending off slick sales sharks in search of a commission. I was ready to make popcorn.

I'm not the only one looking for easier ways to spend my money. In the land of

**By Anita Amirrezvani**

rampant consumerism, shopping is the American pastime. In 1993 Americans spent more than \$1.5 trillion in retail stores, \$53 billion through catalogs, and \$2.5 billion through TV shopping channels, according to Forrester Research, a Cambridge, Massachusetts, market research firm. Although by comparison the \$200 million spent online in 1993 is a pittance, this electronic venue—in theory—is poised to become the next big medium of commerce.

Right now, however, online shopping is in its infancy. It offers none of the excitement or selection available in a store or catalog. And it doesn't yet make up for this lack with convenience. It's great for some items. But if you were thinking of skipping the off-ramps to the malls altogether, read on *before* you log on.

**One, Two, Three: Charge!**

To shop online, all you need is a modem, access to an online service, such as America Online, Prodigy, or CompuServe—or access to the Internet—and a credit card.

But while it's easy to get online, finding what you need there isn't any easier than driving to the mall (unless your car is unreliable). For one thing, pictures are rare, so it's like shopping in the dark: You can search for hours, finally giving up in frustration.

Most online services offer a selection of merchants ranging from mainstream stores like Sears to esoteric shops like The Moose Factory ("wonderful, whimsical trophy animal heads"). But compared to what you'd find in a store or mail-order catalog, the selection is minimal (see "Shopping Online Meets Catalog Shopping").

**A Few Good Places to Shop**

Shopping via modem makes more sense than a trip to town when you're stocking up on staples like groceries, office supplies, or disposable contact lenses, or purchasing quick gifts that you want someone else to process, especially flowers. It's also handy for buying items whose titles or product

# The Five-Inch Shopping Center



If you want photos, sound, and gobs of information all in one place but don't want to wait for online services to come up to snuff, CD-ROMs have the technology right now.

Magellan's The Merchant is free and features at least 20 catalogs from major merchants, including Lands' End, Tiffany & Co., and Buick, as well as a mixed bag of lesser-known companies with intriguing names such as Biobottoms and Self-Care. Shopping2000, \$4.95 from ContentWare (800/273-5757), includes catalogs from 54 merchants, plus a directory of 4000 mail-order companies. Apple, America Online, and Medior have joined forces to provide shoppers with 2Market, a CD-ROM featuring more than 20 catalogs (see *New Products* in this issue). America Online also hosts a 2Market area that doesn't require you own the CD-ROM.

Why would you want to shop this way instead of by print catalog—which is, after all, portable and offers sharper photos? The primary advantage is that you

can search a bunch of catalogs at once. But although the merchandise looks good, these catalogs seem dated and incomplete. With The Merchant, for example, you have to call an 800 number to get real prices that include tax, handling, and shipping.

The most convenient CD-ROM catalogs let you try software before you buy it. Test Drive Superstore from TestDrive Corporation (800/788-8055), for example, lets you try out more than 70 programs. If you decide to buy, just call the 800 number and provide credit card information in exchange for a "key" that unlocks the software right on your CD-ROM.

Obviously, the next step is to allow you to order goods and receive instant catalog updates by logging on directly from the CD-ROM. Magellan plans to upgrade its CD-ROM for interactive shopping in late 1995. CompuServe is already starting to do just that with its CompuServe CD (for Windows), a magazine on disc that features articles, software demos, and ads, and, most important, adds a graphical interface to shops in the electronic mall (800/848-8199). CompuServe will dedicate one issue in 1995 to its electronic mall—minus the usual articles and ads. The bimonthly disc magazine is available for \$5.95 per issue plus shipping and handling.

names you already know, like books, CDs, and computer software and hardware.

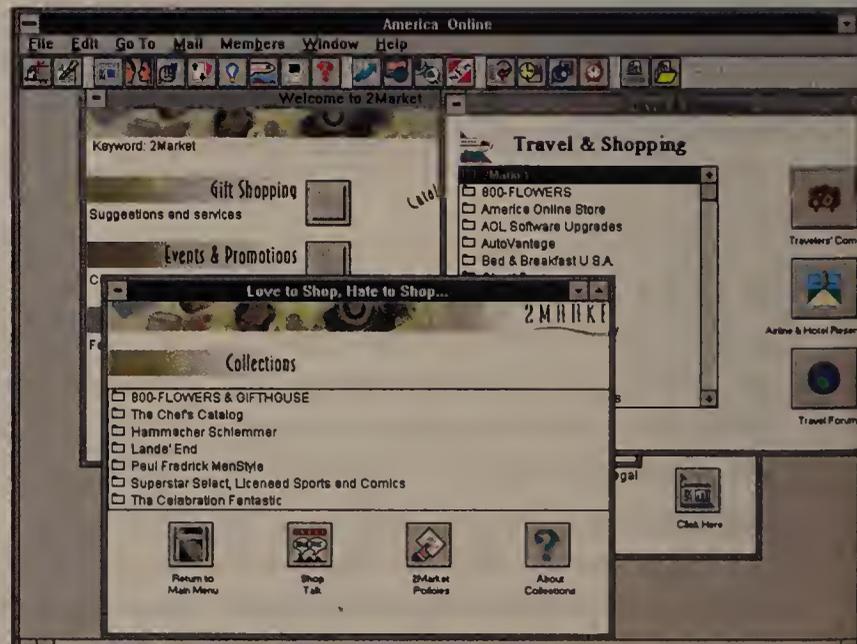
One unusually rich online shopping resource is the Compact Disc Connection, which I accessed on the Internet through Delphi. The interface was primitive, but the information was voluminous. Some 90,000 titles are listed, and many listings include data from Phonolog and reviews from the All-Music Guide.

Delphi users have to pay an extra \$3 per month to shop this way on the Internet. But that charge also includes access to Book Stacks Unlimited, a large bookstore, and to PC Catalog, a computer hardware and software seller.

And when you're shopping for big-ticket items such as cars, VCRs, and computers, a computer and a modem can save time and

arm you with information that puts you in a stronger bargaining position.

Buying a car is a major undertaking. One of the best online resources is Prodigy's Autos section, which offers useful services for buyers of both new and used cars, including *Consumer Reports* data and safety reports. The AutoVantage Online area lets you easily access all kinds of information on



**2MARKET ON AMERICA ONLINE** is a graphical way to shop from your desk. But don't expect your computer to replace your retailer—yet.

**When you're shopping for big-ticket items, a computer and a modem can save time and arm you with information that puts you in a stronger bargaining position.**

new and used cars, though depending on the service you subscribe to, there may be fees attached to this.

Members can look up list and dealers' prices and download the details about a car's standard and optional features. Unfortunately, Prodigy is one of the most advertising-oriented online shopping services, and the distinction between unbiased information and advertising isn't always clear. For example, when I entered the "Online Showroom" expecting general information about cars, what I got was an unabashed plug for Ford.

### Computers by Modem

If you're shopping for computer stuff, you might want to try a service dedicated to the purpose. NECX Direct (508/538-8100), a computer hardware and software distributor, is packed with information and allows you to pinpoint your needs precisely with a narrow search. After you install the NECX Direct software, simply dial up the company as you would any online service. Then, if you're shopping for a computer, you can either browse a vendor's offerings or search by an extensive group of criteria, including price, CPU type, amount of RAM, hard disk size, number of slots, and so on. As you add each search criterion using AND/OR/NOT operators, the program provides a running count of the number of matches. You can then view each match and, if desired, print out detailed spec sheets on the products you're considering. The selection on NECX Direct is impressive, and the prices seem to be in line with those on the market.

### Consumers and Consumables

Not all online shopping services are strictly product oriented. CompuServe's Consumer Forum is an excellent resource that includes extensive library files on where to complain about shoddy products and services—Better Business Bureaus, insurance commissioners, public utilities commissions, car manufacturers, and so on. You can also send questions to David Horowitz of the *Fight Back!* television program via this forum.

If you're always pressed for time and live in the right area, you'll want to look into a couple of new services that promise to take

the drudgery out of grocery shopping—if you don't mind someone else selecting your tomatoes for you. Chicago-based Peapod has hooked up with local Jewel food stores and with Safeway stores in the San Francisco Bay Area to deliver groceries to your door (S.F. 415/929-1600, Chicago 708/864-8900). You can order by fax or phone or through an online kit. The online software includes thousands of items complete with prices. You simply fill in an order form and send it in along with the time you want it delivered.

But unless time is your most valuable asset, you may find the charges prohibitive. The software costs \$29.95 plus shipping and handling. In the Chicago area, the monthly fee is \$6.95, and delivery costs \$5 plus 5 percent of your bill; in the Bay Area, the \$35-a-month fee covers unlimited deliveries.

America Online subscribers in big cities can get groceries and prescriptions delivered thanks to Shoppers Express, a shop-at-home company based in Bethesda, Maryland (301/229-2700); the cost varies by area. As an extension of its shop-by-phone service, Shoppers Express has arrangements with enough retailers to cover about 40 percent of the major metropolitan markets in the country. Not exactly blanket coverage; more like a lap quilt. Call AOL at 800/999-1387 to see if your area is covered.

Most online shopping services are text oriented and weak on illustrations. It's a pleasure, therefore, to use Worldshop (800/530-9055), a new online shopping service that's as graphical as a CD-ROM (see the sidebar "The Five-Inch Shopping Center"). This well-designed service is the PC version of the Home Shopping Network, and it includes merchandise from about 50 different stores as diverse as Radio Shack and The TreeHouse ("manufacturer of silk and preserved trees"). Color photos



allow you to see exactly what you're ordering—clothing, flower arrangements, and so on. The service costs \$4.80 per hour or \$8.95 per month for three hours of use.

### Coming to an Internet Address Near You

If you're connected to the Internet, you may have noticed the recent explosion of commercial services. Last September the Home Shopping Network acquired The Internet Shopping Network, which had built a fairly successful online mall featuring more than 15,000 hardware and software products, as well as information from *InfoWorld* and other PC buying guides. The electronic mall keeps the same name, but HSN has dressed up the look.

Another new shopkeeper is phone company MCI, which last November

**A PICTURE IS STILL worth a thousand words especially when it comes to shopping for clothes online.**

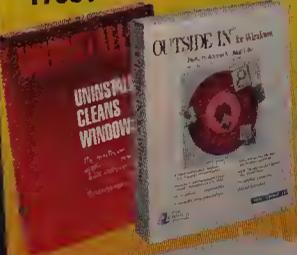
**Below, the bizarre online description of a dress; at left, a photo of the real thing.**



"...In flattering double-breasted styling, it features a shawl collar and four-button front. With shapely princess seams and mock pockets, short sleeves. Add a pretty pin (not included) and you're set for office or dinner out! Dry clean only. Color: Lapis"

# HOT!

17981

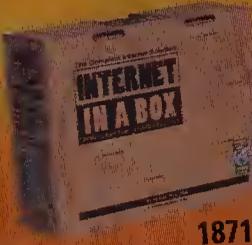


16699

19656



16889



18712



3320

- 17981 MICROHELP Uninstaller 2.0 & Outside-In for Win. **\$49<sup>95</sup>**
- 16699 MICROSOFT Natural Keyboard **\$95<sup>95</sup>**
- 19656 VISIONEER PaperPort for Windows **\$369**
- 16889 HEWLETT-PACKARD DeskJet 540 **\$299**
- 18712 SPRY Internet-in-a-Box **\$99<sup>95</sup>**
- 3320 CREATIVE LABS Sound Blaster Discovery CD 16 **\$279<sup>95</sup>**

## BUSINESS

- 17040 Austin-Hayne Employee Apprais. \$89.95
- 16313 Borland Paradox 5—Windows ..... 339.95
- 5785 CheckMark Payroll—Windows ..... 49.95
- 13156 Clear Software allCLEAR—Win... 179.95
- 17383 Envelope Manager DAZ-zle Plus..... 39.95
- 17007 Gold Disk Video Director—Win... 104.95
- 14922 IdeaFisher—Windows..... 95.00
- 6733 Inspiration—Windows ..... 134.95
- 2426 Intuit Quicken—DOS ..... 42.95
- 3517 Intuit TurboTax—Windows..... 39.95
- 16536 Lotus Ami Pro 3.1 (w/\$30 rebate).. 69.95
- 15978 Lotus Approach 3.0 (w/\$20 rebate) 79.00
- 8138 Microsoft Office for Win. 4.2 ..... 479.95
- 7811 Microsoft Word for Win. 6.0..... 299.95
- 17693 Microsoft Win. NT 3.5 Wkstn..... 295.95
- 5743 Microsoft Win. for Wrkgrps 3.11.. 139.95
- 2735 MS Works—Win (w/free Money).. 84.95
- 14617 NEBS One Write Plus 4.5..... 49.95
- 5426 Shapeware Visio 3.0—Win ..... 129.95
- 4402 Soft Pub Harvard Graphics—Win... 279.95
- 10901 SoftKey A H Dictionary Talking CD.. 38.95
- 7435 Symantec ACT! 2.0 for Windows . 189.95
- 12914 WordPerfect 6.1 for Windows..... 269.95
- 18240 WordPerfect Office 3.0 ..... 439.95

## GRAPHICS

- 13109 Adobe Illustrator & Photoshop ..... \$629.95
- 16661 Adobe Photoshop 3.0 ..... 569.95
- 13791 Aldus PageMaker 5.0 ..... 579.95
- 9943 Aldus Persuasion 3.0..... 324.95
- 7850 Corel Gallery CD-ROM Windows ..... 39.95
- 8498 CorelDRAW! 5.0 CD-ROM ..... 489.95
- 10873 Deneba Canvas 3.5.2—Windows... 289.95
- 16961 Fractal Design Painter 3.0—Win... 349.95
- 1085 Macromedia FreeHand Windows... 399.95
- 17800 Micrografx Picture Publisher 5.0... 279.95
- 10524 Micrografx ABC Flow Charter..... 329.95
- 6992 North Coast PhotoMorph 2.0—Win. 99.95
- 16619 RayDream addOepth—Windows... 119.95

## MULTIMEDIA

- 19482 Altec Lansing ACS51 ..... \$79.95
- 3226 C. Labs Sound Blaster Pro Value Ed. 79.95
- 16428 Intel Smart Video Recorder PRO ..... 429.95
- 17949 MDS Chinon 525 CD-ROM Drive..... 159.95
- 17936 MDS 4X 3501 CD-ROM Drive-Int... 349.95
- 18516 Media Vision MV1100 Kit..... 229.95
- 18538 Media Vision Reno Portable Drive.. 299.95
- 17872 Plextor 4 Plex CD-ROM Drive-Int... 449.95

## ACCESSORIES

- 3858 APC Back-UPS 400 Power Backup. \$149.95
- 9685 APC Professional Surge Protector... 34.95
- 16891 Improve Make-it a 486..... 229.95
- 7899 Kensington Expert Mouse (Serial)... 99.95
- 4623 PC Connection 3.5" Oak Disk Case... 35.95
- 1305 Targus Universal Notebk Bk Case... 69.95

## VIDEO

- 16899 Diamond Stealth 64 ..... \$349.95
- 17318 Magnavox 15" CM2015 Monitor .. 349.95
- 18412 Matrox Impression LITE VLB 2M... 359.95
- 13054 NEC MultiSync 2V 14" Monitor .... 319.95
- 17195 NEC MultiSync XE 15" Monitor..... 569.95

### WORK THE WAY YOU WANT

Imagine having a true multitasking system that works the way you do. Now with IBM OS/2 Warp CD-ROM you can run a huge array of DOS and Windows applications—in a single, stable, crash-proof environment, and with as little as 4MB of memory.

17769 OS/2 Warp **\$74<sup>95</sup>**

18942 OS/2 Warp V.3 with WinOS/2 CD-ROM. **\$129.95**

We Carry Over 10,000 Products For Your PC and Mac!

**CALL FOR A FREE CATALOG!**  
All at low discount prices!



**Need Memory?**  
Call us for the lowest prices around!

# SONY

**Sony's Most Affordable Trinitron!**

The 14" Trinitron Super VGA Color Monitor features:

- 0.25mm aperture grille pitch
- Max refresh rate 75Hz
- Max resolution 1024 x 768

Plus, all Sony monitors offer a 3-year warranty and are Energy Star & MPR II Compliant!



**\$349**  
19211

### OUR POLICY

- VISA, MASTERCARD, AMERICAN EXPRESS, and DISCOVER cards. No surcharge.
- Most of our products are covered by manufacturer's warranty.
- We are not responsible for typographical errors.

### EVERYTHING OVERNIGHT®

Continental U.S.: Shipping Charges: \$5 per order; please add an additional \$10 for each desktop system, scanner, printer, monitor or power backup. Or you may elect FREE UPS Ground shipping on orders which include the hardware mentioned above. Barring events beyond our control, all credit card orders phoned in weekdays by 3 a.m. ET will ship Airborne Express for delivery the next business day. (Some orders ship UPS Ground for next day delivery). Saturday delivery available to many areas upon request at no additional charge. Order all day Saturday thru noon Sunday for Monday delivery. Some areas require an extra day delivery.

APO/FPO, International orders and Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgin Islands: Shipping may require additional time and charges. Please call for information. All other areas: Please call 603-446-0003 or FAX 603-446-7791 M-F 9 a.m.-5:30 p.m. ET.

**OPEN 24 HOURS A DAY!**  
Our order lines are open 24 hours a day, 7 days a week.

495PCW

**\$179<sup>95</sup>**  
7580



### G-FORCE GRAPHICS ACCELERATION!

Number Nine's new #9GXE64 VLB Accelerator gives you high-speed 64-bit processing and unmatched display-control software. Quickly change resolutions, with ZeroFlicker refresh rates beyond 120Hz (monitor dependent). Output to a multimedia card with the on-board VESA feature connector.

### Smart Networking

Give your high performance PCs the network bandwidth they deserve, especially for Pentium processor based PCs. Intel's new EtherExpress PRO/100 adapters provide maximum speed at 10 or 100Mbps, and permit easy migration to Fast Ethernet networking. With PRO/100 adapters and a switching hub, you can even run some nodes at 10Mbps and others at 100Mbps on the same segment. PRO/100 adapters integrate easily into your existing Ethernet environment to deliver these powerful advantages. Adapter also available for EISA.

**\$229<sup>95</sup>**  
PCI  
17706

intel.



## COMMUNICATIONS

2006	DataStorm ProComm Plus—Win	..\$139.95
2446	Delrina WinFax Pro 4.0	.....89.95
16109	Intel EtherExpress PRO/10-TP	.....99.95
11156	Lynx Ring Director RD-200	.....69.95
9976	MDS PC144B FaxModem	.....79.95
19491	Megahertz 10B-T PCMCIA Ethernet	..149.95
18894	Microcom DeskPorte FAST ES V.34	..189.95
18932	Microcom TravelCard 28.8P PCMCIA	299.95
2322	Mustang QModem PRO—Win	.....69.95
2754	Norton-Lambert Close-Up Host/Rem	119.95
11143	Ocean Isle ReachOut Host/Viewer	...129.95
17966	Practical Periph PC288MT V.34	.....299.95
4744	Practical Periph PM144MTII	.....119.95
7779	Server Tech Remote Power On/Off	...119.95
17107	SupraExpress Plus 144i	.....94.95
5252	SupraFAXModem 144LC	.....129.95
11303	Symantec pcAnywhere 2.0—Win	.....134.95
11924	US Robotics Sportster 14.4 Fax	.....119.95
17377	US Rob Sportster 14.4 PCMCIA Fax	..199.95
16391	Ventana Press Internet Member Kit	...49.95
13963	Zoom VFX 14.4V Voice FaxModem	...149.95

## INPUT/OUTPUT

16574	Canon BJC4000 Printer	.....\$399.95
17310	Cirque Glide Point	.....79.95
12212	HP Laser 4L Printer	.....539.00
16658	Microsoft Home Mouse	.....39.95
5187	Microtek ScanMaker II	.....499.00
16811	Polaroid SprintScan	.....2099.95
16151	UMAX BizCard Reader	.....199.95
13287	UMAX UC630 Color Scanner	.....599.00

## EDUTAINMENT

17582	AITECH Wireless Bandit (joystick)	..\$59.95
1705	Delorme Mapping Street Atlas USA	..74.95
6421	Grolier Encyclopedia	.....79.95
16419	Jasmine VidGrid	.....29.95
15140	Lucas Arts Rebel Assault	.....49.95
18284	MECC Oregon Trail II CD	.....49.95
7955	Microsoft Complete Baseball CD	.....39.95
17618	Microsoft Encarta '95 for Win. CD	.....84.95
17448	Passport Design MusicTime 2.0	.....89.95
17348	WordPerfect Paper Planes	.....24.95
16622	WordPerfect Read w/ Me CD 1&2	.....49.95

## UTILITIES

17608	Central Point More PC Tools—Win	..\$49.95
16440	Central Point XTree Gold—Win	.....99.95
3217	Quarterdeck QEMM 7.5	.....64.95
2360	Symantec Desktop—Windows	.....124.95
5136	Symantec Norton Utilities 8.0	.....124.95
10586	Symantec Norton 8.0 Vers Upgrade	..47.95
19302	Vertisoft Remove-IT	.....34.95

## STORAGE

17659	CMS Trakker 700MB Port. Tape	....\$449.95
16291	Conner Periph CFA810A IDE HD	.....399.95
2530	Iomega Bernoulli 90MB Cartridge	.....89.95
16852	Iomega Bernoulli 230MB Cartridge	.....99.95
16820	Iomega Bern. 230MB Transportable	499.95
16399	MDS 250MB Internal Tape Drive	....129.95
17345	Western Digital 1GB IDE Drive	.....479.95

## CONTACT ACCOUNTING

New **DacEasy Accounting 2.0** for Windows allows you to order more inventory, collect money, or keep in touch with people who buy from you with the touch of a button! Order now and receive either a \$50 gift certificate or a Caller ID system FREE! Call for details! Offer thru 6/30/95.

**\$99**  
5134



**FREE \$50 Gift Certificate when you order!**

# HIGH PERFORMANCE PORTABLE STORAGE



Parallel Port Version  
**\$199<sup>95</sup>**  
19172

The Zip Drive from Iomega is the new standard in portable removable storage. It works like a hard drive and gives you unlimited storage on inexpensive 100MB disks. The unique Zip Tools software helps you track, organize, and find everything. Setup is a snap with plug-and-play direct to your parallel port connector.

The Zip Drive has sustained transfer rates of up to 1.25MB/second, parallel throughput up to 20MB/minute, and drive short format time of only 5 seconds. Enjoy no fail reliability and long life with truly useful storage to meet your high capacity needs—in a small, economical package. 1 year manufacturer's warranty on drive; limited lifetime warranty on disks.



19171 Zip Drive SCSI Version .....\$199.95

Extra 100MB disks...Call for single or volume pricing.

# PC Connection<sup>®</sup>

**800-800-0003**

OR FAX YOUR ORDER  
**603-446-7791**

**ORDERS BY 3 A.M. ET SHIP FOR NEXT DAY DELIVERY!**

## PICTURE-PERFECT COLOR PRINTING

The new Epson Stylus COLOR InkJet printer produces sharp, superior color images at its standard 360 dpi and remarkable, near-photographic quality at 720 dpi with special paper. Compatible with both Macs and PCs (including Windows applications).



**\$549**  
16084

# COMPUTERS

## THE MDS STANDARD —PERFORMANCE AND VALUE!



**\$899**  
18053

With MDS Systems, you'll always get the best quality for the lowest price. The MDS DX2/50 Mini-Tower features a powerful 50MHz 486DX2 processor, 128K Cache, 4MB of RAM (upgradeable to 64 MB), 212MB hard drive, and ISA video accelerator. Also includes 101-key keyboard, mouse, and parallel, game, and serial ports (monitor not included). Plus, MS-DOS 6.2 and Windows for Wordgroups 3.11 pre-installed.



19622 Compaq Contura 4/50 DX2 w/ 350MB Hard Drive, Passive Matrix Screen .. **\$2499.**

19612 Compaq Contura 4/50 DX2 w/ 350MB Hard Drive, Active Matrix Screen .... **3139.**

WE ALSO CARRY NEC, APPLE, IBM, T.I. AND TOSHIBA COMPUTERS!

**UPGRADES**

7841	Microsoft Word 6.0 for Windows (\$30 mfr.'s rebate for owners of previous versions—offer exp. 4/30/95) (Version) .....	<b>\$89<sup>95</sup></b>
11336	Microsoft Office for Win. 4.2 ...	<b>\$279<sup>95</sup></b>
17230	WordPerfect Quattro Pro Win. 6.0 (Version) .....	<b>\$49<sup>95</sup></b>
12963	WordPerfect for Windows 6.1 (Version) .....	<b>\$92<sup>95</sup></b>
18261	WordPerfect Perfect Office Standard (Version) .....	<b>\$189<sup>95</sup></b>
17954	Symantec pcAnywhere Win. 2.0 (Version) .....	<b>\$59<sup>95</sup></b>

signed a deal with Netscape Communications, formerly Mosaic Communications, to supply secure credit card transaction services within an online service called internetMCI. MCI intends to make its service colorful and easy to use and plans to offer high-speed access for businesses. In addition, Netscape has signed agreements with Bank of America, one of the country's largest merchant banks, and with First Data, one of the world's biggest credit card payment processors, to provide secure credit card transactions. Microsoft and Visa have also recently joined forces to tackle the cred-

it card issue. These agreements go a long way toward removing one of the most persistent obstacles to shopping on the Internet: the problem of secure credit card transactions.

"The Internet is an open system that was designed to provide widespread access, unlike private online services," explains William Wong, a project leader for CommerceNet, a Menlo Park, California, organization formed by Internet merchants to provide a forum for developing security "fire walls" to guard sensitive transactions such as credit card purchases.

## Shopping With a Digital Assistant

Forrester Research predicts that online shopping will generate \$4.8 billion a year in sales by 1998, so it's no surprise that new services are being developed and that TV companies are scrambling to form alliances with them. TCI (Tele-Communications, Inc.), for example, recently purchased a 20 percent stake in The Microsoft Network—an acquisition that hints at a future in which we'll be able to access that network from cable television.

Like many companies, QVC—which has plans to roll out a shopping service called

## A Map to the Shops Online

● = Yes ○ = No

	Type of service	Goods available	Sample of major vendors
<b>America Online</b>	subscription-based general interest	books, cars, computers and peripherals, flowers, groceries <sup>1</sup> , office supplies, travel information, Shoppers Advantage items	Shoppers Advantage (including Apple, AT&T, London Fog, Maytag, Panasonic, and Yamaha)
<b>CompuServe</b>	subscription-based general interest	boats, books, cars, clothing, club memberships, cosmetics, flowers, food, home electronics, jewelry, magazines, music, office supplies, pet supplies, real estate, sports equipment, toys, travel information, videos, Shoppers Advantage items	800 Flowers, Air France, Cadillac, Hammacher Schlemmer, H&R Block, IBM, JC Penney, Lands' End, Metropolitan Museum of Art, Microsoft Press, Patagonia, Sears, Shoppers Advantage (including Apple, AT&T, London Fog, Maytag, Panasonic, and Yamaha)
<b>Delphi</b>	subscription-based general interest	books, cars (including parts and services), gourmet coffee, Shoppers Advantage items	Shoppers Advantage (including Apple, AT&T, London Fog, Maytag, Panasonic, and Yamaha)
<b>GEnie</b>	subscription-based general interest	books, cameras, computers and peripherals, contact lens supplies, credit reports, flowers, gifts, gourmet food, music, office supplies, Shoppers Advantage items	Lands' End, Shoppers Advantage (including Apple, AT&T, London Fog, Maytag, Panasonic, and Yamaha)
<b>Global Network Navigator (O'Reilly &amp; Associates)</b>	Internet-based general interest	books, computers, eyeglasses, food, legal books and services, music, sports equipment, travel information	Digital, Fodor's, NordicTrack
<b>The Internet Mall</b>	Internet-based general interest	art, beauty products, books, collectibles, computer hardware and software, craft supplies, financial services, flowers, jewelry, music, personal items, real estate, toys, travel information	Adaptek, CyberMedia, First Virtual, FTD Direct, Godiva, Journal Graphics, Pizza Hut, Powell's Books, Webster
<b>The Internet Shopping Network (Home Shopping Network)</b>	shopping oriented	computer hardware and software	over 600 companies, including Adobe, Canon, Hewlett-Packard, IBM, Microsoft, and Sony
<b>NECX Direct</b>	computer oriented	computer hardware, software, supplies, and accessories	Borland, Hewlett-Packard, IBM, Intel, Lotus, Microsoft, Panasonic, Toshiba
<b>Prodigy</b>	subscription-based general interest	clothing, computer hardware and software, financial services, flowers, food, gifts, home electronics, magazine subscriptions, music, sports equipment, stamps, stationery, tickets for entertainment events, travel information	Chrysler, Columbia House, Dell Computer, Ford, Hammacher Schlemmer, JC Penney, Lands' End, L.L. Bean, Patagonia, Sears, Spiegel, Toyota
<b>Shopping2000 (ContentWare)</b>	linked Web pages	auto accessories, bed and bath, clothing, consumer electronics, gifts, home furnishings, jewelry, music, sports equipment	Artistic Greetings, FTD Direct, Marshall Field's, NordicTrack, Parsons Technology, REI, Sara Lee Direct, Spiegel, Sunnyland Farms, Tower Records
<b>Worldshop</b>	shopping oriented	auto parts, clothing, computer supplies, food, insurance, music, videos	Hammacher Schlemmer, Radio Shack

<sup>1</sup> Through Shoppers Express.

<sup>2</sup> Shoppers Advantage requires \$39 yearly membership fee or per-item purchase fee.

<sup>3</sup> SLIP or PPP Internet connection as well as World Wide Web browser required.

Merchants could also target you by using regional buying patterns, your buying history in other shopping venues, and even your personal perception of issues such as quality.

Q-online—intends to create a “smart agent” that will collect detailed information from consumers and target products specifically at those individuals. For example, if you’re married to a ballroom dancer and your kids play soccer, you might get solicitations about dance wear and soccer gear. Merchants could also target you by using regional buying patterns, your buying history in other venues, and even your perception of issues such as quality.

AT&T PersonaLink Market Square plaza, the shopping arm of a new online service called AT&T PersonaLink Services, promises a similar approach. Currently available for personal digital assistants like Sony’s Magic Link, the service will be available for PCs sometime this year. The company plans to offer a mall-like interface that will allow users to browse through graphical storefronts containing “aisles” of products from such merchants as Lands’ End and



Mall access	Online pictures	Basic price	Extra cost for shopping	Contact	Reader service no.
from the Welcome screen, select Go To • Keyword, then type shopping	●	\$9.95 per month for 5 hours of basic services	○ <sup>2</sup>	800/827-6364	621
select shopping Icon or type go mall	●	\$9.95 per month for unlimited access to basic services	○ <sup>2</sup>	800/848-8199	622
type shopping at prompt on first screen	○	\$10 per month for 4 hours or \$20 per month for 20 hours of basic services	○ <sup>2</sup>	800/695-4005	623
select keyword, then type shopping	○	\$8.95 per month for 4 hours of standard connect time	○ <sup>2</sup>	800/638-9636	625
<a href="http://gnn.com">http://gnn.com</a>	○	free <sup>3</sup>	○	<a href="http://gnn.com">http://gnn.com</a>	626
FTP ( <a href="ftp://ftp.netcom.com/pub/Guldes/Internet.Mall">ftp://ftp.netcom.com/pub/Guldes/Internet.Mall</a> ) or E-mail ( <a href="mailto:taylor@netcom.com">taylor@netcom.com</a> with send mall in subject line)	○	free <sup>3</sup>	●	<a href="mailto:taylor@netcom.com">taylor@netcom.com</a> with send mall in subject line	627
<a href="http://shop.internet.net">http://shop.internet.net</a>	●	free <sup>3</sup>	○	800/677-7467 or <a href="mailto:info@internet.net">info@internet.net</a>	628
dial up 508/538-8675 (download interface software) or go to Web site <a href="http://necxdirect.necx.com">http://necxdirect.necx.com</a>	○	free	○	508/538-8100	629
select shopping Icon	●	\$9.95 per month for 5 hours of basic services	○	800/776-3449	630
<a href="http://www.shopping2000.com">http://www.shopping2000.com</a>	●	free <sup>3</sup>	○	415/856-8265 or <a href="mailto:marcf@netcom.com">marcf@netcom.com</a>	631
software required	●	\$8.95 per month for 3 hours of use and \$4.80 per hour; nonsubscribers \$6.50 per hour	○	800/530-9055	632

For more information about all products in this table, circle reader service no. 903.

# POWERFUL SOLUTIONS



# POPULAR CHOICES



## P90PCI POWERSTATION

- Intel™ 90MHz Pentium™ processor
- 256K write-back cache, Flash BIOS
- 2X CD-ROM drive, 3.5" floppy drive
- PCI 64-bit graphics accelerator (2MB)
- "Tool-free" desktop or mini-tower
- Microsoft® Mouse, 101-key keyboard
- MS-DOS® & Windows® for Workgroups

- A** • 8MB RAM, 527MB IDE hard drive  
• 15" Micron 15FGx, 1280NI, .28mm  
• Microsoft Works Multimedia CD

**\$2,299** (Business Lease \$82/month)

- B** • 16MB RAM, 850MB IDE hard drive  
• 15" Micron 15FGx, 1280NI, .28mm  
• Microsoft Office Professional 4.3 CD

**\$2,899** (Business Lease \$103/month)

- C** • 32MB RAM, 1.2GB IDE hard drive  
• 17" Micron 17FGx, 1280NI, .26mm  
• Microsoft Office Professional 4.3 CD

**\$3,899** (Business Lease \$133/month)



pentium  
PROCESSOR

## P90PCI POWERSTATION PLUS

- Intel 90MHz Pentium processor
- 256K write-back cache, Flash BIOS
- PCI 32-bit Fast SCSI-2 controller
- 4X SCSI-2 CD-ROM drive, 3.5" floppy drive
- PCI 64-bit graphics accelerator (2MB)
- "Tool-free" desktop or mini-tower
- Microsoft Mouse, 101-key keyboard
- MS-DOS & Windows for Workgroups
- Microsoft Office Professional 4.3 CD

- A** • 16MB RAM, 1GB SCSI-2 hard drive  
• 15" Micron 15FGx, 1280NI, .28mm

**\$3,499** (Business Lease \$119/month)

- B** • 32MB RAM, 2GB SCSI-2 hard drive  
• 15" Micron 15FGx, 1280NI, .28mm

**\$4,799** (Business Lease \$164/month)

- C** • 64MB RAM, 4GB SCSI-2 hard drive  
• 17" Micron 17FGx, 1280NI, .26mm

**\$6,999** (Business Lease \$229/month)

## 466PCI MAGNUM

- Intel 486DX2 66MHz processor
- Pentium Technology Ready (ZIF)
- 256K write-back cache, Flash BIOS
- 4 ISA, 2 PCI, 1 ISA/PCI slots
- 2X CD-ROM drive, 3.5" floppy drive
- "Tool-Free" desktop or mini-tower
- Microsoft Mouse, 101-key keyboard
- MS-DOS & Windows for Workgroups

- A** • 8MB RAM  
• 420MB 14ms IDE HD (PCI)  
• PCI graphics accelerator (1MB)  
• 14" Micron 14FG, 1024NI, .28mm  
• Microsoft Works Multimedia CD

**\$1,699** (Business Lease \$61/month)

- B** • 16MB RAM  
• 850MB 12ms IDE HD (PCI)  
• PCI graphics accelerator (1MB)  
• 15" Micron 15FGx, 1280NI, .28mm  
• Microsoft Office Professional 4.3 CD

**\$2,399** (Business Lease \$86/month)

▶ With DX4 100MHz Processor ..... **\$1,799** (Business Lease \$64/month)

▶ With Pentium 66MHz Processor ..... **\$2,499** (Business Lease \$89/month)

▶ With Pentium 75MHz Processor ..... subtract **\$200\***

▶ With Pentium 100MHz Processor ..... add **\$200\***

▶ With Optional Full-Size Tower ..... add **\$100**

\*Applies only to P90PCI PowerStation and PowerStation Plus

## AWARD-WINNING SERVICE & RELIABILITY

	RELIABILITY	REPAIR	TECH SUPPORT	BUY AGAIN
MICRON	9.0	8.8	8.7	8.7
DIGITAL	8.2	7.8	7.9	6.6
GATEWAY	8.6	8.0	7.4	8.2
DELL	8.4	8.0	8.1	7.8
IBM	8.2	7.6	7.4	6.5
COMPAQ	8.4	7.7	7.7	7.4
HP	8.4	7.8	7.7	7.1

In PC Magazine's latest Service and Reliability survey, Micron received the highest scores in all four categories: Satisfaction with Reliability, Satisfaction with Repair Experience, Satisfaction with Technical support, and Future Likelihood of Buying. (PC Magazine, January 1995.)

## P90 HOME MPC

- Intel 90MHz Pentium processor
- 8MB RAM, 256K write-back cache
- 527MB 14ms IDE hard drive (PCI)
- 2X CD-ROM drive, 3.5" floppy drive
- SoundBlaster16, joystick & speakers
- 14.4 Fax/ Modem & WinFax Lite
- 64-bit graphics accelerator (2MB)
- 14" Micron 14FG, 1024NI, .28mm
- "Tool-Free" desktop or mini-tower
- Microsoft Mouse, 101-key keyboard
- MS-DOS & Windows for Workgroups
- Microsoft Works Multimedia CD
- Microsoft Encarta® CD
- Quicken® Deluxe Edition CD
- On-line trial services: Compuserve, Prodigy and America On-Line
- 3 LucasArts CD games: Rebel Assault, Indiana Jones and the Fate of Atlantis & Day of the Tentacle

**\$2,499**

## 466 HOME MPC

- 486DX2 66MHz processor
- 8MB RAM, 128K cache
- 420MB 14ms IDE hard drive
- 2X CD-ROM drive, 3.5" floppy drive
- SoundBlaster16, joystick & speakers
- 9600/2400 Fax/Modem & WinFax Lite
- Local bus graphics (1MB)
- 14" Micron 14FG, 1024NI, .28mm
- Low profile desktop case
- Microsoft Mouse, 101-key keyboard
- MS-DOS & Windows for Workgroups
- MS Works Multimedia CD, Encarta CD
- Quicken Deluxe Edition CD
- On-line trial services: Compuserve, Prodigy and America On-Line
- 3 LucasArts CD games: Rebel Assault, Indiana Jones and the Fate of Atlantis & Day of the Tentacle

**\$1,799**



January 1995  
July 1994



June 28, 1994  
P90PCI  
POWERSTATION



April 26, 1994  
466  
MAGNUM



January 26, 1993  
466  
MAGNUM



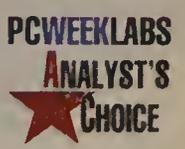
November 1994  
4100  
MAGNUM



October 1994  
P90  
HOME MPC



May 1994  
P90PCI  
POWERSTATION



June 27, 1994  
P90PCI  
POWERSTATION



From Mexico  
208-465-8970



Toll free from Canada  
800-708-1758



Toll free from Puerto Rico  
800-708-1756



International #  
208-465-8970  
International FAX  
208-465-8993

**MICRON**  
COMPUTER, INC.

**800-223-6571**

MON-FRI 7AM - 8PM, SAT 8AM - 5PM (MT) • 900 E. Karcher Road Nampa, Idaho 83687 • (208) 463-3434 • FAX (208) 463-3424 • Purchase Order FAX (208) 465-8992

©1995 Micron Computer, Inc. All rights reserved. All prices and specifications subject to change without notice. Micron Computer, Inc. cannot be responsible for omissions, errors in typography or photography. Intel, Intel Inside, Pentium and Overdrive are registered trademarks of the Intel Corporation. Microsoft is a registered trademark and Windows, Windows NT and the Windows logo are trademarks of Microsoft Corporation. The Energy Star emblem does not represent EPA endorsement of any product or service. All other company trademarks are trade names of each respective company. Prices do not include shipping and handling. 30 day money back guarantee does not include return freight or shipping and handling charges. Applies only to Micron brand products, and begins from date of shipment. All returns require RMA numbers and must be shipped in the original condition prepaid and insured. Lease prices based on 36-month lease.

Circle 217 on reader service card

# Shopping Online Meets Catalog Shopping

**M**ail-order retailers are hitting the information highway in growing numbers: JC Penney, Spiegel, Lands' End, and Hammacher Schlemmer offer electronic versions of their catalogs online. Even the Metropolitan Museum of Art is selling hieroglyph neckties and Pompeian scarves online. But is shopping via PC practical? How does it compare to shopping from catalogs? I logged on to find out.

JC Penney's catalogs on CompuServe and Prodigy are slim shadows of its phone book-size catalog, offering fewer than a dozen products each in categories such as "Clothes." Worse, there are no pictures. Entries consist of vague descriptions like "After a long day of work, you will look forward to slipping on this cable-knit pullover sweater. Styled with the casual look you love to relax in." I may be a computer geek, but I still like to know what my clothes look like before I buy them.

The Spiegel catalog on Prodigy does offer sales on items not available in its catalog, but who can order a bedspread on the basis of this

watery description: "Hand guided outline-quilting accents a winsome rose/cream floral, machine wash, scalloped edges"?

The Hammacher Schlemmer catalog on CompuServe is full of intriguing gadgets, like Heated Slippers and Home Warm Wax Therapy System. Many are illustrated, but again, the pictures leave something to be desired. The Wristwatch Spy Camera looks like a satellite weather photo of a football field. The Lighted Tie Rack looks like a .357 magnum.

Obviously, the best things to buy online are those you don't need to see, like floppy disks or paper clips. For years I ordered office supplies through Penny Wise on CompuServe. Delivery was fast and free, and prices were low. Then I came across Penny Wise's 800 number and catalog. That was more convenient than tapping around CompuServe. Recently, however, I dis-

covered a local Office Max with even lower prices. Penny Wise lost my business.

The problem with online shopping is that the prices are the same as those in mail-order catalogs, but the inconvenience is greater. Merchants usually don't pick up orders until a day or two after you post them, plus you're robbed of the pleasure of indolently thumbing through



*PICTURES DON'T ALWAYS make shopping online compelling. This photo illustrates a wristwatch spy camera.*

catalogs while on the phone or eating lunch.

Maybe when modems are faster and the pictures on our PC screens are as clear as those on the Home Shopping Network, online shopping will take off. Until then, I'll stick to flipping through the catalogs that arrive in my mailbox. —Judy Heim



**UNLESS YOU HAVE a good idea what old coffins look like (or a degree in archaeology), you'll have a hard time deciding whether this tie is one for your collection. Below, the online description of the tie at left.**

*"...An intriguing Egyptian motif inspired by drawings on the outer coffin of Amenempe (Dynasty 20, c.1113-1085 B.C.), Made in Canada of imported Italian silk, 4" wide, Wine background"*

Tower Records. And merchants will be able to track customers' buying habits. "If for three weeks a customer 'walks' into an online store and buys nothing, the company could provide a discount or offer some help," says AT&T PersonaLink marketing director Bill Fallon.

## The PC Versus the TV

Since many households have both cable and a computer, some companies are exploring ways to hook the two together. "Cable has a much wider bandwidth for transmitting data than the telephone does, and it's about 1000 times faster," says John Raftrey, communications manager for Intel. That's why Intel is developing an adapter that would allow you to receive gobs of information via your cable hookup. Intel displayed the CablePort adapter at the Western Cable Show last November and is now conducting trials with Viacom in Castro Valley, California.

Jacob Tanz, Intel marketing director, expects the CablePort to be available the second half of 1995. Pricing hasn't been set, but he says the adapter will sell for under \$500—more than a high-speed modem, but less than one of those 18-inch DirectTV dishes.

Merchants won't stop at making your computer more like a TV. They also plan to make the TV more like a computer. One way is with set-top boxes that will let you shop interactively from your TV. To this

end, marriages of technology, TV, and retail companies are happening faster than you can say "Charge it!" But experts say interactive TV won't get off the ground for at least five to ten years. When it does happen, though, interactive TV could combine the best of both worlds. "You'd be able to call up products you're interested in any time of the day or night," says Cynthia Woll, an executive producer for Time Warner Interactive who is involved in trials for Catalog 1, a home shopping cable show. "You'd get all the best elements of shopping in a store from the comfort of home."

No one knows what the outcome of all these plans and alliances will be. But it's possible that the two blockbuster products of the twentieth century, though separated at birth, will turn out to be identical (or at least fraternal) twins.

*Anita Amirrezvani and Judy Heim are contributing editors for PC World. Research assistance provided by Anita Hamilton, Peggy Nauts, Richard Overton, and Peter Scisco.*



Powerful  
ECCO Lite  
~~\$59.00~~ \$9.99  
Call and order  
today

# In the fast and furious 90's, work just got easier.

## Easier for you.

Work in the 90's. Information overload. Red-hot pace. More work, less play. You need a breakthrough product to make work easier. It's ECCO™. The best tool for personal or group information management. Winning 14 awards in just over a year. It's unchallenged. **"Awesome"**, *PC Computing*. Only ECCO makes it easy to plan what to do and how to do it – quickly turning great ideas into immediate actions. Makes it easier to prioritize and keep on top of important appointments, contacts, To-Do's, and projects, with ECCO's outstanding calendar, phone book and outlines. Sends information between other programs and ECCO—instantly, with the incredible Shooter™. And keeps your information in synch wherever it is—on your laptop, home PC or office PC.\*



## Easier for your workgroup.\*

Teamwork. ECCO makes it easy. **"Superb workgroup features"**, *PC Computing*. Share whatever you want with whomever you want. Calendars, projects, brainstorm, phone books, and more. Integrates shared information with your personal calendar. And scheduling meetings—**"It's a breeze"**, *PC Computing*. Simple network installation, with user-specific access privileges. Let who you want see what you want. And keep all members of your team in synch and up-to-date—at the corporate office, on the road, or even at remote locations. So call for ECCO, see why *PC World* rated ECCO **"World Class"**, and make your work easier.

Experience ECCO's great standalone features with ECCO Lite.

More Powerful than Organizer™ and Sidekick®.

Call 1-206-885-4272, Ext. 27

NETMANAGE™



May 17th 1994 ECCO Pro 1.1 Jan 11th 1994 ECCO Pro 1.1 Jan 10th 1995 ECCO Pro 2.0 \*Not available in ECCO Lite. ©1994 NetManage. ECCO and Shooter are trademarks of NetManage. Other trademarks are property of respective trademark holders.

Circle 139 on reader service card



## The New Texas Instruments TravelMate™ 5000

- 75 MHz Pentium processor • Two Lithium ion battery packs • Serial infrared port • 10.4" Active Matrix or 10.5" Dual Scan displays • 524 million bytes (=500MB) or 810 million bytes (=722MB) Hard Disk Drives\* • 8MB RAM, expandable to 32MB • Multimedia package: Built-in 16-bit sound, internal speaker and dual mode microphone



# Introducing The First Notebook To Maximize The Pentium's Full Potential.

When the rush was on to introduce a notebook with a Pentium™ processor, Texas Instruments decided to do what others thought couldn't be done.

We created a notebook that maximizes Pentium performance by integrating *full PCI bus architecture* in our *TravelMate 5000*.



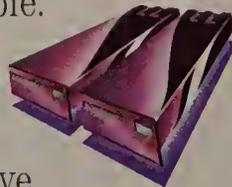
And for flexible connectivity, we designed a way to allow external access from the PCI bus to the latest peripherals.

It was a challenge we addressed for two simple reasons: to give users true desktop Pentium performance for *faster running software and expansion capabilities* for investment protection.



So now you have a notebook with smoother full-motion video and enhanced 3-D graphics. In addition, we designed the TravelMate 5000 to take advantage of the "plug and play" capabilities of Windows 95® when it becomes available.

But our engineers didn't stop there. *We added a second lithium battery* without sacrificing size, weight or eliminating a floppy drive.



In addition, wireless communication with other notebooks and desktops is very quick and easy with our integrated infrared capabilities.

*The Texas Instruments 5000*. For more information on what others thought you couldn't do with a notebook, simply call 1-800-TI-TEXAS (e-mail: [2ti@msg.ti.com](mailto:2ti@msg.ti.com)).



EXTENDING YOUR REACH™

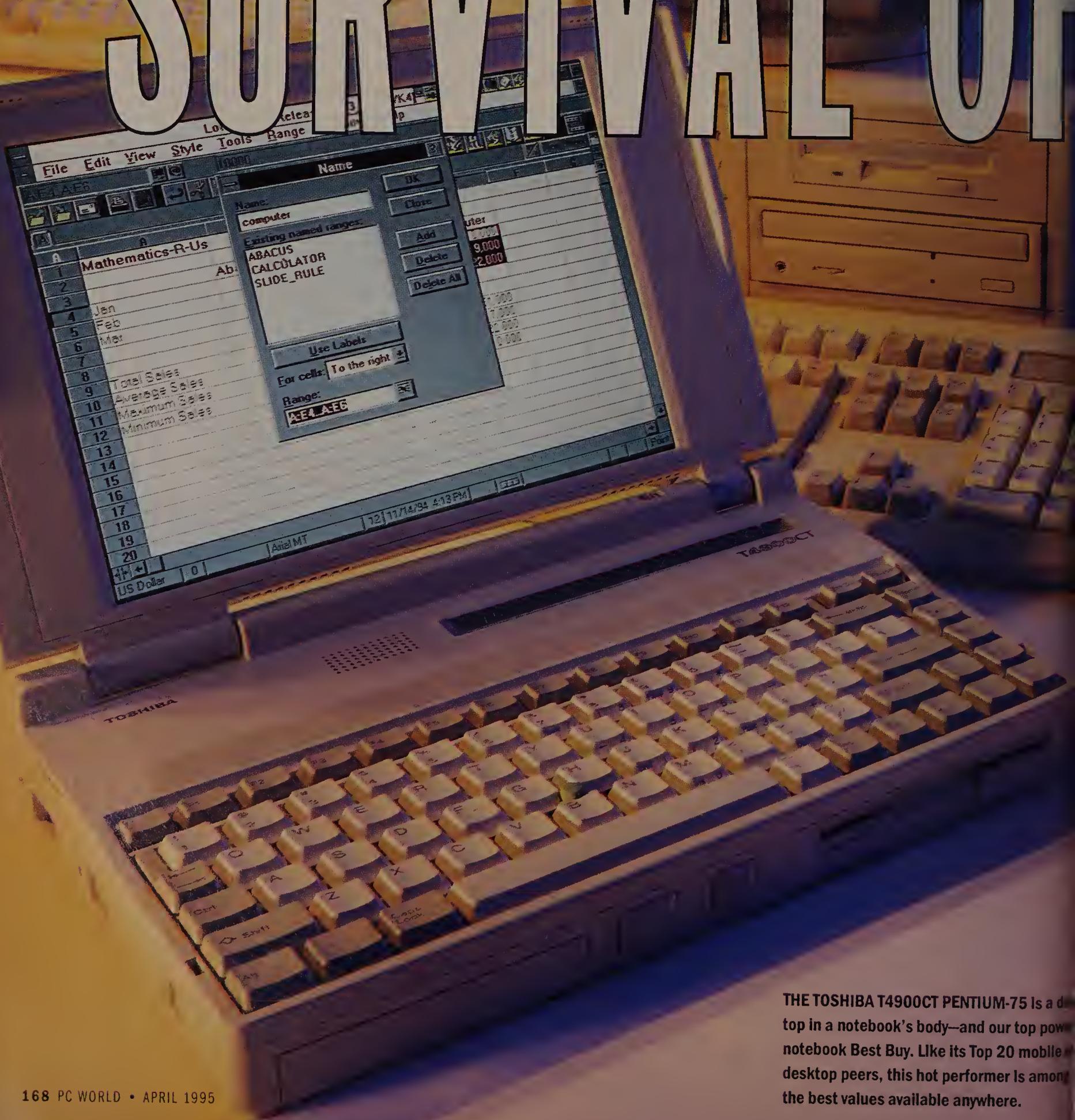
 **TEXAS  
INSTRUMENTS**

\*Depending on model. TravelMate and "Extending Your Reach" are trademarks of Texas Instruments. Windows 95 is a registered trademark of Microsoft Corporation. Pentium is a trademark and the Intel Inside logo is a registered trademark of Intel Corporation. © 1995 TI.

Circle 244 on reader service card

# TOP 20 PCs

# SURVIVAL OF



THE TOSHIBA T4900CT PENTIUM-75 is a desktop in a notebook's body—and our top power notebook Best Buy. Like its Top 20 mobile desktop peers, this hot performer is among the best values available anywhere.

# THE FITTEST

For the first time ever, four number ones repeat, fending off all the latest challengers. At the top: Micron P90PCI PowerStation, MIS Slimline 66, Toshiba T4900CT, and WinBook XP DX2/50.

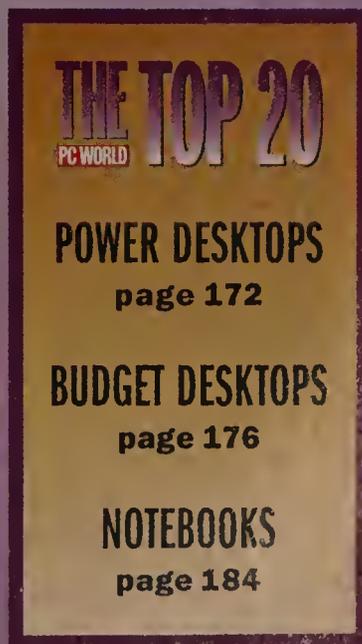
By Rex Farrance and Michael Desmond

You can't get the job done right without the right tools. When it comes to buying a new system, *PC World's* Top 20s give you what you need to make the right decision—reviews of the hot new systems, plus continually updated ratings for *all* the best PCs on the market, drawn from our Test Center's current database of more than 300 desktop and notebook systems reviewed over the previous ten months.

If you've been reading *PC World* for a while, you know that in the year and a half we've been running our Top 20s, we've fine-tuned them to increase their usefulness. This month we introduce a major redesign that makes our Top 20s even more indispensable.

As you scan our pages, you'll note expanded coverage of the systems that appear on our Top 20 charts. We now include monthly evaluations for every Top 20 system—even those units originally reviewed in a previous issue. As always, we take an in-depth look

ROBERT CARDIN



**THE TOP 20**  
PC WORLD

**POWER DESKTOPS**  
page 172

**BUDGET DESKTOPS**  
page 176

**NOTEBOOKS**  
page 184

at every Top 20 system we're reviewing for the first time. For these new systems, we also provide comprehensive features comparisons and test reports. Worthy new contenders that don't qualify for our Top 20s receive briefer write-ups, listing their main features, strengths, and shortcomings. These units are discussed in our "System Snapshots" section. The changes don't stop there—our Top 20 tables have a new look as well. We now add information on CD-ROM drives and indicate which systems are likely purchases for home use. Our object is to give you more of the information you need—in context—so that you can see at a glance how the machine you're considering stacks up against the other contenders in its class.

### Best of the Best

Enduring success is the mark of a true champion, and this month's top winners demonstrate that kind of staying power. Our teams of Best Buys are led by four stalwarts, each of which won its class last month. Micron's \$3199 P90PCI PowerStation holds our heavyweight crown for the third month in a row. In our estimation, this compact Pentium-90 system represents the best power desktop value available—bar none. It comes with 16MB of RAM and a hefty 1080MB hard drive,

## Buying Smart: Consumer Tips

### Use a credit card.

**Unless you already have a reliable credit arrangement with the vendor, use a credit card to order all equipment. The credit card company can help mediate any disputes that arise or can give you a refund if you fail to receive a product that you've paid for.**

### Insure against power damage.

**Buy a high-quality surge protector with a UL 1449 surge-protection rating of 330 volts and phone line connectors for your modem. The unit should handle a minimum spike of 13,000 amps to protect against catastrophic power surges. Prices run from \$50 to \$100; the best vendors include free lifetime coverage against power-related damage both for the product and for all connected equipment.**

### Install SCSI CD-ROM drives in the office.

**Buy a SCSI, caddy-type CD-ROM drive for heavy office use. SCSI lets you add more devices, and caddy-feed mechanisms withstand heavy use better than the tray feeds in cheaper drives.**

and it delivers smashing performance. Among the budget desktop contenders, MIS's Slimline 66 system is back at the top, likewise for the third straight month. This no-frills winner provides the basics, with rock-solid DX2-66 performance, 8MB of RAM, and a 420MB hard drive, all for just \$1495.

The budget notebooks scene reveals no newcomers, just a steady lineup of low-cost, high-value machines. The top budget system is a solid champ: The WinBook XP DX2/50 monochrome notebook gives you a DX2-50 CPU, 8MB of RAM, a 255MB hard drive, and 6.8-hour battery life, and it costs just \$1999. Like the leading desktop Best Buys, it's completing its third straight month at the top.

### Power on the Move

Power notebooks are clearly in a period of transition; six new systems break into the power division of our Notebooks Top 20. Despite this high turnover rate, our first-place titleholder—the \$7479 Toshiba T4900CT Pentium-75—repeats its victory of last month. It features fantastic performance, a magnificent 810MB hard drive, and a stunning 10.4-inch active-matrix color screen that displays 65,536 simultaneous colors. You also get Toshiba's truly superior support.

When it comes to power notebooks, the strong keep getting stronger. You'll no longer find a DX2 system anywhere among our power notebooks. Four of the ten power systems on our Notebooks Top 20 have DX4-75 processors. Four more are powered by DX4-100s, and a fast Pentium-75 drives the number one Toshiba T4900CT. The mightiest processor in this division, a muscular Pentium-90, powers the MidWest Micro Elite Pentium SoundBook Plus. This \$5599 unit is the fastest notebook we've ever tested, with performance comparable to that of a typical Pentium-66 desktop.

All this power does not diminish battery life: Every Top 20 power notebook battery lasted at least 3 hours. One system—the AST Ascentia 910N DX4-75—kept going for almost 8 hours, and two others surpassed 6.5 hours. Among the long-life elite, the Best Buy Ascentia 910N and the Dell Latitude XP 4100CX use lithium-ion batteries, a new type of power cell that can undergo many more recharge cycles before needing replacement than batteries using earlier recharge technology. You'll find out more about lithium ion's advantages in the reviews of the individual notebook systems.

Screen quality is another important consideration for buyers of mobile PCs. Here, the picture continues to brighten. For example, NEC's Versa M/75HC, which didn't quite earn a place on our Top 20 chart, provides the first 800 by 600 screen we've seen on a notebook. And IBM has added features on its ThinkPad 755 screens that considerably enhance viewability under adverse lighting conditions. These fresh developments—along with up-to-date ratings—are the hard facts you need when you're looking for a new system. Every month, you'll find the latest right here.

*Rex Farrance and Michael Desmond are associate editors for PC World. They can be reached on PC World Online (see page 12 for contact information). PC World staff members John Goddard, Anita Hamilton, Arden Hoffman, Owen Linderholm, Melissa Riofrio, and Valerie Singer contributed to this article. Testing by Dean Andrews, Dave Casini, Ulrike Diehlmann, Susan Silvius, and Kirk Steers; research and support by Mike Salayko.*

.....  
 Call 800/434-4495 (for payment by Visa or MasterCard) or 900/993-2972 (for telephone billing) to order fax copies of system reviews. You can order three systems' capsule reviews (\$4.95), a single capsule review plus features table and test report (\$4.95), an entire month's review (\$9.95), and a list of all systems tested by the PC World Test Center (\$4.95). In addition, you can order next month's Top 20 charts and capsule reviews in advance (*The Top 20 Flash Report*, \$9.95). Touch-tone telephone required.

**For more information about all products in this article, circle reader service no. 904.**

## Our Competition's Sales Pitch.

*"We've got the most powerful, easiest-to-use database you can buy."*

## The Translation.



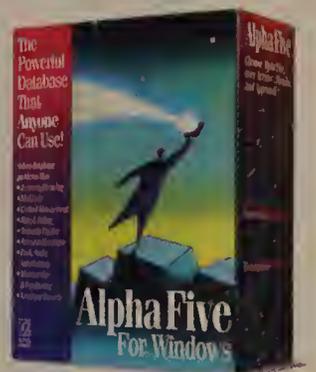
©1994 Alpha Software Corporation, Inc. All company and product names are trademarks and registered trademarks of their respective owners.

For Lotus® and Microsoft® to say their databases are both easy and powerful takes some nerve. One doesn't have enough horsepower, while the other one makes you learn complex programming techniques if you want to create powerful applications.

Fortunately, there's a third choice that really does combine power and true ease-of-use: new Alpha Five™ For Windows. From the makers of the best-selling end-user database

### Special Pricing For Alpha Four® Users

in DOS, Alpha Five lets you build powerful database applications without having to program. Just drag, drop, point, click, and presto, you're tracking sales and orders, managing projects, issuing invoices, and creating stunning reports — all with incredible ease. There are even pop-up Genies to walk you through finding, sorting and analyzing data from new or existing files. And if you do happen to be a programmer, we've included a powerful programming language called Xbasic.™ So visit your local reseller today, or you can call us for more information at 800-441-ALPHA. And choose the database that really and truly is both powerful and easy-to-use. And that's not just a load of, um, baloney.



## Alpha Five For Windows

*The powerful database anyone can use.*

800-441-ALPHA 617-229-2924

Circle 41 on reader service card

ABJ

# THE TOP 20

## PC WORLD



**1** Micron P90PCI PowerStation  
Speedy three-time top system.

## POWER DESKTOPS

		Last month	Months on chart	First reviewed	Overall rating	Performance rating	Reliability/service rating	Price	CPU	RAM (MB)	Hard drive (MB)
<b>1</b>	<b>Micron P90PCI PowerStation</b>	1	3	Feb 95	90	86	71/85	\$3199	Pentium-90	16	1080
<b>2</b>	<b>Dell Dimension XPS P90</b>	4	2	Mar 95	89	83	77/81	\$3673	Pentium-90	16	1080
<b>3</b>	<b>Quantex QP5/90W-3</b>	2	2	Mar 95	88	79	73/78	\$2997	Pentium-90	16	1080
<b>4</b>	<b>Dell OptiPlex XMT 590</b>	6	4	Jan 95	87	82	77/81	\$3500	Pentium-90	16	1080
<b>5</b>	<b>Everex Step SP/100</b>	3	2	Mar 95	87	86	75/65	\$3295	Pentium-100	16	1275
<b>6</b>	<b>Austin Power System 90</b>	5	7	Oct 94	86	83	71/75	\$3499	Pentium-90	16	1060
<b>7</b>	<b>Dell Dimension XPS P100</b>	7	2	Mar 95	86	77	77/81	\$3887	Pentium-100	32	1080
<b>8</b>	<b>Micron P90 Home MPC</b>	8	4	Jan 95	85	79	71/83	\$2499	Pentium-90	8	530
<b>9</b>	<b>USA Flex PT-90 Power System</b>	—	1	current	85	82	71/73	\$4114	Pentium-90	16	1080
<b>10</b>	<b>Gateway 2000 P5-100XL</b>	12	2	Mar 95	85	84	73/72	\$4299	Pentium-100	16	1060
<b>11</b>	<b>Tagram Thunderbolt XL</b>	16	3	Feb 95	85	86	<sup>2</sup>	\$2901	Pentium-90	16	540
<b>12</b>	<b>Zeos Pantera 90</b>	9	9	Aug 94	85	80	71/76	\$2995	Pentium-90	16	720
<b>13</b>	<b>Acer AcerPower MiniTower</b>	10	3	Feb 95	84	80	78/68	\$3265	Pentium-90	16	730
<b>14</b>	<b>Blackship P90 Neptune</b>	—	1	current	84	77	71/69	\$2960	Pentium-90	16	540
<b>15</b>	<b>DFI Diamond P90</b>	13	3	Feb 95	84	84	<sup>2</sup>	\$3795	Pentium-90	16	1080
<b>16</b>	<b>Acma P90</b>	11	3	Feb 95	84	88	78/68	\$2968	Pentium-90	16	540
<b>17</b>	<b>Zeos Pantera DX4-100</b>	17	7	Oct 94	83	75	71/76	\$2582	DX4-100	16	720
<b>18</b>	<b>Gateway 2000 P5-75 Family PC</b>	14	2	Mar 95	83	69	73/72	\$2499	Pentium-75	8	730
<b>19</b>	<b>ALR Evolution X/75</b>	18	2	Mar 95	83	70	78/74	\$3174	Pentium-75	16	1090
<b>20</b>	<b>Robotech Cobra RS p90</b>	15	4	Jan 95	83	84	<sup>2</sup>	\$3152	Pentium-90	16	730



<sup>1</sup> Call 800/434-4495 (for payment by Visa or MasterCard) or 900/993-2972 (for telephone billing) and use the fax reprint numbers listed above to order fax copies of system reviews. You can order three systems' capsule reviews (\$4.95), a single capsule review plus features table

and test report (\$4.95), an entire month's review (\$9.95), and a list of all systems tested by the PC World Test Center (\$4.95). In addition, you can order next month's Top 20 charts and capsule reviews in

**2** Dell Dimension XPS P90  
Muscle from reliable Dell.



**4** Dell OptiPlex XMT 590  
Classy, has three-year warranty.



**3** Quantex QP5/90W-3  
\$2997 buys 17-inch monitor.



**5** Everex Step SP/100  
Pentium-100, 17-inch monitor.

CD-ROM drive	Bus slots	Monitor size/dot pitch	Vendor contact number	Fax reprint number <sup>1</sup>	Reader service no.	Comments	 Recommended as home system
2X	ISA, PCI	15"/.28	800/223-6571	3184	646	Last month's no. 1 Best Buy has top blend of power, price, and features.	
3X	ISA, PCI	15"/.28	800/613-3355	3202	647	Newest version of popular and successful Dell Pentium.	
2X	ISA, PCI	17"/.26	800/288-0566	3200	648	Cheapest Best Buy, loaded multimedia system with big monitor.	
2X	ISA, PCI	15"/.28	800/613-3355	3173	649	Corporate version of Dell's solid Pentium-90 design is also a good value.	
—	ISA, PCI	17"/.28	800/821-0806	3201	650	Top Pentium-100. Large monitor and great performance. Should have a CD-ROM drive.	
2X	ISA, PCI	17"/.28	800/331-1501	3142	651	Loaded Pentium-90 with large hard drive is a very good deal.	
2X	ISA, PCI	15"/.28	800/613-3355	3203	652	100-MHz version of the no. 2 Best Buy. Disappointing performance despite great features.	
2X	ISA, PCI	14"/.28	800/223-6571	3172	653	Great home PC, but could use a little more RAM in a power configuration.	
4X	ISA, PCI	17"/.26	800/872-3539	3215	654	Serious multimedia powerhouse with quad-speed CD-ROM drive and 17-inch monitor.	
4X	ISA, PCI	17"/.26	800/846-2000	3204	655	Another multimedia powerhouse with quad-speed CD-ROM drive and big monitor.	
4X	ISA, PCI	15"/.28	800/824-7267	3187	656	Fast and cheap—a good general-purpose system.	
2X	ISA, PCI	15"/.28	800/554-5220	3123	657	Good office Pentium-90 at a great price.	
2X	ISA, PCI	15"/.28	800/368-2237	3186	658	Solid minitower could be a few hundred dollars cheaper.	
4X	ISA, PCI	15"/.28	800/531-7447	3216	659	Nice multimedia system could use a larger hard drive.	
2X	ISA, PCI	17"/.26	800/275-3342	3188	660	Very fast, fully loaded home system.	
2X	ISA, PCI	15"/.28	800/786-6888	3185	661	No longer the fastest system we've tested, this is still the fastest PC on the Top 20.	
2X	ISA, PCI	15"/.28	800/554-5220	3140	662	The lone non-Pentium survivor on the Top 20 bests some Pentiums' performance.	
2X	ISA, PCI	15"/.25	800/846-2000	3205	663	Slowest system on the Top 20, but one of the cheapest. Could use more RAM.	
—	ISA, PCI	15"/.28	800/444-4257	3206	664	Slow, but has a big hard drive. Should have a CD-ROM drive.	
2X	ISA, PCI	15"/.28	800/533-0633	3174	665	Fast system comes with a generous bundle of graphics software.	

advance (The Top 20 Flash Report, \$9.95). Touch-tone phone required. <sup>2</sup> Insufficient customer responses to our Reliability and Service Monitor to gauge service performance and reliability. For our overall evaluation, we use an average rating derived from all companies for which we have received fewer than 125 responses.

For more information about all products in this table, circle reader service no. 905.

# Top 20 Power Desktops

THE POWER DESKTOPS TOP 20 REMAINS STABLE, with just two new systems, both Pentium-90s: the number 9 USA Flex, and the number 14 Blackship. Meanwhile, Micron's P90PCI PowerStation stays on top for the third month. All the Best Buys have at least a Pentium-90 CPU (Everex's is a Pentium-100) and 16MB of RAM. Their hard disks range from 1080MB to an impressive 1275MB. The mix includes two 17-inch monitors, yet the most expensive one, Dell's Dimension XPS P90, costs under \$3700, while Quantex's QP5/90W-3 goes for a mere \$2997.

This Top 20 features three Pentium-100 systems, two Pentium-75s, and one DX4-100; Pentium-90s still hold the majority. Reasonable pricing continues, while memory, storage, graphics controllers, displays, and multimedia offerings are more robust than ever.

## **Micron P90PCI PowerStation**

REVIEWED: February 1995

**PROS:** Blazing speed, generous RAM, jumbo hard disk, flat-screen monitor, CD-ROM drive

**CONS:** Could do better than ordinary one-year warranty, slight cable clutter inside

This highly expandable \$3199 three-time top Best Buy Pentium-90 compact has 16MB of RAM, an unusually large 512K secondary cache, a 1080MB hard drive, a CD-ROM drive, a high-quality flat 15-inch Mag monitor, and a 2MB 64-bit PCI graphics controller.

## **Dell Dimension XPS P90**

REVIEWED: March 1995

**PROS:** Lightning-fast Pentium-90 performance, generous RAM, jumbo hard disk, clean design

**CONS:** Unlike Dell's Optiplex line, lower-cost Dimensions come with just a one-year warranty

This nicely expandable \$3673 Pentium-90 minitower unit has 16MB of RAM, a 256K secondary cache, a 1080MB hard disk, a CD-ROM drive, a 128-bit 4MB PCI graphics controller, and a 15-inch monitor.

## **Quantex QP5/90W-3**

REVIEWED: March 1995

**PROS:** Generous RAM, jumbo hard drive, 17-inch monitor, CD-ROM drive, 14.4-kbps fax-modem

**CONS:** Could do better than ordinary one-year warranty, some cable clutter inside

Super-expandable, affordable \$2997 Pentium-90 tower has 16MB of RAM, a 1080MB hard drive, a CD-ROM drive, a 14.4-kbps fax-modem, a 2MB 64-bit PCI graphics controller, a huge 17-inch monitor, and good—but not great—performance.

**4**



## **Dell OptiPlex XMT 590**

REVIEWED: January 1995

**PROS:** Terrific Pentium-90 performance, generous RAM, jumbo hard drive, very clean design, three-year warranty

**CONS:** Long seven-day turnaround policy on service center repairs

Expandable \$3500 Pentium-90 minitower super-performer comes with 16MB of RAM, a 1080MB hard drive, a CD-ROM drive, a nifty combo floppy drive that accepts both standard formats, a 2MB PCI graphics controller, a 15-inch monitor, and a three-year warranty.

**5**



## **Everex Step SP/100**

REVIEWED: March 1995

**PROS:** Super performance, largest hard disk on Power Desktops Top 20, good expandability

**CONS:** Everex provides no toll-free technical support

Highest-ranking Pentium-100 costs just \$3295 with 16MB of RAM, a huge 1275MB hard drive, a 2MB 64-bit graphics controller, a 17-inch monitor, and a two-year warranty—but no toll-free tech support.

**6**

## **Austin Power System 90**

REVIEWED: October 1994

**PROS:** Fast Pentium-90 performance, highly expandable, good support

**CONS:** Documentation on this model could be more detailed

**7**

## **Dell Dimension XPS P100**

REVIEWED: March 1995

**PROS:** Jumbo hard drive, fine 4MB, 128-bit PCI graphics controller, clean basic design

**CONS:** A bit pricey, not all that fast for a Pentium-100, one-year Dimension warranty

**8**

## **Micron P90 Home MPC**

REVIEWED: January 1995

**PROS:** Quick Pentium-90 performance, great price, full set of multimedia features

**CONS:** Ordinary one-year warranty; 14-inch monitor is small, especially for a multimedia PC

**9**

## **USA Flex PT-90 Power System**

NEW THIS MONTH

**PROS:** 17-inch monitor, three-year warranty, multimedia configuration, 14.4-kbps fax-modem

**CONS:** Price is on the high side, some cable clutter inside big tower case

The \$4114 price won't appeal to penny-pinchers, but USA Flex's PT-90 Power System is truly a tower of power. The 90-MHz CPU and jumbo 1080MB hard drive in this big floor-standing PC will grab the power user's attention. Granted, the Flex Pentium isn't the fastest PC we've tested, but it compares well with its 90-MHz Pentium peers.

Along with 16MB of RAM (expandable to 128MB) and 256K of secondary cache, you get an attractive multimedia setup, including large Altec Lansing speakers and a Sound Blaster 16 sound board with a wave-table MIDI card. The quad-speed Teac CD-ROM drive should perform well, but testing for our December review, "CD-ROM Drives: The Power and the Glory," showed it to be not much faster than a quick double-speed drive. The expansive 17-inch monitor is



just what we like on a multimedia PC, and the 2MB Stealth 64 VRAM PCI graphics controller matches it admirably. And let's not forget the 14.4-kbps fax-modem.

Even with all the goodies, the Flex Pentium still has two free 16-bit ISA slots, one free PCI slot, and a free slot that accepts a PCI or an ISA card. Three externally accessible drive bays are available as well.

USA Flex tops it all off with a stack of software, including CD-ROM games and reference titles. Finally, customers responding to our fax-back polls are generally impressed with the company's ability to resolve problems—an important service indicator. In February, we mistakenly dinged USA Flex for having a one-year warranty. Let us correct that: You get a three-year warranty with 24-hour tech support, plus a 30-day money-back guarantee and a year of on-site service for a reasonable \$49. The bottom line? This system rates a strong Power Desktops Top 20 recommendation.

## 10 Gateway 2000 P5-100XL

REVIEWED: March 1995

**PROS:** Fast Pentium-100 performance, 17-inch monitor, jumbo hard drive, three-year warranty

**CONS:** Would cost less without the extras, long waits on hold for technical support

## 11 Tagram Thunderbolt XL

REVIEWED: February 1995

**PROS:** Ultrafast Pentium-90 performance, reasonable price, three-year warranty

**CONS:** Interior somewhat crowded, cable clutter inside case

## 12 Zeos Pantera 90

REVIEWED: August 1994

**PROS:** Solid Pentium-90 performance, good expandability, 24-hour tech support

**CONS:** Ordinary one-year warranty

## 13 Acer AcerPower MiniTower

REVIEWED: February 1995

**PROS:** Good Pentium-90 performer, big hard disk, 24-hour tech line, multimedia configuration

**CONS:** Ordinary one-year warranty surprising from a company of this size

## 14 Blackship P90 Neptune

NEW THIS MONTH

**PROS:** Reasonable price, solid array of multimedia and home-office features

**CONS:** Performance just so-so for a Pentium-90, one-year warranty, no weekend tech support

To make our power Top 20, a multimedia desktop must also be a capable business PC. The \$2960 Blackship P90 Neptune earns its place in the sun with a quality multimedia and home-office configuration. It comes with a quad-speed Teac CD-ROM drive, a Sound Blaster sound card, speakers, a 14.4-kbps voice fax-modem, and three CD-

ROM apps. The Teac drive is fine for current multimedia use, although tests for our December CD-ROM drive review show its performance to be closer to that of a quick double-speed drive. The Pentium-90 Blackship has 16MB of RAM and 256K of secondary cache. These days a 540MB hard drive is minimal on a power box,



but the 2MB graphics controller and 15-inch monitor are well matched.

This compact unit has one free PCI slot, two free 16-bit ISA slots, and one free slot that accepts either an ISA or a PCI card. You'll also find two free drive bays (one externally accessible). Blackship offers just a one-year warranty, but it's backed by on-site service and a 30-day money-back guarantee. Tech support is available 10 hours daily, weekdays only. Even with its less-than-sterling support package, however, the P90 Neptune is an impressive unit and a deserving new member of our Power Desktops Top 20.

## 15 DFI Diamond P90

REVIEWED: February 1995

**PROS:** Fast Pentium-90 performance, solid multimedia and home-office features

**CONS:** No toll-free technical support, somewhat pricey for a Pentium-90

## 16 Acma P90

REVIEWED: February 1995

**PROS:** Extremely impressive Pentium-90 performance, PCMCIA slot installed in unit

**CONS:** One-year warranty, no weekend tech support, drive cage obstructs a free slot

## 17 Zeos Pantera DX4-100

REVIEWED: October 1994

**PROS:** Excellent DX4-100 performance, 24-hour tech support, optional \$49 integrated SCSI

**CONS:** Ordinary one-year warranty, limited number of slots accept full-length cards

## 18 Gateway 2000 P5-75 Family PC

REVIEWED: March 1995

**PROS:** Attractive bundle of home applications, three-year warranty

**CONS:** Long hold times on the phone when trying to reach technical support

## 19 ALR Evolution X/75

REVIEWED: March 1995

**PROS:** Solid Pentium-75 performance, jumbo hard drive, excellent design, great support

**CONS:** Unit priced relatively high for a Pentium-75 system

## 20 Robotech Cobra RS p90

REVIEWED: January 1995

**PROS:** Fantastic Pentium-90 performance, impressively large and varied software bundle

**CONS:** Minitower case a little crowded, some cable clutter under the hood

# THE TOP 20

PC WORLD



## BUDGET DESKTOPS

**1** MIS Slimline 66  
Basic business DX2-66 for \$1495.

	Last month	Months on chart	First reviewed	Overall rating	Performance rating	Reliability/service rating	Price	CPU	RAM (MB)	Hard drive (MB)
<b>1</b> MIS Slimline 66	1	3	Feb 95	85	50	85/88	\$1495	486DX2-66	8	420
<b>2</b> Quantex QP5/60PM-2	89	1	Jan 95	81	61	73/78	\$2198	Pentium-60	8	540
<b>3</b> Micro Express MicroFlex-VL/80	2	2	Mar 95	81	57	69/71	\$1549	Am486DX2-80	8	420
<b>4</b> Zeos Pantera DX2-66	4	5	Dec 94	81	55	71/76	\$1845	486DX2-66	8	530
<b>5</b> Zeos Pantera 60	7	5	Dec 94	81	66	71/76	\$2123	Pentium-60	8	530
<b>6</b> Expotech Platinum 486DX2/66	6	5	June 94	81	49	73/59	\$1671	486DX2-66	16	500
<b>7</b> Polywell Poly 486-80VB	11	3	Feb 95	80	63	<sup>2</sup>	\$1795	Am486DX2-80	8	540
<b>8</b> Gateway 2000 P4D-66	8	11	June 94	80	46	73/72	\$1884	486DX2-66	8	730
<b>9</b> Blackship Atlantis	9	3	Feb 95	80	45	71/69	\$1695	486DX2-66	8	540
<b>10</b> DTK QuIn-35	—	1	current	79	72	75/73	\$2200	Pentium-90	8	545
<b>11</b> Polywell Poly 560MPC	30	—	Jan 95	79	65	<sup>2</sup>	\$1995	Pentium-60	8	545
<b>12</b> Micron 4100 PCI Magnum	10	7	Aug 94	79	62	71/83	\$1999	DX4-100	8	420
<b>13</b> Axlk Ace Cache 466 VG2 Cutlass	3	2	Mar 95	79	47	85/65	\$1645	486DX2-66	8	540
<b>14</b> Quantex Q486DX2/66MM-4	16	6	June 94	79	42	73/78	\$1698	486DX2-66	8	540
<b>15</b> Diamond DT DX4/100 VIP	14	2	Mar 95	79	60	67/64	\$1699	DX4-100	8	540
<b>16</b> Quantex QP5/60W-2	12	5	Dec 94	79	63	73/78	\$2215	Pentium-60	16	540
<b>17</b> MIS M5P/60	13	3	Sept 94	79	52	85/86	\$2220	Pentium-60	8	270
<b>18</b> Micron Family MPC LPX	33	—	Dec 94	78	51	71/83	\$1909	486DX2-66	16	420
<b>19</b> MIS M466T	15	5	July 94	78	36	85/86	\$1580	486DX2-66	8	270
<b>20</b> USA Flex PT-60 Tower	24	—	Nov 94	78	60	71/73	\$2048	Pentium-60	8	425



<sup>1</sup> Call 800/434-4495 (for payment by Visa or MasterCard) or 900/993-2972 (for telephone billing) and use the fax reprint numbers listed above to order fax copies of system reviews. You can order three systems' capsule reviews (\$4.95), a single capsule review plus features table

and test report (\$4.95), an entire month's review (\$9.95), and a list of all systems tested by the PC World Test Center (\$4.95). In addition, you can order next month's Top 20 charts and capsule reviews in

**2** Quantex QP5/60PM-2  
17-inch monitor, great home PC.



**4** Zeos Pantera DX2-66  
Robust business PC.



**3** Micro Express MicroFlex-VL/80  
Am486DX2-80 runs like Pentium-60.



**5** Zeos Pantera 60  
Fast and solid.

CD-ROM drive	Bus slots	Monitor size/dot pitch	Vendor contact number	Fax reprint number <sup>1</sup>	Reader service no.	Comments	 Recommended as home system
—	ISA, VLB	15"/.28	800/733-9188	3191	666	Very cheap system with good performance, from a little-known vendor.	
2X	ISA, PCI	17"/.26	800/288-0566	3217	667	Big price cut moves feature-rich multimedia Pentium onto Budget list.	
—	ISA, PCI	15"/.28	800/989-9900	3208	668	Cheap and fast, ordinary reliability and service scores.	
2X	ISA, PCI	14"/.28	800/554-5220	3167	669	Fast for a DX2-66, member of the solid Pantera family.	
2X	ISA, PCI	14"/.28	800/554-5220	3163	670	Pentium version of no. 4 system costs more but is fastest Best Buy.	
2X	ISA, VLB	15"/.28	800/215-3976	3102	671	Poor service scores, lots of RAM, can take a second processor. (Formerly VTech.)	
2X	ISA, VLB	14"/.28	800/999-1278	3194	672	AMD DX2-80 system is faster than many DX4-100s, and it's cheap.	
2X	ISA, PCI	15"/.28	800/846-2000	3096	673	Huge hard drive in basic system from major vendor.	
2X	ISA, VLB	15"/.28	800/531-7447	3192	674	Decent value home PC with ordinary service and reliability.	
—	ISA, PCI	14"/.28	800/289-2385	3218	675	Low-cost Pentium-90 only lacks a CD-ROM drive.	
2X	ISA, VLB	14"/.28	800/999-1278	3219	676	Large price cut moves cheap multimedia Pentium system onto Top 20.	
2X	ISA, VLB	14"/.28	800/233-6571	3125	677	Top-rated budget DX4-100 is fast without a big price.	
—	ISA, PCI	14"/.28	800/234-2945	3209	678	Solid desktop value at a low price, but no CD-ROM.	
2X	ISA, VLB	15"/.28	800/288-0566	3212	679	Full multimedia PC is loaded but slow.	
—	ISA, PCI <sup>3</sup>	14"/.28	800/989-7253	3211	680	Low-cost system is a bit slow for a DX4-100.	
2X	ISA, PCI	15"/.28	800/288-0566	3164	681	Low-cost Pentium with lots of RAM.	
2X	ISA, PCI	15"/.28	800/733-9188	3193	682	Cheap Pentium needs a bigger hard drive.	
2X	ISA, VLB	14"/.28	800/223-6571	3220	683	Big price cut boosts low-cost home PC onto chart.	
—	ISA, PCI	14"/.29	800/733-9188	3195	684	Cheap desktop is also the slowest on the Top 20.	
—	ISA, PCI	15"/.28	800/872-3539	3221	685	Basic value system could use a CD-ROM drive.	

advance (The Top 20 Flash Report, \$9.95). Touch-tone phone required. <sup>2</sup> Insufficient customer responses to our Reliability and Service Monitor to gauge service performance and reliability. For our overall evaluation, we use an average rating derived from all companies for which we have received fewer than 125 responses. <sup>3</sup> Also has VLB expansion slots.

For more information about all products in this table, circle reader service no. 906.

# Top 20 Budget Desktops

IF YOU LIKE YOUR PCs ECONOMICALLY PRICED and capably configured, check out our Budget Desktops Top 20, where the price ceiling is now \$2250. For the third straight month, our top system is MIS's Slimline 66. This no-nonsense business desktop is buoyed by solid DX2-66 performance and a near-irresistible \$1495 price. The most expensive of our five Best Buys, the Quantex QP5/60PM-2 Pentium-60, goes for just \$2198 with a 17-inch monitor. Next down on the price list is the Zeos Pantera 60 Pentium-60, which costs just \$2123 with a 530MB hard disk and a CD-ROM drive. The Am486DX2-80 processor is making a splash in April's budget pool: One of this month's Best Buys, the Micro Express MicroFlex-VL/80, features this hot new AMD, achieving Pentium-like performance for a price much more typical of a 486DX2-66.

The only newly reviewed system on this month's Budget Desktops Top 20 is the number ten DTK Quin-35, a \$2200 Pentium-90. The CPU mix runs rich on the Budget chart; five processors are represented, including both 60-MHz and 90-MHz Pentiums, DX4-100s, Am486DX2-80s, and 486DX2-66s. The prices on the chart run from \$1495 to \$2220, and every unit is a solid budget business machine.

  **MIS Slimline 66**  
**REVIEWED:** February 1995

**PROS:** Excellent price for a basic business PC with snappy 486DX2-66 performance  
**CONS:** Ordinary service policies with just a one-year warranty and no weekend tech support  
 Fast, expandable DX2-66 desktop boasts a 15-inch monitor, a 420MB hard drive, and 8MB RAM. This great entry-level system is a steal at \$1495. Reader feedback on MIS reliability and service is very good.

  **Quantex QP5/60PM-2**  
**REVIEWED:** January 1995

**PROS:** Quick Pentium-60 performance, 17-inch monitor, hefty software bundle, good price  
**CONS:** Could do better than ordinary one-year warranty, some cable clutter inside  
 This quick and eminently expandable Pentium-60 minitower system costs a very reasonable \$2198 and comes with a big 17-inch moni-

tor that would be right at home on a power desktop. In addition, you get a CD-ROM drive and a 14.4-kbps fax-modem. A hefty software bundle includes Borland Office and Quicken.

  **Micro Express MicroFlex-VL/80**  
**REVIEWED:** March 1995

**PROS:** High performance for a particularly low price, minitower case has good expandability  
**CONS:** Below-average reliability and service scores from reader fax-back survey  
 AMD's new Am486DX2-80 CPU pays off in good performance for this Micro Express minitower, which has 8MB RAM, a basic 420MB hard disk, and a 15-inch monitor paired with a 2MB graphics controller. You also get good expandability for the amazing \$1549 price.

  **Zeos Pantera DX2-66**  
**REVIEWED:** December 1994

**PROS:** Unusually good performance for 486DX2-66 system, CD-ROM drive, 24-hour tech support  
**CONS:** Standard monitor just a 14-incher, one-year warranty mediocre in today's market  
 This fast, expandable 486DX2-66 desktop has 8MB RAM and a 128K secondary cache. Zeos provides a solid 530MB hard drive, a CD-ROM drive, and a 2MB PCI graphics controller. With a 14-inch display the system costs \$1845, but a 15-inch display upgrade adds just \$95 to your purchase price. The one-year warranty doesn't compare well these days, but Zeos's 24-hour technical support is commendable.

  **Zeos Pantera 60**  
**REVIEWED:** December 1994

**PROS:** Strong Pentium-60 performer, expandable, integrated SCSI option, 24-hour tech line  
**CONS:** Standard monitor just a 14-incher, one-year warranty mediocre in today's market  
 This system is quite expandable, with strong Pentium-60 performance, 8MB RAM, a 256K secondary cache, a 530MB hard drive, a CD-ROM drive, a 1MB graphics controller, and 12-bit audio. It provides a nice step up from 486DX2-66 computing and costs just \$2123. You can upgrade the small 14-inch monitor to a 15-incher for \$95 when you buy your system and add integrated SCSI-2 for \$49.

 **Expotech Platinum 486DX2/66**  
**REVIEWED:** June 1994

**PROS:** Fast DX2-66 performance, dual-processor option, CD-ROM drive, three-year warranty  
**CONS:** Limited expandability, poor service scores in our Reliability and Service Monitor

 **Polywell Poly 486-80VB**  
**REVIEWED:** February 1995

**PROS:** Pentium-60 performance from budget-price Am486DX2-80, CD-ROM drive  
**CONS:** Polywell provides a small 14-inch monitor at the bargain price

 **Gateway 2000 P4D-66**  
**REVIEWED:** June 1994

**PROS:** Basic business 486DX2-66 desktop has CD-ROM drive, nice-size 730MB hard disk  
**CONS:** Generally long hold times for Gateway technical support



*There are many ways to ~~addr~~ address letters.*



And to make labels.



**But there's only one  
smart way to do both.**

Pocket your pen. Toss your typewriter. And leave your laser printer alone. Because if you're using any of them to address envelopes or make labels, you're making things hard on yourself. After all, you could be using a Smart Label Printer.

These little machines feature powerful, easy-to-use software. So you can print labels in an instant without exiting an application whether you're working with a Windows™, DOS or Macintosh® system.

Smart Label software can automatically capture an address or other text and graphics from your computer screen. Print it instantly, or save it to the built-in database. It even lets you personalize labels with graphics, bar codes, digital images, and a selection of over 50 fonts. In short, this unique software makes Smart Label Printers the time-saving, hassle-free, fool-proof solution for labeling everything from envelopes to name tags, file folders to floppy disks.

The Smart Label Printer Pro™ and the Smart Label Printer Plus®. Making labels any other way just wouldn't be smart.

For more information, call 1-800-688-0817.

**SII** ●  
Seiko Instruments

## 9 Blackship Atlantis

REVIEWED: February 1995

**PROS:** Great price, solid 486DX2-66 performance, multimedia and home office features

**CONS:** Ordinary one-year warranty, no weekend tech support, cable-crowded interior

## 10 DTK Quin-35

NEW THIS MONTH

**PROS:** Eminently affordable Pentium-90 system with good expandability

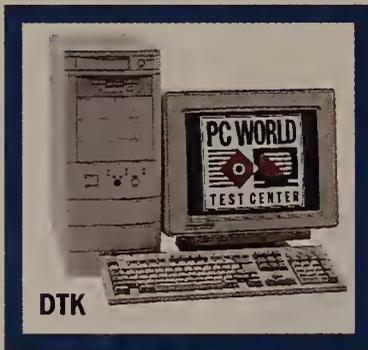
**CONS:** A bit slow for a Pentium-90, no weekend technical support, 14-inch monitor

If you think that being on a budget rules out getting a Pentium-90, better think again. The DTK Quin-35 Pentium-90 costs an astonishingly affordable \$2200. That price and the solid array of basic features are the primary factors that vault this system onto our Budget Desktops Top 20. In truth, if the Quin-35 had recorded slightly faster performance scores, it would have added a Power Desktops Top 20 appearance to its accomplishments.

Don't get the idea this system is slow; it's not. But its level of speed is much closer to that of a fast Pentium-66 than of a snappy Pentium-90. Still, when you factor in the cost, you come up with a very good price/performance ratio. And if you expanded the RAM and the secondary cache, you would likely net a modest boost in performance. But while performance is an important factor in evaluating a budget PC, it does not carry the same weight as in the power category.

The configuration is sound on this medium-size tower unit. You get 8MB of RAM expandable to 128MB and 256K of secondary cache expandable to a hefty 1MB. The 14-inch monitor isn't a great match for the 2MB PCI graphics controller. There's little to criticize in the expandability department, because DTK left a lot of room for upgrades: an impressive seven free drive bays, along with three free 16-bit ISA slots, two free PCI slots, and an additional slot that takes either an ISA or a PCI card. Two free SIMM sockets leave ample space for adding RAM. Furthermore, the sockets are very easy to reach—a significant point for Quin-35 buyers, who are likely to want to bring their standard 8MB of RAM up to 16MB, more typical of a Pentium, as one of their first upgrades.

DTK offers a solid two-year warranty, though toll-free technical support is available only 9 hours a day and just during the week. The lack of weekend tech support is likely to affect you most if you're buying the system for home or home-office use. DTK enjoys above-average scores in our monthly reliability and service fax-back polls. The prime factor keeping this system from a higher rating is its lack of sterling Pentium-90 performance. But on balance it's still a relatively fast budget system and—for the dough—a very fine value.



## 11 Polywell Poly 560MPC

REVIEWED: January 1995

**PROS:** Low price for a PC with fast Pentium-60 performance and a voice fax-modem

**CONS:** 14-inch monitor definitely on the small side for a system with this much power

## 12 Micron 4100 PCI Magnum

REVIEWED: August 1994

**PROS:** Outstanding DX4-100 performance for a great price, great problem-solving gives

Micron one of the highest service ratings on the Budget Desktops Top 20

**CONS:** Ordinary one-year warranty, 14-inch monitor small for a powerful PC

## 13 Axik Ace Cache 466 VG2 Cutlass

REVIEWED: March 1995

**PROS:** Impressively low price, good expandability, good 486DX2-66 performance

**CONS:** Ordinary one-year warranty, small 14-inch monitor

## 14 Quantex Q486DX2/66MM-4

REVIEWED: June 1994

**PROS:** Great price for 486DX2-66 multimedia system, a nice home PC

**CONS:** One-year warranty, lack of free SIMM sockets makes RAM upgrades pricey

## 15 Diamond DT DX4/100 VIP

REVIEWED: March 1995

**PROS:** Price unusually low for a DX4-100 system

**CONS:** So-so warranty, no weekend technical support

## 16 Quantex QP5/60W-2

REVIEWED: December 1994

**PROS:** Ample configuration with many extras, good Pentium-60 performance

**CONS:** Ordinary one-year warranty, no weekend technical support

## 17 MIS M5P/60

REVIEWED: September 1994

**PROS:** Very attractive price for a multimedia Pentium-60 system

**CONS:** 270MB hard drive small for a Pentium system—especially a multimedia PC

## 18 Micron Family MPC LPX

REVIEWED: December 1994

**PROS:** Good DX2-66 performance, complete multimedia configuration, company rated top problem-solver by customers responding to our Reliability and Service Monitor

**CONS:** Ordinary one-year warranty, 14-inch monitor small for a multimedia PC

## 19 MIS M466T

REVIEWED: July 1994

**PROS:** Highly expandable 486DX2-66 compact at a very attractive price

**CONS:** 14-inch monitor, one-year warranty, 270MB hard drive, mediocre performance

## 20 USA Flex PT-60 Tower

REVIEWED: November 1994

**PROS:** Solid Pentium-60 performance, expandable, three-year warranty

**CONS:** Some fairly minor cable clutter inside full-size tower case



{ *your computer.* }

{ *your computer with Paradise.* }

*regular. standard. plain.*

Some people are completely satisfied with things the way they come.

But there are those who want extra large, upgrades, the works.

And there's a word for people like this:

*Paradise.*

*Paradise* is a full line of graphics accelerators and sound card products that help you get the most out of your computer, both *now* and in the *future*.

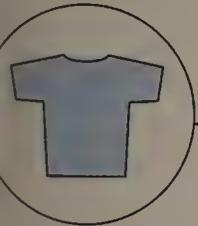
With easily installed *Paradise* upgrades, you can start enjoying *brilliant color*, *amazing digital sound* and *impressive speed*.

What's more, *Paradise* performance products support the widest range of operating systems and applications software with *guaranteed compatibility*.

So if you're looking for something better, come to *Paradise*.  
And to get here, call 1-800-832-4778.



Western Digital Corporation®



**FREE T-SHIRT!** See store for details.



**PARADISE**  
*where everything is better.*

© 1994 Western Digital Corporation. Paradise is a trademark of Western Digital.

Circle 179 on reader service card

We've sold **64 Million**

disc drives **SO FAR.**





(Of course, the accuracy depends on how old this magazine is.)

Your disc drive needs have never really changed. You always wanted speed. Value's always been critical. And above all, you've insisted on reliability.

It looks like you've learned exactly where to get it all. Because for 15 years now—since we first invented the disc drive for the PC—the world's most demanding computer users have relied on Seagate.

No company has sold more drives. No one has brought more innovation to data storage. And for providing a vast selection of disc drives, no other manufacturer can equal Seagate.

To get more information, please call 408-438-8111 and request any Seagate product literature you'd like.

 **Seagate**

THE DATA TECHNOLOGY COMPANY

Seagate and the Seagate logo are registered trademarks of Seagate Technology, Inc. © 1994 Seagate Technology, Inc.

**Circle 209 on reader service card**

# THE TOP 20

PC WORLD



## NOTEBOOK PCs

**1** Toshiba T4900CT  
Pentium-75 luxury model.

POWER SYSTEMS			Last month	Months on chart	First reviewed	Overall rating	Performance rating	Reliability/service rating	Price	CPU	RAM (MB)	Hard drive (MB)
<b>1</b>		Toshiba T4900CT	1	2	Mar 95	93	54	80/73	\$7479	Pentium-75	8	810
<b>2</b>		AST Ascentia 910N	—	1	current	92	42	66/66	\$5349	DX4-75	8	510
<b>3</b>		AT&T Globalyst 250	—	1	current	92	51	74/76	\$5154	DX4-75	8	540
<b>4</b>		Compaq LTE Elite	2	7	Oct 94	91	37	83/82	\$5179	DX4-75	8	340
<b>5</b>		Dell Latitude XP 4100CX	—	1	current	91	42	69/73	\$4799	DX4-100	8	340
<b>6</b>		Toshiba T4850CT	3	2	Mar 95	90	41	80/73	\$5280	DX4-75	8	505
<b>7</b>		MidWest Micro Elite Pentium SoundBook Plus	—	1	current	90	67	<sup>3</sup>	\$5599	Pentium-90	16	720
<b>8</b>		IBM ThinkPad 755CE	—	1	current	90	48	78/77	\$7624	DX4-100	24	540
<b>9</b>		Austin Business Audio 4/100	4	5	Dec 94	89	54	72/62	\$4548	DX4-100	16	525
<b>10</b>		IBM ThinkPad 755CD	—	1	current	88	46	78/77	\$7599	DX4-100	8	540
BUDGET SYSTEMS			Last month	Months on chart	First reviewed	Overall rating	Performance rating	Reliability/service rating	Price	CPU	RAM (MB)	Hard drive (MB)
<b>1</b>		WinBook XP DX2/50	1	3	Feb 95	90	28	<sup>3</sup>	\$1999	486DX2-50	8	255
<b>2</b>		Dell Latitude 450C	29	1	Jan 95	90	30	69/75	\$2668	486DX2-50	8	525
<b>3</b>		Acom Patriot 4000	9	2	Mar 95	84	35	<sup>3</sup>	\$2240	486DX2-66	8	325
<b>4</b>		Austin Business Audio 4/75	3	3	Feb 95	84	36	72/62	\$2689	DX4-75	8	250
<b>5</b>		WinBook XP DX4/75	4	3	Feb 95	84	37	<sup>3</sup>	\$2259	DX4-75	8	125
<b>6</b>		CTX EzBook	2	2	Mar 95	84	28	<sup>3</sup>	\$1978	486DX2-50	8	340
<b>7</b>		BSI GN8549D	6	4	Jan 95	84	29	<sup>3</sup>	\$2285	DX4-100	4	340
<b>8</b>		Arm ArmNote TS30M	5	2	Mar 95	83	26	<sup>3</sup>	\$1549	486DX2-50	8	200
<b>9</b>		ZDS Z-Star EX	7	3	Feb 95	83	29	67/75	\$2248	486DX2-50	8	200
<b>10</b>		AT&T Globalyst 200 (486SX-33)	8	5	Dec 94	82	26	74/76	\$2570	486SX-33	8	170



<sup>1</sup> CA = color active, CD = color dual-scan, CP = color passive, MD = mono dual-scan, MP = mono passive. <sup>2</sup> Call 800/434-4495 (for payment by Visa or MasterCard) or 900/993-2972 (for phone billing) and use the fax reprint numbers listed above to order fax copies of system reviews. You can order three systems' capsule reviews (\$4.95), a single capsule review plus features table and test report (\$4.95), an entire month's review (\$9.95), and a list of all systems tested by the PC World Test Center (\$4.95).

**2** AST Ascentia 910N

Fast DX4-75 has 8-hour battery.



**1** WinBook XP DX2/50  
\$1999 for steady monochrome.

**2** Dell Latitude 450C

Color DX2-50, 525MB hard drive.



Weight (pounds)	Battery life (hours)	Screen type/size <sup>1</sup>	Vendor contact number	Fax reprint number <sup>2</sup>	Reader service no.	Comments
7.6	3:57	CA/10.4"	800/334-3445	3677	686	Good at everything, and a huge hard drive to boot.
7	7:55	CA/10.4"	800/876-4278	3683	687	Longest-running battery we've seen.
8.6	3:49	CA/9.5"	800/225-5627	3684	688	Heavy, fast, and relatively cheap.
7.2	6:32	CA/9.5"	800/345-1518	3650	689	Slowest Top 20 power note, but has a good battery.
7.4	6:46	CA/9.5"	800/613-3355	3685	690	Very good battery life and service.
8.4	4:22	CA/10.4"	800/334-3445	3678	691	Decent and relatively inexpensive, but slow.
8.2	3:28	CA/10.4"	800/728-8582	3686	692	Desktop-level performance—best desktop replacement.
7.4	3:33	CA/10.4"	800/426-2968	3687	—	IBM quality and classic power features with no compromises.
8.4	3:08	CA/9.4"	800/331-1501	3661	693	Cheapest Top 20 power notebook.
8.6	3:11	CA/10.4"	800/426-2968	3688	—	Built-in CD-ROM drive in a full multimedia setup.
6.8	6:46	MP/9.5"	800/468-2162	3673	694	Cheap, with good battery life and features.
7	3:13	CD/9.5"	800/613-3355	3689	695	Big price cut takes solid color notebook onto chart.
8.4	3:30	CP/10.3"	800/898-2665	3682	696	Big screen. Price cut moves it up chart.
8.2	3:57	CD/9.5"	800/331-1501	3676	697	Very fast budget notebook with good audio.
7	5:39	CP/9.4"	800/468-2162	3674	698	Fastest budget notebook, but slow for a DX4-75. Tiny hard drive.
7.2	4:25	MP/9.5"	800/888-9052	3680	699	Large hard drive, low price, otherwise ordinary.
7.6	3:55	CD/9.5"	800/872-4547	3670	700	Very slow for a DX4-100, needs more RAM.
7.2	4:05	MP/9.5"	800/765-1767	3681	701	Cheapest budget notebook is also among the slowest.
6.8	3:09	CP/9.5"	800/533-0331	3675	702	Modular notebook with optional multimedia kit.
7	4:45	CD/9.4"	800/225-5627	3665	703	Nice design, but needs a bigger hard drive.

You can also order next month's Top 20 charts and capsule reviews in advance (The Top 20 Flash Report, \$9.95). Touch-tone phone required.  
<sup>3</sup> Insufficient customer responses to our Reliability and Service Monitor to gauge service performance and reliability. For our overall evaluation, we use an average rating derived from all companies for which we have received fewer than 125 responses.

For more information about all products in this table, circle reader service no. 907.

## Top 20 Notebooks

THIS MONTH'S POWER NOTEBOOKS SHOW THE biggest turnover among our Top 20 divisions. Six of the ten top units are new, featuring innovative design and technology: The AST Ascentia 910N and Dell Latitude XP 4100CX provide lithium-ion batteries, the latest and greatest in rechargeable power. And two new ThinkPads feature IBM's Black Matrix screens, which are easier to view under bright lights. Last month's top Best Buy, the Toshiba T4900CT Pentium-75, repeats; the number two AST Ascentia 910N is new. We also boast our first Pentium-90—a record-setting speedster from MidWest Micro.

You don't expect budget notebooks—with their \$2750 ceiling—to offer the bells and whistles of their upscale power cousins. There are no Pentiums or active-matrix color screens here. One unit has a DX4-100 CPU, however, and a couple have DX4-75s. The rest have 486DX2-66, 486DX2-50, and 486SX-33 processors. Performance figures are generally less impressive, although any budget notebook here will handle basic Windows computing easily. And it's not all sackcloth and ashes: Just three budget notes lack a color screen, and despite generally smaller storage, Dell's Best Buy Latitude 450C DX2-50 provides a hefty 525MB hard drive. No new budget notebooks break into our Top 20 this month; the field is monopolized by systems reviewed during the last several months. For the third consecutive time, the top budget Best Buy goes to the WinBook XP DX2/50.

## Power Notebooks



### Toshiba T4900CT

REVIEWED: March 1995

**PROS:** Great performance, 10.4-inch color active screen, giant hard disk, three-year warranty

**CONS:** Price among the highest on our Notebooks Top 20

Hot-performing 7.6-pound Pentium-75 notebook has 8MB of RAM, an 810MB hard drive, a 10.4-inch color active screen, 65,536 simultaneous colors, a 4-hour battery life, and 24-hour technical support.



### AST Ascentia 910N

NEW THIS MONTH

**PROS:** Nearly 8-hour battery life, lithium-ion battery, fast DX4-75 performance, small and light

**CONS:** Fairly high price for a DX4-75, some looseness in the screen hinge

If you think there is nothing truly new under the sun, you probably haven't seen the latest AST Ascentia models. Like other members of the Ascentia family, this unit is made expressly for power users. It takes a fast 75-MHz DX4 processor and a spacious, good-looking 10.4-inch active-matrix color display and backs them up with a rock-solid power configuration: 8MB of RAM expandable to a healthy 32MB, an easily removable 510MB hard drive upgradable to 720MB, and a PCMCIA Type III slot that alternatively accepts two Type II cards (or even a single Type I card, if you still happen to have one around). As you might deduce from the system's excellent standing on our chart, the good news continues. The Ascentia 910N is loaded with all the right stuff, including a number of high-class touches that contribute to its lofty \$5349 street price—and to its Best Buy rating.

The Ascentia 910N's performance leaves little to be desired, even if today you generally expect the notebook speed standard to be carried by a DX4-100. This system ran our tests noticeably faster than a typical DX4-75 notebook. It even outperformed some of the slower DX4-100 systems we've had in for evaluation—a feat that goes to show you can't judge a system's performance entirely by its processor. The vendor's implementation and configuration are at least as important to system performance. And despite the high-octane processor, the system's battery life is fantastic. This svelte portable dazzled us with a run-down time of nearly 8 hours—close to the best we've seen from any notebook computer. The model's lithium-ion battery pack provides more power capacity for its weight than the more common nickel-cadmium (NiCd) and nickel-metal-hydride (NiMH) cells. You don't have to drain lithium-ion cells fully before recharging them, you can use them three times longer than NiMH batteries before you have to replace them, and they drain much more slowly when stored with a full charge. However, lithium-ion batteries cost up to twice as much as NiMH batteries and four times more than NiCd cells. But clearly you receive value in kind.

As beautiful a unit as it is, the AST Ascentia 910N isn't completely flawless. For example, the display hinge on our test unit was somewhat loose. As a result, even a bout with relatively routine in-flight turbulence could jolt the screen closed. And for our fingers, the Track-Point-like pointing device mounted in the keyboard was uncomfortably stiff for prolonged use. However, these quirks strike us as relatively minor, and the Ascentia 910N's slight 7-pound traveling weight and tiny battery adapter make it a joy to carry. AST's one-year warranty is minimal these days, but in contrast to many other companies AST allows you to extend the warranty for another year for \$99. Furthermore, AST's 24-hour toll-free technical support line is available seven days a week. With all these advantages, the Ascentia 910N quickly wound up as one of our favorite notebooks. It earns an outstanding power rating and a solid power Best Buy.



AST

# CUT THE CORD.

**SUPERIOR RADIO TECHNOLOGY**



**TREAT YOURSELF TO SOME DESKTOP FREEDOM WITH MOUSEMAN CORDLESS.**

**☞ SUPERIOR RADIO TECHNOLOGY WORKS RIGHT THROUGH DESKTOP CLUTTER.**

**☞ REDUCE TEDIOUS MENU COMMANDS TO A MOUSE CLICK.**

**☞ NO MORE DOUBLE CLICKING! ASSIGN ALL DOUBLE CLICKS TO A SINGLE CLICK.**

**☞ MOST COMFORTABLE MOUSE YOU'VE EVER TRIED, OR RETURN IT WITHIN 60 DAYS.**

**☞ PLUG AND PLAY READY.**

**☞ THREE YEAR WARRANTY.**

**☞ TO RECEIVE PRODUCT INFORMATION BY FAX, CALL 1-800-245-0000, EXT. 4014.**

*Radio receiver tucks away anywhere on the desktop.*



Circle 241 on reader service card

## 3 AT&T Globalyst 250

NEW THIS MONTH

**PROS:** Excellent performance, good design, strong reliability and service, integrated audio

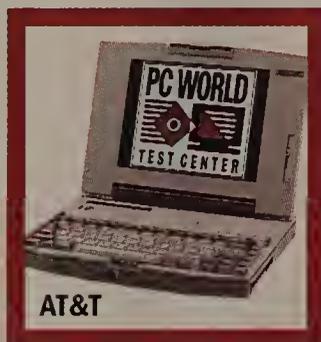
**CONS:** 8.6-pound traveling weight rather heavy for a notebook without a CD-ROM drive

To rate high on our shortlist, a power notebook needs more than performance; it also needs excellent expandability, a superior display, and solid ergonomic features. And it must be backed by impeccable service and reliability. The AT&T Globalyst 250 meets every one of these tough criteria, meanwhile complementing its blazing performance with outstanding design. As a result, the \$5154 Globalyst 250 is a near Best Buy.

Built around a 75-MHz DX4 processor and 8MB of RAM expandable all the way to 40MB, this handsome notebook is one of the fastest DX4-75s we've tested. It tore through our application tests much faster than a typical DX4-75 notebook and even significantly outpaced most DX4-100 notebooks. With its removable 540MB hard drive, integrated audio, and Type III PCMCIA slot, the Globalyst 250 is equipped to handle applications into the future. Although its 9.5-inch active-matrix color display is smaller than the 10.5-inch screens of many high-end notebooks, color and viewability are outstanding. We did find the system's 8.6-pound traveling weight cumbersome on long hikes. Battery life tested just shy of 4 hours, a respectable showing.

The Globalyst 250 excels with its comfortable design, including a front-mounted trackball that has good roll resistance and gives you excellent control and comfort. The quiet keyboard is nicely laid out, and we were impressed by the system's generally solid construction and the easy access to all the removable components.

AT&T boasts an excellent three-year warranty with 24-hour toll-free technical support seven days a week. A year of free on-site service surpasses most notebook vendors' policies, while the company enjoys fine ratings in our monthly fax-back polls on service quality. If you need that kind of blue-chip support along with serious performance *and* the fine feature comforts of a well-designed notebook, the AT&T Globalyst 250 should be right up your alley.



## 4 Compaq LTE Elite

REVIEWED: October 1994

**PROS:** Solid DX4-75 performance; first-rate design and screen, 6.5-hour battery life, PCMCIA hot-swapping, Plug and Play compatible, 7.2-pound weight, great support

**CONS:** Innovative trackball placed in screen panel was inconsistently responsive

## 5 Dell Latitude XP 4100CX

NEW THIS MONTH

**PROS:** Outstanding design, great battery life, lithium-ion battery, good reliability and service

**CONS:** Readers report long waits on hold on sales lines

In the last few years, we saw Dell stumble and temporarily abandon its notebook marketing. The company returned with AST-manufactured notebooks while it retooled its own manufacturing efforts almost

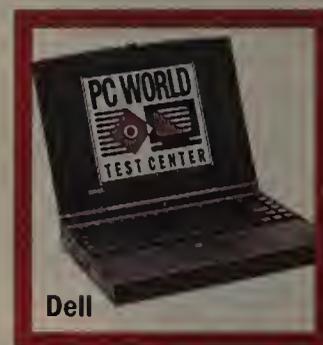
from scratch. Now we're seeing the new Dell notebooks, and they impress us greatly with their thoughtful, innovative design and state-of-the-art components.

The \$4799 Dell Latitude XP 4100CX is an outstanding example of the notebook maker's art. While performance is merely decent, the hot-swappable battery pack's 6.75-hour life is remarkable for a unit with a DX4-100 processor. Contributing to this feat is lithium-ion technology, a breakthrough we've seen on only a few elite power notebooks so far. Lithium-ion batteries provide more power capacity for the weight than NiCd and NiMH cells. And you can recharge lithium-ion cells even if they aren't completely discharged. If you try this trick regularly with NiCd and NiMH batteries, you'll reduce their short- and long-term life. Furthermore, lithium-ion batteries last over three times as long as NiMH batteries before they need replacement, and they drain much more slowly when stored with a full charge. That's an advantage you'll prize if you use your notebook's battery only periodically—say, once every week or two. No more will you find yourself running short of power on the commuter special because your battery has dipped to half charge while sitting in the closet.

The Latitude's configuration is the stuff solid, basic power notebooks are made of: 8MB of RAM (36MB max), a 340MB removable hard drive, a 1MB local bus graphics controller, and a 9.5-inch active-matrix color screen. While not as large as the displays on most luxury models, the screen still yields sharp, vivid color graphics. Given Dell's considerate price, we think you'll find the somewhat smaller screen size a pretty fair compromise. Dell fills out the basics with a PCMCIA Type III slot that alternatively accepts two Type II devices.

Every design element in this light 7.4-pound notebook stands out. For example, the keyboard has large keys, a logical layout, and full key travel. Only the function keys on the top row are reduced in size—a logical compromise. The keystroke click should satisfy desktop users without being obtrusive. The front-and-center trackball is also a pleasure, making a believer of one reviewer who previously felt uncomfortable with anything but a standard desktop mouse. In addition, port cover doors retract out of harm's way when open and snap securely back in place when closed. Finally, this handsome black unit's overall fit and finish is excellent.

The online documentation is so clear and complete, you'll probably never crack the manual. Readers responding to our monthly reliability and service fax-back poll give Dell a solid endorsement. Responsive tech support is available 24 hours a day, seven days a week. And the XP line comes with a great three-year warranty. This is a great little business notebook, and even in this exalted company it falls just shy of a Best Buy. With all its features and fine points, it places high among the power units on our Top 20 Notebooks chart.

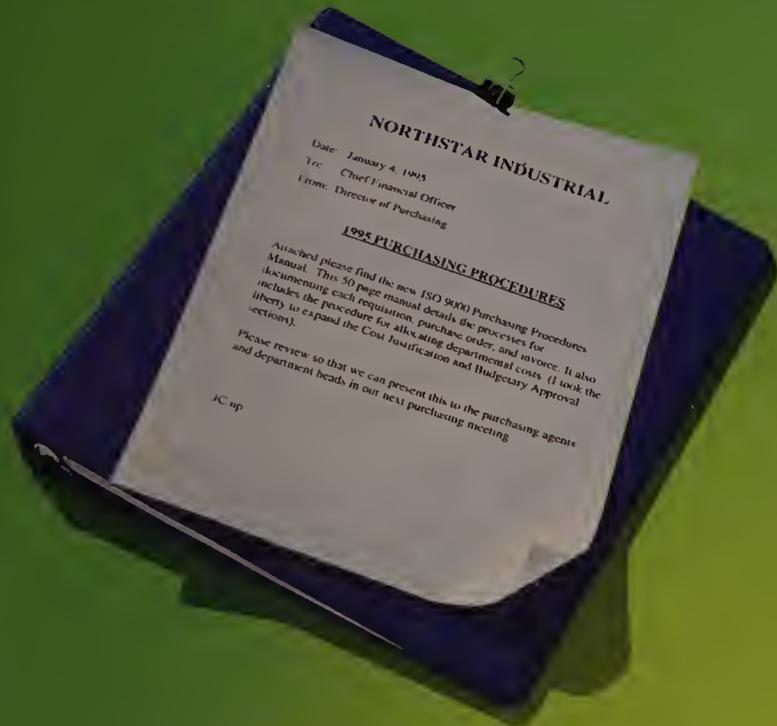


## 6 Toshiba T4850CT

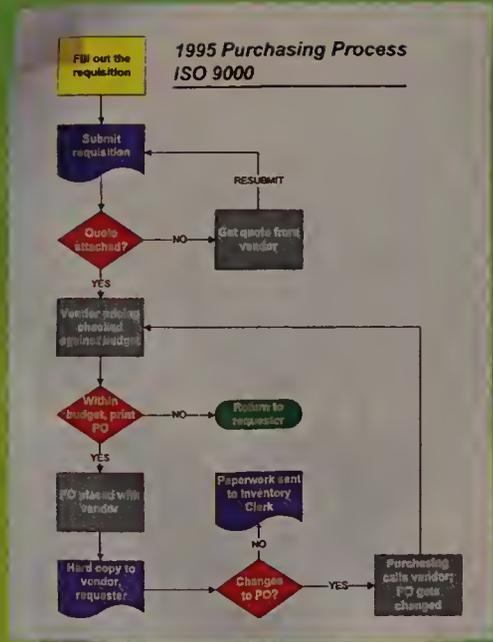
REVIEWED: March 1995

**PROS:** Good DX4-75 performance, fine color-active display, 4.3-hour battery, super support

**CONS:** Relatively high price for a DX4-75, 8.4-pound traveling weight quite heavy



or

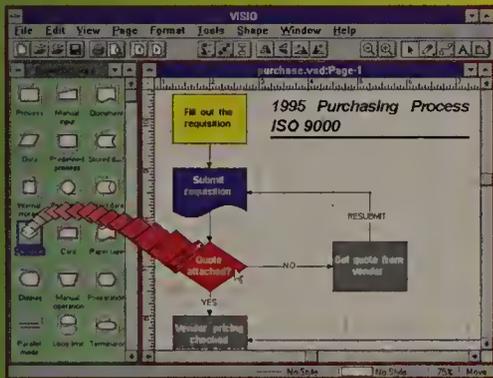


(Sort through a fifty page plan to get to the point.)

(Get to the point with a single Visio diagram.)

**AND NOW A FEW WORDS ON WHY WORDS ALONE ARE NOT THE MOST EFFECTIVE WAY TO CONDUCT DAY TO DAY BUSINESS.**

With over 20,000 words in the English language at our disposal, why do we have such a hard time expressing ourselves? Some things are just better seen than described. Try explaining how the purchasing process works in your company in a hundred words or less. You get the picture. Until now, however, it wasn't practical to work with drawings and diagrams. You either needed an artist or talent. Not anymore. Visio<sup>®</sup> is the first software that enables everyone to effortlessly work with drawings and diagrams. In fact, Visio is so practical that companies like Motorola, Smith-Barney and many others consider it an essential desktop tool.



Packed with 22 stencils and over 750 business SmartShapes<sup>®</sup>, Visio 3.0 can do it all. You won't have to draw a thing to create quality management diagrams, flow charts, organization charts, network diagrams, floor plans, and more. Just drag and drop shapes from stencil to page, add text. You're done. Visio automatically connects the shapes for you. And you can customize or create SmartShapes to meet your



© 1995 Shapeware Corp. All trademarks referenced herein are held by their respective companies. All rights reserved.

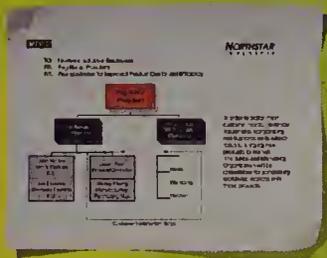
unique drawing needs. Nothing could be easier.

The world's top Windows<sup>™</sup> engineers made it simple. In fact, it's the only drawing software specifically designed for Windows.

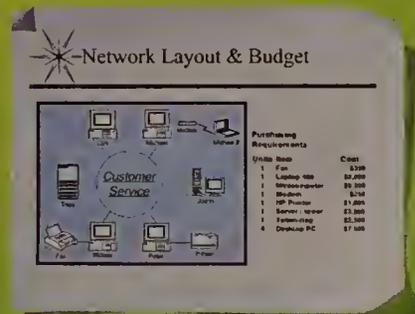


PC Computing voted Visio 3.0 as one of their MVPs of the year.

So it even looks easier. Visio's toolbars and menus can change to mimic either Microsoft<sup>®</sup> Office or Lotus<sup>®</sup> SmartSuite. And only Visio fully supports OLE 2.0 so you can create and edit drawings within your favorite Windows packages.



We're not suggesting you give up word processors and spreadsheets. No way. You just shouldn't be limited by them. If you want to conceive and convey ideas in the fastest, simplest way known, you need a third tool in your toolbox. Visio.



Order today or visit your favorite reseller. Our 60-day unconditional money-back guarantee ensures you'll love it.



**Business drawing for people whose business isn't drawing.™**

**7 MidWest Micro Elite Pentium SoundBook Plus**

**NEW THIS MONTH**

**PROS:** Fastest portable we've ever tested, a fine desktop replacement

**CONS:** Unpredictable vertical control with TrackPoint-style pointing device

If typical notebooks aren't quick enough for you, check out the MidWest Micro Elite Pentium SoundBook Plus. This \$5599 laptop workstation is the fastest notebook we've ever tested. With a 90-MHz Pentium processor, 16MB of RAM expandable to 40MB, and a 256K secondary cache, the Elite Pentium blazed through our benchmark tests about a third faster than a typical DX4-100 system. In fact, its performance is comparable to what you'd expect from a Pentium-



**MidWest Micro**

66 desktop, making it a great choice for those who do heavy statistical and graphics work on the move. In our tests, this unit managed over 3 hours of battery life using its power management—not half bad for a notebook that has a power-chomping Pentium CPU and a secondary cache.

Equipped with a large 720MB hard drive and a brilliant 10.4-inch active-matrix color screen, the Elite Pentium also includes a PCMCIA Type III slot, which alternatively accepts two Type II cards. Furthermore, the system comes equipped with built-in audio and an infrared I/O port that lets you share data with similarly equipped units.

The Elite Pentium is well constructed, with a sturdy keyboard, and hinges and covers that resist breaking. Our only complaint: Vertical cursor control was frustratingly unpredictable with the TrackPoint-like pointing device. You get a terrific three-year warranty with toll-free tech support six days a week. If you demand raw power, the MidWest Micro Elite Pentium SoundBook Plus delivers. No wonder this gutsy unit is a shoo-in for power honors on our Notebooks Top 20.

**8 IBM ThinkPad 755CE**

**NEW THIS MONTH**

**PROS:** Superior support, 24MB of RAM, excellent color screen, lots of extras

**CONS:** Highest price on Notebooks Top 20

Any student of recent PC history knows that IBM has helped define notebook state of the art. The new IBM ThinkPad 755CE is no exception. This unit's large, crisp 10.4-inch active-matrix color screen with Black Matrix technology provides viewability under very bright conditions, and it's driven by a 1MB VL bus graphics controller that delivers 65,536 simultaneous colors. In addition, IBM provides a software-upgradable 14.4-kbps voice fax-modem, as well as infrared communications for wireless data exchange with similarly equipped units.



**IBM 755CE**

This classy little 7.4-pound note is configured to the limit: It comes with an impressive 24MB of RAM and a generous 540MB hard drive. A PCMCIA Type III slot alternatively accepts two type II devices. The keyboard design is as good as you'll find, and IBM's TrackPoint is

the pointing device par excellence. Battery life is reasonably good at 3.5 hours, and the Windows power management utility makes for easy adjustments. You get a ton of preinstalled utilities and online introductory offers.

You'll have to go a long way to beat IBM's three-year warranty, round-the-clock tech support, and 1-day turnaround on factory repairs. The 30-day IBM money-back guarantee comes only when you buy direct (otherwise talk to your dealer), and IBM will sell you an on-site service policy for the first year for a mere \$40. At a heady \$7624 (\$975 less if you buy it with only 8MB of RAM), you pay plenty to catch this ThinkPad's act. Its presence on our Top 20 Notebooks chart attests to how good a show you get for your money.

**9 Austin Business Audio 4/100**

**REVIEWED:** December 1994

**PROS:** Fast DX4-100 performance, 16MB of RAM, 525MB hard drive, built-in sound

**CONS:** So-so 3-hour battery life, muted color active screen

**10 IBM ThinkPad 755CD**

**NEW THIS MONTH**

**PROS:** Strong performance, built-in CD-ROM drive, color-rich screen, lots of extras

**CONS:** Price among the highest on Notebooks Top 20

If you want the latest features in a notebook with quick DX4-100 performance, check out IBM's ThinkPad 755CD. This unit comes ready to put on a show, with 8MB of RAM and a full complement of multimedia peripherals, including an easy-access CD-ROM drive positioned unobtrusively below the left side of the keyboard. In addition, IBM integrates 16-bit sound, speakers, and a microphone. You also get a large, crisp 10.4-inch active-matrix color screen (with Black Matrix technology) driven by a 1MB VL bus graphics controller delivering 65,536 colors. IBM provides a software-upgradable 14.4-kbps voice fax-modem, as well as infrared communications hardware and software that enables wireless data exchange with similarly equipped units.



**IBM 755CD**

Portability is very good, considering the extra hardware a multimedia notebook requires. Ready to travel with CD-ROM drive, floppy drive, and power supply, the ThinkPad 755CD weighs a reasonable 8.6 pounds. This expandable unit is replete with fine design touches. You can swap the internal CD-ROM drive for a floppy drive or an additional PCMCIA Type III slot. The unit comes standard with an integrated Type III slot that alternatively accepts two Type II cards. You can also upgrade the removable 540MB hard drive to an 810MB model. Video ports and software enable you to capture video from your television or video camera and play it back. A docking station and television tuner are available for extra cost, in case you have any loot left after paying the stiff \$7599 this beauty of a notebook costs.

Like other ThinkPads, the 755CD uses IBM's comfortable keyboard design and TrackPoint pointing device. Battery life is an acceptably solid 3.25 hours, and you can conveniently access all power management settings in Windows. The 21 preinstalled utilities and intro-

**prodigy@10hrs//:free+e.z.internet/.access**

**(Get 10 free hours\* with easy Internet access)**

By the way, our real e-mail address is: [getlive@prodigy.com](mailto:getlive@prodigy.com)

Name \_\_\_\_\_ 32517893

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Signature \_\_\_\_\_ Phone Number (\_\_\_\_) \_\_\_\_\_

**Or Call 1-800-PRODIGY ext. 407**

Please send me software in the following format: (please check only one)

DOS 3.5    DOS 5.25    Windows™ 3.5    Macintosh 3.5

\*10 free hours\* includes a membership fee and 10 hours of service in the 1st month. Usage beyond trial offer will result in charges. New Terms of Service charged for accuracy. Credit card required. Phone charges may vary. Limited time offer subject to change, and orders are subject to acceptance. Please allow approximately two weeks for shipment of your PRODIGY system. The offer is available to new members only and limited to one member per household.



**PRODIGY**  
Service

# If you want the Web, you want PRODIGY.

(Not AOL. Not CompuServe. Not Microsoft.)

The Net is sizzling and there's no better way to surf it than with PRODIGY's New Web Browser for Windows™. Explore the exploding World Wide Web with full multimedia capabilities including audio and images.

Exchange opinions and information with 20 million people around the world (all of whom will probably become close personal friends) with Internet Usenet Newsgroups.

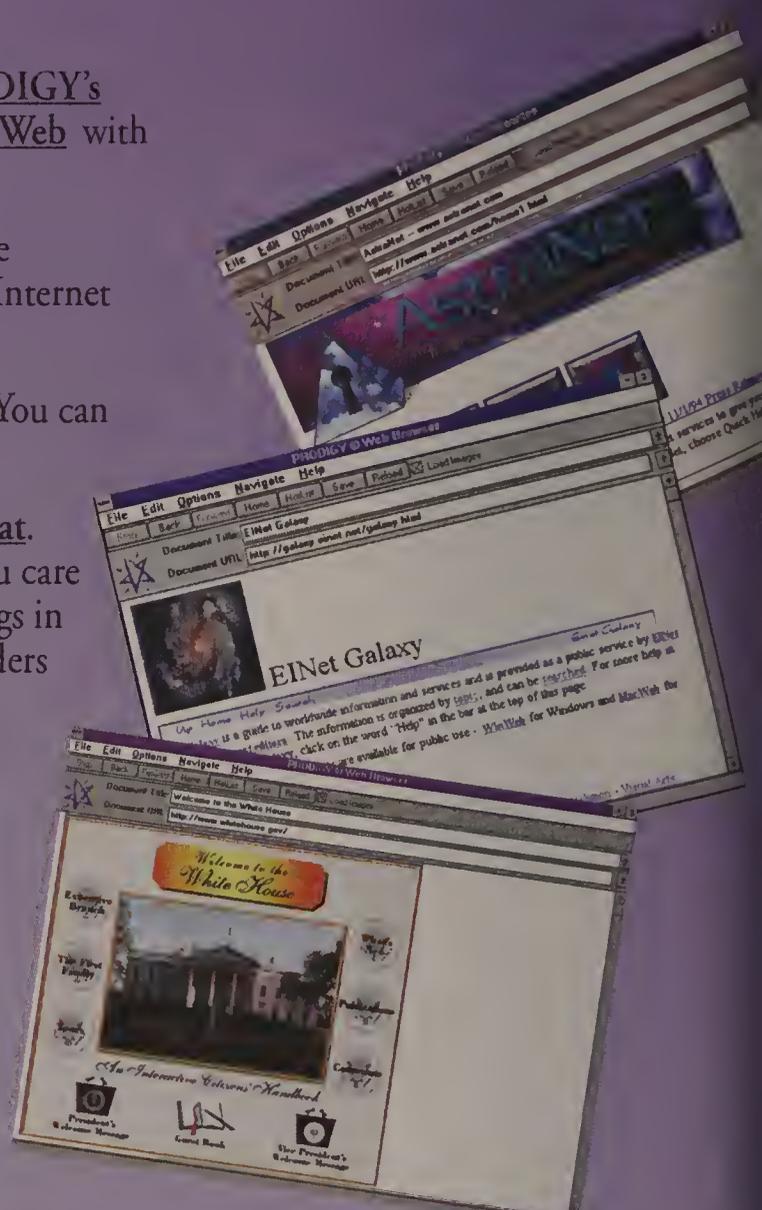
Send an E-Mail to Kansas City, Kentucky, Kashmir and Kamchatka. (You can also send E-Mails to places that don't start with a K.)

When you've had enough of the Net, settle into the best Real-Time Chat. Talk to people who care about what you care about no matter what you care about. PRODIGY Chat also gives you the chance to talk up the Bigwigs in the Cyberbiz--magazine editors, columnists and the other thought leaders who have those cushy jobs and lunch a lot.

There's no extra charge for high speed access. (Why should we penalize you for having a better modem?) And 14,400 bps is available in most areas to placate New Yorkers and other really impatient types.

Some stuff you'll find Only on PRODIGY and nowhere else. Good stuff like Strategic Investor,<sup>SM</sup> Sports Illustrated for Kids and more.

Try us for 10 free hours. 'Cause if you haven't tried PRODIGY lately, you haven't tried PRODIGY.



As of 1/25/95, PRODIGY is the only major online service provider that gives you full multimedia access to the World Wide Web. The PRODIGY Web Browser is available only for Windows™. Windows is a trademark of Microsoft Corporation. PRODIGY is a registered trademark of Prodigy Services Company. © 1995 Prodigy Services Company.



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST CLASS MAIL/PERMIT NO. 98/JOHNSON CITY, TN

POSTAGE WILL BE PAID BY ADDRESSEE



PO BOX 8667  
GRAY TN 37615-9967



## To get your 10 free hours

Call us at 1-800-PRODIGY. But before you call, you should check your screen because you may already have the PRODIGY software on your computer. If you prefer to E-Mail us, our address is [getlive@prodigy.com](mailto:getlive@prodigy.com). And you can also download the software right off the WWW location: [www.astranet.com](http://www.astranet.com). After your 10 free hours, PRODIGY is only \$9.95 for five hours.

**Call 1-800-PRODIGY  
ext. 407**



# PC WORLD

# SAVINGS VOUCHER

**YES!** I want to get PC WORLD for less than \$1.92 per issue and save 61% off the cover price. Plus, I'll get the exclusive PC WORLD Windows tips mouse pad — complete with the most often used File Manager and Windows commands — **FREE** with my order.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY/STATE/ZIP \_\_\_\_\_

Savings based on annual newsstand price of \$59.40. Please allow 6 to 8 weeks for delivery of your first issue. Foreign orders add \$46 postage. Canadian and Mexican orders add \$20 postage.

4LKA6

**IMPORTANT:** Return this voucher to start your subscription and receive a FREE BONUS!

**ANNUAL COVER PRICE**

**\$59.40**

**YOUR ONE-YEAR RATE**

**\$22.97**

**YOUR FREE BONUS**

**WINDOWS TIPS  
MOUSE PAD**

**MAIL THIS CARD OR CALL 800-825-7595 ext. 501 — FAX 415-882-0936**

**Please  
Accept Your  
FREE GIFT!**



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

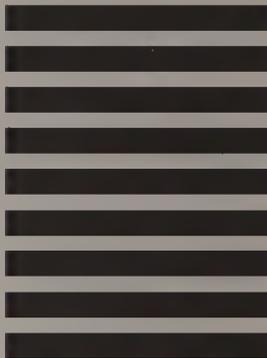
**BUSINESS REPLY MAIL**

FIRST CLASS MAIL PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

**PC WORLD**

Subscription Department  
P.O. Box 51833  
Boulder, Colorado 80321-1833



ductory offers from online services include the Compel PE presentation program, FaxWorks Voice communications package, Lotus Organizer, Taxi mapping software, Reuters Money Network online investment software, and CoSession Host remote access package.

IBM's three-year warranty, 24-hour toll-free technical support, and 1-day turnaround on factory repairs are tops. If you buy direct, you get a 30-day money-back guarantee and can obtain a year of on-site service for \$40. Considering its price, this unit will have to stay on the wish list for bargain hunters. If you can afford it, however, the ThinkPad 755CD stands as a unique and impressive value.

## Budget Notebooks

### **WinBook XP DX2/50**

REVIEWED: February 1995

**PROS:** Exceptional battery life, trim dimensions, light weight, low price, modular design

**CONS:** Can't hot-swap battery, ordinary one-year warranty could be better

Monochrome screen helps keep \$1999 DX2-50 notebook's power consumption low—the battery runs for 6.75 hours. Decent performer with 14.4-kbps fax-modem, 255MB hard drive, and 8MB of RAM.

### **Dell Latitude 450C**

REVIEWED: January 1995

**PROS:** Fast for a DX2-50 notebook, high-speed fax-modem, great documentation

**CONS:** Battery life only so-so, one-year warranty doesn't compare well with other top vendors'

Lightweight 7-pound DX2-50 costs just \$2668 with dual-scan color screen, 525MB hard drive, 14.4-kbps PCMCIA fax-modem, and 8MB of RAM. Recent addition to Dell's notebooks shows elegant design.

### **Acom Patriot 4000**

REVIEWED: March 1995

**PROS:** Great DX2-66 performance, integrated audio, 10.3-inch color screen

**CONS:** Dull screen colors, 8.4 pounds, no set turnaround policy on repairs

### **Austin Business Audio 4/75**

REVIEWED: February 1995

**PROS:** Fast DX4-75, audio features, 4-hour battery, 24-hour tech support

**CONS:** One-year warranty, 8.2 pounds, limited power management

### **WinBook XP DX4/75**

REVIEWED: February 1995

**PROS:** Quick DX4-75 performance, low price, 7 pounds, 5.6-hour battery

**CONS:** Undersize 125MB hard drive, can't hot-swap battery, one-year warranty

### **CTX EzBook**

REVIEWED: March 1995

**PROS:** Excellent price, decent DX2-50 performance, 7.2 pounds, 340MB hard drive

**CONS:** Nonstandard monitor connector, no weekend tech support

### **BSI GN8549D**

REVIEWED: January 1995

**PROS:** Outstanding price for fairly lightweight 7.6-pound DX4-100 notebook with respectable 4-hour battery life and integrated audio features

**CONS:** Slow for a DX4-100, ordinary one-year warranty, no weekend tech support

### **Arm ArmNote TS30M**

REVIEWED: March 1995

**PROS:** Low price for a DX2-50 with a good monochrome screen, light 7.2-pound weight, 4-hour battery, integrated audio, three-year labor warranty

**CONS:** One-year warranty on parts falls short of three-year labor coverage

### **ZDS Z-Star EX**

REVIEWED: February 1995

**PROS:** Good DX2-50 performance, modular design, 6.8 pounds, three-year warranty

**CONS:** Top hard drive option is just 340MB, no weekend technical support, 3-hour battery life just so-so, 200MB standard hard drive minimal for Windows computing

### **AT&T Globalyst 200 (486SX-33)**

REVIEWED: December 1994

**PROS:** Good 486SX-33 performance, wonderful design qualities, easy-to-adjust power management features, better-than-average budget color dual-scan display, solid 4.75-hour battery life, three-year warranty with one year of on-site service

**CONS:** 170MB hard drive quite small even for bargain-priced notebook

#### TEST REPORT Battery Life



**AST Ascentia 910N**

**7:55**

**Dell Latitude XP 4100CX**

**6:46**

**AT&T Globalyst 250**

**3:49**

**IBM ThinkPad 755CE**

**3:33**

**MidWest Micro Elite Pentium SoundBook Plus**

**3:28**

**IBM ThinkPad 755CD**

**3:11**



**BEST BUY**

Time in hours:minutes.

#### Methodology

We drain and fully recharge the battery and set power-saving options to match a consistent profile where possible. Office workers type at regular intervals in Word for Windows, saving periodically. Notebooks are rotated among workers to even the workloads. We report the time elapsed until the notebook shuts itself off.

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



## ROM & ROLL

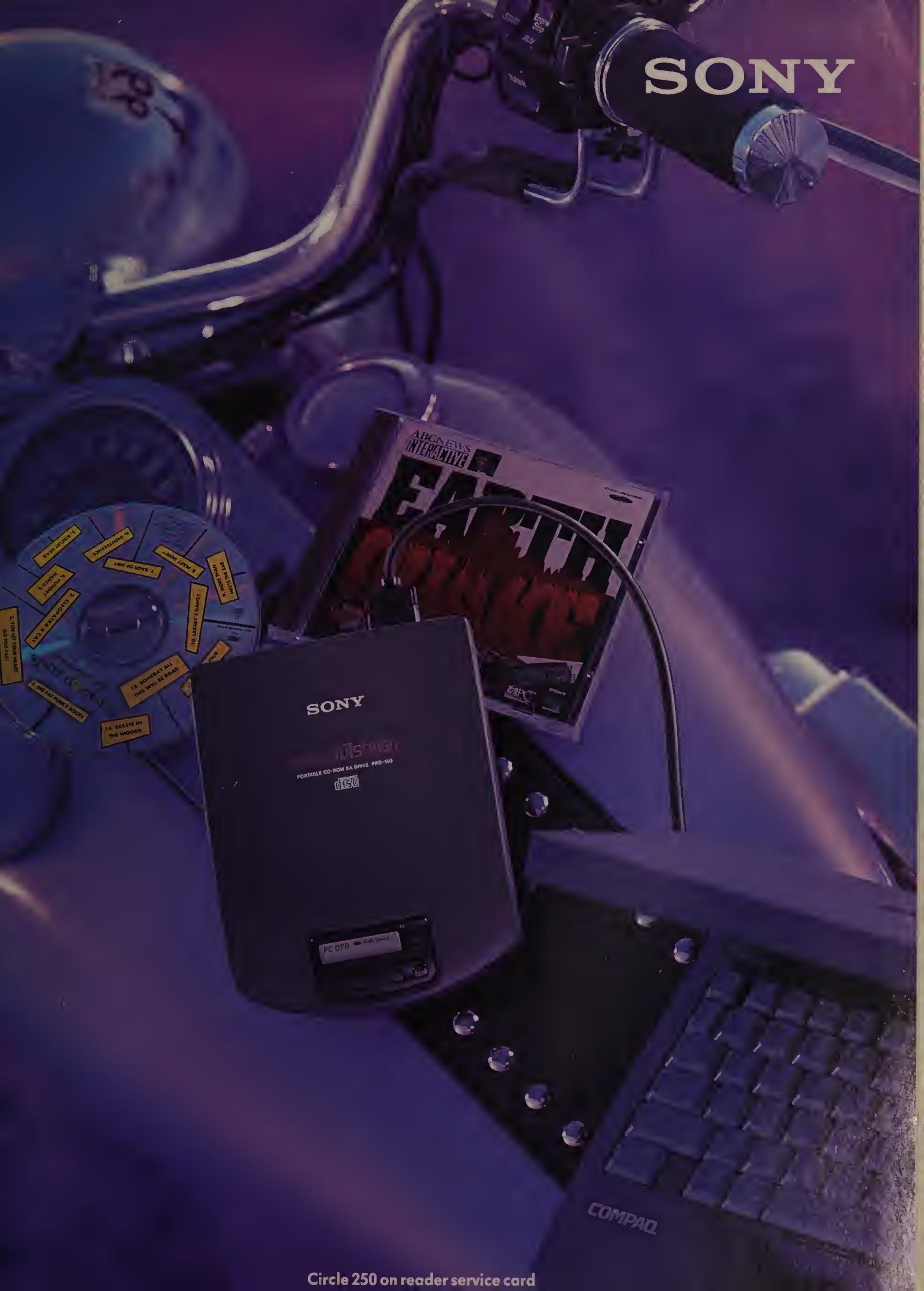
Own the road. With the new portable Sony CD-ROM Discman player.

Plug this double-speed drive into practically any PC-compatible notebook for powerful multimedia on-the-go. And with 16-bit digital sound for music CDs, you can tour with your favorite bands. From rock to rocket science, the Sony CD-ROM Discman takes you down whatever road you want.

For the dealer nearest you, call 1-800-766-9236.



SONY



- 1. YOU'LL NEVER GET TO THE TOP (LAST)
- 2. TOULLETTOUR HURST
- 3. CLEARWATER & CAN
- 4. HUNTER & HUNTER
- 5. SPORTS HEAD
- 6. NIGHTMARE
- 7. MASS OF DEBT
- 8. MAFY JANE
- 9. THE NEW YORK
- 10. LARRY'S BANGS
- 11. THE NEW YORK
- 12. SOMEDAY ALL THIS WILL BE ROAD
- 13. BEASTS BY THE WOODS
- 14. THE NEW YORK

SONY

CD-ROM DRIVE  
PORTABLE CD-ROM EA DRIVE PRO-150  
CD-ROM DRIVE

PC QPR High-Speed

COMPAQ

Circle 250 on reader service card

**FEATURES COMPARISON This Month's Contenders—Desktops**

● = Yes ○ = No  
n/a = not applicable

Standard features	Blackship P90 Neptune	DTK Quin-35	USA Flex PT-90 Power System
Street price as of 1/6/95 <sup>1</sup>	\$2960	\$2200	\$4114
CPU	Pentium-90	Pentium-90	Pentium-90
CPU or upgrade socket	320-pin ZIF	320-pin ZIF	320-pin ZIF
BIOS	AMI 1.00.10.AX1 8/23/94	Award 4.50G 10/18/94	AMI 1.00.10.AX1 8/23/94
Installed/maximum RAM (MB)	16/128	8/128	16/128
30-pin or 72-pin SIMMs	72-pin	72-pin	72-pin
SIMM sockets/number free	4/2	4/2	4/2
Secondary RAM cache installed/maximum (K)	256/256	256/1024	256/256
Case style	compact	tower	tower
Free externally accessible 3½-inch/5¼-inch drive bays	1/0	1/3	0/3
Free internal 3½-inch/5¼-inch drive bays	0/1	3/0	0/0
Free 32-bit EISA/16-bit ISA/8-bit ISA expansion slots	0/3/0 <sup>2</sup>	0/4/0 <sup>2</sup>	0/3/0 <sup>2</sup>
PCI or VL bus slots/number free	3 PCI/2 <sup>2</sup>	4 PCI/3 <sup>2</sup>	3 PCI/2 <sup>2</sup>
Hard disk	Quantum Maverick 540A	IBM DSAA	Western Digital Caviar 31000
Size (MB)	540	545	1080
Adapter	integrated	integrated	integrated
Floppy drives (MB)	combo	1.44	1.44
Graphics adapter	Spider 64 PCI	Cirrus Logic OEM	Stealth 64 PCI
Installed VRAM/DRAM (MB)	0/2	0/2	2/0
Monitor	ADI MicroScan 4GP	ADI/Craftika	Mag MX17F
Screen diagonal (Inches)/dot pitch (mm)	15/.28	14/.28	17/.26
Modem speed for fax/data (kbps)	14.4/14.4	n/a	14.4/14.4
Sound board	Sound Blaster	○	Sound Blaster 16
CD-ROM drive	Teac CD 55A	○	Teac CD 55A
Data transfer rate (K/sec)	600	n/a	600
Parallel/serial/mouse/SCSI ports	1/2/0/0	1/2/0/0	1/2/0/0

**Service and support**

	1	2	3
Warranty (years)	1	2	3
30-day money-back guarantee	●	○ <sup>3</sup>	●
On-site service first-year price	free	free	\$49
Repair turnaround policy (days)	2	2	3
Daily toll-free phone support (hours)	10	9	24
Weekend support	○	○	●
BBS	●	●	●
Fax	●	●	●

<sup>1</sup> All systems priced as configured with DOS 6.0 or later version, Windows 3.1, VGA and color monitor, keyboard, and mouse or other pointing device. Price is direct or based on vendor estimate.

<sup>2</sup> One less 16-bit slot available when all PCI slots are filled, and vice versa.

<sup>3</sup> System replacement only.

# System Snapshots

These desktops and notebooks were tested and reviewed along with the others, but didn't score high enough to reach the Top 20 charts.

## Alaris EnergySmartPC BL3X100

**PROS:** Three-year warranty, multimedia configuration

**CONS:** Performance is slow for the price

IBM Blue Lightning III-100 minitower, math coprocessor, 8MB RAM, 540MB hard drive. \$2697; Alaris, 800/317-2348, 510/770-5700 Reader service no. 704

## Alaris Nx586 P80

**PROS:** Solid performance, three-year warranty

**CONS:** Small hard drive, spartan configuration

NexGen 586 P80-based compact performs like Pentium-66; 8MB RAM, small 280MB hard drive. \$2300; Alaris, 800/317-2348, 510/770-5700 Reader service no. 705

## Aspen Portalite

**PROS:** Good performance, large hard drive

**CONS:** Hefty 8.2-pound traveling weight

DX4-100 power notebook, 8MB RAM, 540MB hard drive, so-so 3-hour battery life, solid color active display. \$4505; Aspen Computer, 800/472-3273, 716/626-0315

Reader service no. 706

## AST Advantage Adventure 8066d

**PROS:** Software bundle, three-year warranty

**CONS:** Fairly slow

Cyrix 486DX2-66 minitower, 8MB RAM, 540MB hard drive, tons of software, 14.4-kbps fax-modem, top support. \$2219; AST Research, 800/876-4278, 714/727-4141

Reader service no. 708

## AT&T Globalyst 525

**PROS:** Quick, great design, excellent three-year warranty

**CONS:** Somewhat pricey for a 486DX2-66

Expandable 486DX2-66 minitower model, 8MB RAM, 340MB hard drive, CD-ROM drive, superior design qualities, outstanding service rating from readers, three-year warranty. \$2322; AT&T Global Information Solutions, 800/225-5627, 513/445-5000

Reader service no. 709

# Revolutionizing an industry happens once in a lifetime. Okay, maybe twice.



*COLOR LASER COPIER 800*

**W**hen the world asked for color, Canon responded with the revolutionary Color Laser Copier. Today Canon is answering your color needs with another visionary advance—the Canon Color Laser Copier 800 and 700 color solutions.

This extraordinary breed of copiers produces images so sharp, so vivid, they're virtually indistinguishable from the original. And Canon copiers are highly productive, too.

They make a swift seven full-color copies per minute on a variety of materials including card stock.

Auto-feed OHP transparencies efficiently by cassette. Make multi-page documents effortlessly with the optional Recirculating Document Feeder and Sorter. And the Color Laser Copier 800 is the first color copier ever to offer *Auto Duplexing* for automatic two-sided copies.

You can also transform these exceptional color copiers into ultrafast, full-color, plain paper printers with optional print controllers and Intelligent Processing Units (IPUs), so you can make brilliant color output directly from your computer or network.

For a free *Color Solutions Guide* that will tell you more about the Canon Color Laser Copier 800 and 700, as well as the rest of our color copier line, call 1-800-OK-CANON. When the rest say you can't, Canon says you can.

**N O W**  
**Y O U**  
**C A N**

**Canon**

**AT&T Globalyst 580****PROS:** Quick performance, great design, three-year warranty**CONS:** Pricy for a Pentium-60, no free drive baysPentium-60 minitower, 8MB RAM, 540MB hard drive, CD-ROM drive, great design qualities and fit and finish, super service rating from readers, three-year warranty, just one free full-length slot. \$2868; *AT&T Global Information Solutions*, 800/225-5627, 513/445-5000 **Reader service no. 830****Axik Ace Power 90 MPC****PROS:** Fast performance, 32MB RAM, 1030MB hard drive,

high-quality multimedia components

**CONS:** Ordinary one-year warrantyPentium-90 tower model has power users' configuration, with amazing 32MB RAM, robust 1030MB SCSI hard drive, and quality 4MB PCI graphics controller. \$4200; *Axik Computers*, 800/234-2945, 408/735-1234 **Reader service no. 710****BSI NP3700 CD-Sound Notebook****PROS:** Integrated CD-ROM drive, speakers, microphone**CONS:** 9.2-pound traveling weight heavy even for a CD-ROM-equipped notebook, deficient support packageDX4-100 multimedia notebook, 8MB RAM, 345MB hard drive, sound, speakers, less than 3 hours of battery life, good color passive screen with support for 65,536 colors, no toll-free technical support. \$3110; *Broadax Systems*, 800/872-4547, 818/442-0020**Reader service no. 711****Dell OptiPlex XMT575****PROS:** Multimedia configuration, fine design**CONS:** A bit pricy, slow for a Pentium-75Nicely put together Pentium-75 tower PC, 16MB RAM, 540MB hard drive, CD-ROM drive, 14.4-kbps fax-modem. \$3195; *Dell Computer*, 800/613-3355, 512/338-4400**Reader service no. 712****Digital Venturis 560****PROS:** Excellent support, three-year warranty**CONS:** Poor expandability, small monitorPentium-60 compact, 8MB RAM, 540MB hard drive, robust design with good fit and finish, small 14-inch monitor. \$2598; *Digital Equipment*, 800/722-9332, 603/884-4304**Reader service no. 713****DTK DTN-4T100P****PROS:** Attractive price**CONS:** Heavy, one-year warranty, no weekend tech supportDX4-100 notebook with 8MB RAM, 340MB hard drive, dual-scan color screen, battery life under 3 hours, relatively heavy 8.8-pound weight; almost managed a Top 20 ranking. \$2600; *DTK Computer*, 800/289-2385, 818/810-0098 **Reader service no. 714****FutureTech FutureMate FM366T****PROS:** Strong Pentium-66 performance, one-day turnaround policy on service center repairs**CONS:** 10.6-pound traveling weight, short, 2.25-hour battery life, no weekend technical supportPowerful Pentium-66 notebook, 16MB RAM, 330MB hard drive, active-matrix screen, 16-bit sound, speaker, microphone. \$4249; *FutureTech Systems*, 800/275-4414, 201/488-4414 **Reader service no. 715****Hewlett-Packard OmniBook 600C****PROS:** Quick, 5.6 pounds, three-year warranty**CONS:** Cramped keyboard, small hard driveDX4-75 subnote, 8MB RAM, 170MB hard drive, 8.5-inch color passive display, 65,536 colors, infrared comm port for wireless data transfer with similarly equipped systems. \$3300; *Hewlett-Packard*, 800/443-1254, 503/715-2004 **Reader service no. 716****IBM Personal Computer 330 DX2-66****PROS:** Speedy for DX2-66, three-year warranty**CONS:** Pricy for modest configuration, 14-inch monitor486DX2-66 compact, 8MB RAM, 365MB hard drive, small 14-inch monitor, just one free drive bay, super reliability rating, outstanding three-year warranty. \$2191; *IBM*, 800/426-2968, 914/766-1900**Insight PCI P90 MM****PROS:** Quadruple-speed Plextor SCSI CD-ROM drive, 28.8-kbps fax-modem, high-quality multimedia components**CONS:** Pricy, shaky service ratingsHigh-performance Pentium-90 tower with loads of expandability, 16MB RAM, 1080MB hard drive, 4MB VRAM, 17-inch monitor, and a quad-speed Plextor SCSI CD-ROM drive that's one of the best such drives you can buy, bar none. \$4499; *Insight Direct*, 800/998-8011, 602/902-1176 **Reader service no. 717****Micro Express MicroFlex-PCI/P901****PROS:** Quick Pentium-90 performance, eight free drive bays**CONS:** Piecemeal documentation, low service scoresReasonably expandable Pentium-90 tower, 8MB RAM, 540MB hard drive; Micro Express hardware rates well, but readers tend to give the company below-average service scores. \$2598; *Micro Express*, 800/989-9900, 714/852-1400 **Reader service no. 718****MidWest Micro Elite P5-90 Home PC****PROS:** Hot performer, software bundle, three-year warranty, would make a solid home-office machine or deluxe home PC**CONS:** Some internal cable clutterPentium-90 minitower, reasonably expandable, 16MB RAM, generous 780MB hard drive, quality array of multimedia components, 15-inch monitor, 14.4-kbps fax-modem. \$3075; *MidWest Micro*, 800/728-8582, 513/368-2309 **Reader service no. 719****Mitsuba Premier System-90****PROS:** Multimedia configuration, 17-inch monitor**CONS:** Subpar performance, no toll-free tech supportPentium-90 compact, 16MB RAM, 730MB hard drive, 14.4-kbps fax-modem, jumbo 17-inch monitor, solid two-year warranty; quad-speed Teac CD-ROM drive performed more like fast double-speed drive in *PC World* tests. \$3300; *Mitsuba*, 800/648-7822, 909/392-2000 **Reader service no. 720****NEC Versa M/75HC****PROS:** Quick, 800 by 600 screen, three-year warranty**CONS:** High price, no weekend tech supportQuick DX4-75 notebook didn't miss our Top 20 by much. It features 8MB RAM, a 540MB hard drive, a color active screen, and the quality design typical of NEC. This unit has the first 800 by 600 screen we've ever seen on a notebook computer. \$5399; *NEC Technologies*, 800/632-4636, 508/264-8000**Reader service no. 721****Netis N590****PROS:** Good performance and expandability**CONS:** Ordinary one-year warrantyNo-frills Pentium-90 tower, 8MB RAM, 730MB hard drive, difficult access to RAM. \$2340; *Netis Technology*, 800/577-7526, 408/263-0368 **Reader service no. 722**



For 1200 dpi printing,  
there's really only  
one choice.

There are, however,  
several options.

The new Optra family  
from Lexmark.

At Lexmark, we don't limit top-of-the-line features to our top-of-the-line printers.

The new Optra™ family is the first full line of network-ready, desktop laser printers capable of true 1200 x 1200 dpi\* printing. Each Optra laser printer, from the extremely affordable 12 ppm Optra R to the extremely powerful 16 ppm Optra Lxi, delivers four times the sharpness of ordinary 600 dpi printers.

No matter which option you choose, our breakthrough MarkVision™ printer utility is standard. Users and LAN managers can control and configure every Optra on the network, and monitor job statistics, right from Windows™ or Macintosh workstations.

PostScript™ Level 2 and enhanced PCL® 5 emulations are also standard. Which means that every Optra prints incredibly sharp graphics and beautiful, crisp text from virtually any of your applications.

All this value and innovation from Lexmark, a former division of IBM. For more information, call us at **1 800 891-0399, ext. 24.**

Thanks to the new Optra family, you can choose the best printer, rather than the best compromise.

**LEXMARK™**

ADVANCING THE ART OF PRINTING



\*1200 dpi requires additional memory for complex files. Lexmark products are manufactured under the ISO 9002 approved quality process. The Energy Star emblem does not represent EPA endorsement of any product or service. Lexmark, Optra and MarkVision are trademarks of Lexmark International, Inc. NetWare is a registered trademark of Novell, Inc. Windows is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Inc. PostScript is a trademark of Adobe Systems Incorporated, which may be registered in certain jurisdictions. PCL is a registered trademark of Hewlett-Packard Company. © 1995 Lexmark International, Inc.

Circle 178 on reader service card

## FEATURES COMPARISON This Month's Contenders—Notebooks



● = Yes ○ = No

n/a = not applicable

	AST Ascentia 910N	AT&T Globalyst 250	Dell Latitude XP 4100CX	IBM ThinkPad 755CD	IBM ThinkPad 755CE	MidWest Micro Elite Pentium SoundBook Plus
<b>Standard features</b>						
Street price as of 1/6/95 <sup>1</sup>	\$5349	\$5154	\$4799	\$7599	\$7624	\$5599
CPU	DX4-75	DX4-75	DX4-100	DX4-100	DX4-100	Pentium-90
Traveling weight (pounds) <sup>2</sup>	7	8.6	7.4	8.6	7.4	8.2
Width x depth x height (inches)	11.5 x 8.5 x 2	11.6 x 9.5 x 2.3	11 x 8.8 x 2	11.6 x 8.4 x 2.3	11.8 x 8.4 x 2	11 x 8.6 x 2.1
Installed/maximum RAM (MB)	8/32	8/40	8/36	8/40	24/40	16/40
Secondary RAM cache installed/maximum (K)	0/0	0/0	0/0	0/0	0/0	256/256
Installed/maximum hard disk (MB)	510/720	540/810	340/810	540/810	540/810	720/720
Removable hard disk	●	●	●	●	●	○
Display type	color active	color active	color active	color active	color active	color active
Screen diagonal (inches)	10.4	9.5	9.5	10.4	10.4	10.4
Maximum colors or gray shades of LCD	256	256	65,536	65,536	65,636	256
Simultaneous LCD and external monitor	●	●	●	●	●	●
Highest resolution of external monitor	1024 x 768	1024 x 768	1024 x 768	1024 x 768	1024 x 768	1024 x 768
Mouse/keyboard ports	1/1	1/0 <sup>3</sup>	1/0 <sup>3</sup>	1/0 <sup>3</sup>	1/0 <sup>3</sup>	1/0 <sup>3</sup>
Cursor keys In Inverted T	●	●	●	●	●	●
Dedicated page-control keys	●	●	●	●	●	●
All 12 function keys dedicated	○	●	●	●	●	●
Standard <Ctrl> and <Alt> layout	○	○	○	●	●	○
Built-in pointing device	●	●	●	●	●	●
Modem speed for fax/data (kilobits per second)	n/a	n/a	n/a	14.4/14.4	14.4/14.4	n/a
Docking station available	●	●	●	●	●	●
PCMCIA slot Type II/III	0/1 <sup>4</sup>	0/1 <sup>4</sup>	0/1 <sup>4</sup>	0/1 <sup>4</sup>	0/1 <sup>4</sup>	0/1 <sup>4</sup>
<b>Power management</b>						
Supports APM	●	●	●	●	●	●
Type of battery	lithium ion	NiMH	lithium ion	NiMH	NiMH	NiMH
Suspend button	●	●	●	●	●	●
Suspends when case closed	●	●	●	●	●	○
<b>Service and support</b>						
Warranty (years)	1	3	3	3	3	3
30-day money-back guarantee	○	●	●	●	●	●
On-site/replacement service first-year price	○	free	free	\$40	\$40	○
Repair turnaround policy (days)	2	2	2	1	1	○
Daily toll-free phone support (hours)	24	24	24	24	24	11
Weekend support	●	●	●	●	●	● <sup>5</sup>
BBS	●	●	●	●	●	●
Fax	●	●	●	●	●	●



<sup>1</sup> All notebooks priced as configured with DOS 6.0 or later version, Windows 3.1, VGA monochrome or better display, and mouse or other pointing device. Price is direct or based on vendor estimate.

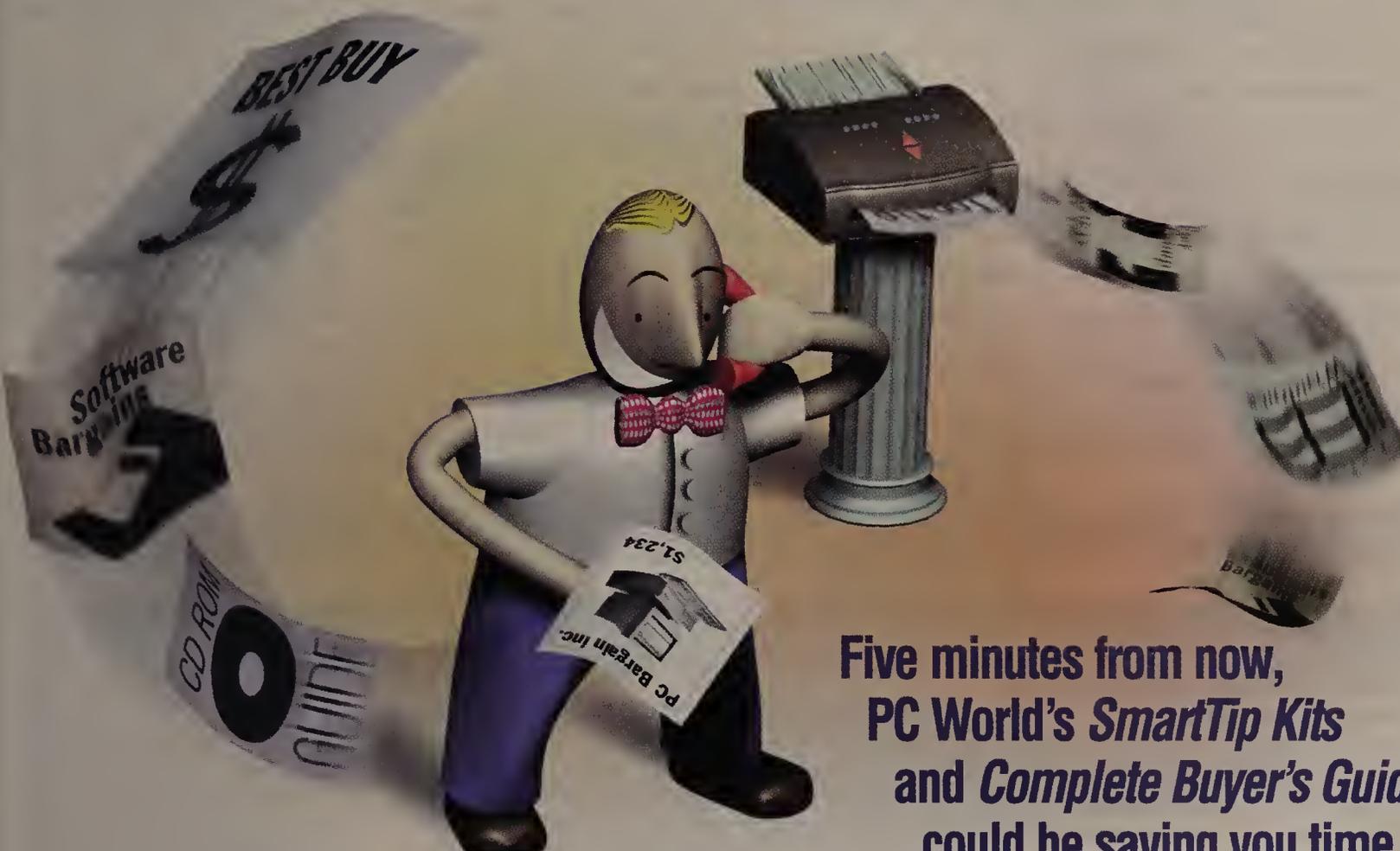
<sup>2</sup> Includes computer, adapter, power cord, and external floppy drive if notebook has one.

<sup>3</sup> Mouse port doubles as keyboard port.

<sup>4</sup> Type III slot alternatively holds two Type II devices.

<sup>5</sup> Saturdays only.

# Tips by Fax!



Five minutes from now,  
**PC World's SmartTip Kits**  
 and **Complete Buyer's Guides**  
 could be saving you time  
 and money!

## Complete Buyer's Guides

Expert advice from PC World editors to make sure you don't go wrong with your next purchase. Learn the inside story on how to find the best values and how to make the smartest choices.

### CD ROM Buyer's Guide, #430

Reviews of the newest and hottest CD ROMs for business, entertainment and education. *Entire Package: \$16.95, #430*

- Great CD ROMs for Fun and Profit, 5 pgs, \$5.95 #405
- The Titles: From Shareware to Leisureware, 2 pgs, \$3.95 #406
- Summer Sizzlers: CD ROM Titles, 3 pgs, \$4.95 #407
- DISCoROMA: Reviews of the latest CD ROMs, 4 pgs, \$5.95 #408
- Best CDs of '94: Gifts on a Silver Platter, 9 pgs, \$9.95 #410

### Guide to Multimedia Hardware, #420

Tips for buying and setting up a multimedia PC with reviews of CD ROM drives and sound boards. *Entire Package: \$13.95, #420*

- Multimedia, Step by Step, 2 pgs, \$3.95 #402
- How to Avoid a Multimedia Mugging, 2 pgs, \$3.95 #403
- Sound Advice: Audio Components for PCs, 4 pgs, \$5.95 #404
- Best CD ROM Drives and Sound Boards, 12 pgs, \$11.95 #409

### Complete Guide to Buying a PC, #200

Everything you need to know about how to buy your next PC: system reviews, buying tips, company reliability and service ratings. Plus a How to Buy instant reference card. *Entire Package: \$11.95 #200*

- Brand Name vs. No Name, 5 pgs, \$5.95 #203
- Reliability and Service, 2 pgs, \$3.95 #204
- Buying Locally: Smart Tips, 4 pgs, \$4.95 #206
- Best Products of 1994, 5 pgs, \$5.95 #207
- Smart Buyer Tips, 4 pgs, \$5.95 #208

## SmartTip Kits

A roundup of the best tips from PC World's editorial library, guaranteed to make you more productive. Order complete kits—or individual items—faxed to you within minutes.

### Top Tips for Windows 3.1, #100

A compilation of expert trouble-shooting advice, performance-boosting tips, and undocumented shortcuts. *Entire Package \$16.95 #100*

- 80 Windows Tips... and a few for DOS too, 9 pgs, \$9.95 #102
- Windows Detective: Solving Error Messages, 5 pgs, \$6.95 #103
- Tips to Supercharge Windows, 7 pgs, \$7.95 #104

### Personal Finance, #900

Expert advice on investment software, tax filing and personal finance management. In-depth reviews of the best software tools that make the management of your finances easier. *Entire Package: \$13.95 #900*

- Easy Money: Personal Finance Software, 6 pgs, \$7.95 #901
- Tax Software: Many Happy Returns, 6 pgs, \$7.95 #902
- 15 Ways to Leave Your Broker, 6 pgs, \$7.95 #903

### Going Online, #450

What you need to go online: a no-nonsense guide to the simplest, cheapest and fastest routes. *Entire Package: \$11.95 #450*

- The Internet, 8 pgs, \$7.95 #451
- Fax Modems: The Right Connections, 4 pgs, \$5.95 #452
- AOL & CompuServe: Keywords at a Glance, 2 pgs, \$3.95 #453

## Product Spotlight

The PC World Top 20—it's the most authoritative monthly PC systems review and ranking. Now you can receive it by fax a month ahead of publication. Order one of the PC World Top 20 Flash Reports and you'll immediately receive the inside information on the hottest new systems. The May Top 20 Flash Reports become available on March 22.

### To Order Individual Top 20 Flash Reports

1. Call the 800 number below.
2. Press **2** on your touch-tone keypad.
3. Select from the following:

- Power Desktops Flash Report, 10 pgs, \$9.95
- Budget Desktops Flash Report, 10 pgs, \$9.95
- Notebooks Flash Report, 10 pgs, \$9.95

### Subscribing to the Top 20 Flash Reports

You can also subscribe to a Top 20 Flash Report and receive it regularly by fax on the day that PC World's Top 20 reviews and rankings are completed—almost a month ahead of publication.

Call the 800 number below and press **3** to receive a Top 20 Flash Report subscription form. *Subscription prices are as follows:*

- 3-month trial subscription:
 

Single Flash Report (Power, Budget, or Notebook)	\$25
All three Flash Reports	\$49
- 6-month subscription:
 

Single Flash Report (Power, Budget, or Notebook)	\$45
All three Flash Reports	\$119
- 12-month subscription:
 

Single Flash Report (Power, Budget, or Notebook)	\$79
All three Flash Reports	\$159

*If you subscribe to all three reports for 6 or 12 months, you'll receive a FREE Microsoft Sound System, complete with 16-bit sound board, microphone, and headphones (\$179 retail value).*

**PC WORLD**  
**CONNECT**

**1-800-434-4495**

## Packard Bell CD TV

**PROS:** Nice multimedia bundle, TV card

**CONS:** Weak performance, pricey for a 486DX2-66, fairly low service rating, one-year warranty

DX2-66 compact, 8MB RAM, 540MB hard drive, big CD-ROM bundle, basic 2400/9600 fax-modem. \$2400; Packard Bell Electronics, 800/733-5858 Reader service no. 723

## Polywell Poly DX4-100

**PROS:** Good DX4-100 performance, multimedia configuration

**CONS:** Some internal cable clutter

DX4-100 minitower, 15 CD-ROMs, good warranty. \$2415; Polywell Computers, 800/999-1278, 415/583-7222 Reader service no. 724

## Texas Instruments TravelMate 4000M/100

**PROS:** Multimedia capabilities, 7.2-pound traveling weight

**CONS:** One-year warranty, no weekend tech support

DX4-100, 8MB RAM, 540MB hard drive, color active screen, sound, 2.75-hour battery, optional \$849 docking station with SCSI CD-ROM drive. \$6499; Texas Instruments, 800/848-3927, 817/771-5856 Reader service no. 725

## Twinhead Slimnote 5100T

**PROS:** Fast DX4-100 notebook, Touchpad pointing device

**CONS:** One-year warranty, no weekend support, 8.2 pounds

16MB RAM, 500MB hard disk, color screen, sound, speakers. \$4860; Twinhead, 800/995-8946, 408/945-0808 Reader service no. 726

## ZDS Z-Select 100 XE

**PROS:** Quality design, nonstop technical support

**CONS:** Slow for a 486DX2-66, small screen, poor expandability

Compact 486DX2-66, 8MB RAM, 270MB hard drive, 14-inch monitor. \$2084; Zenith Data Systems, 800/553-0331, 708/808-5000 Reader service no. 727

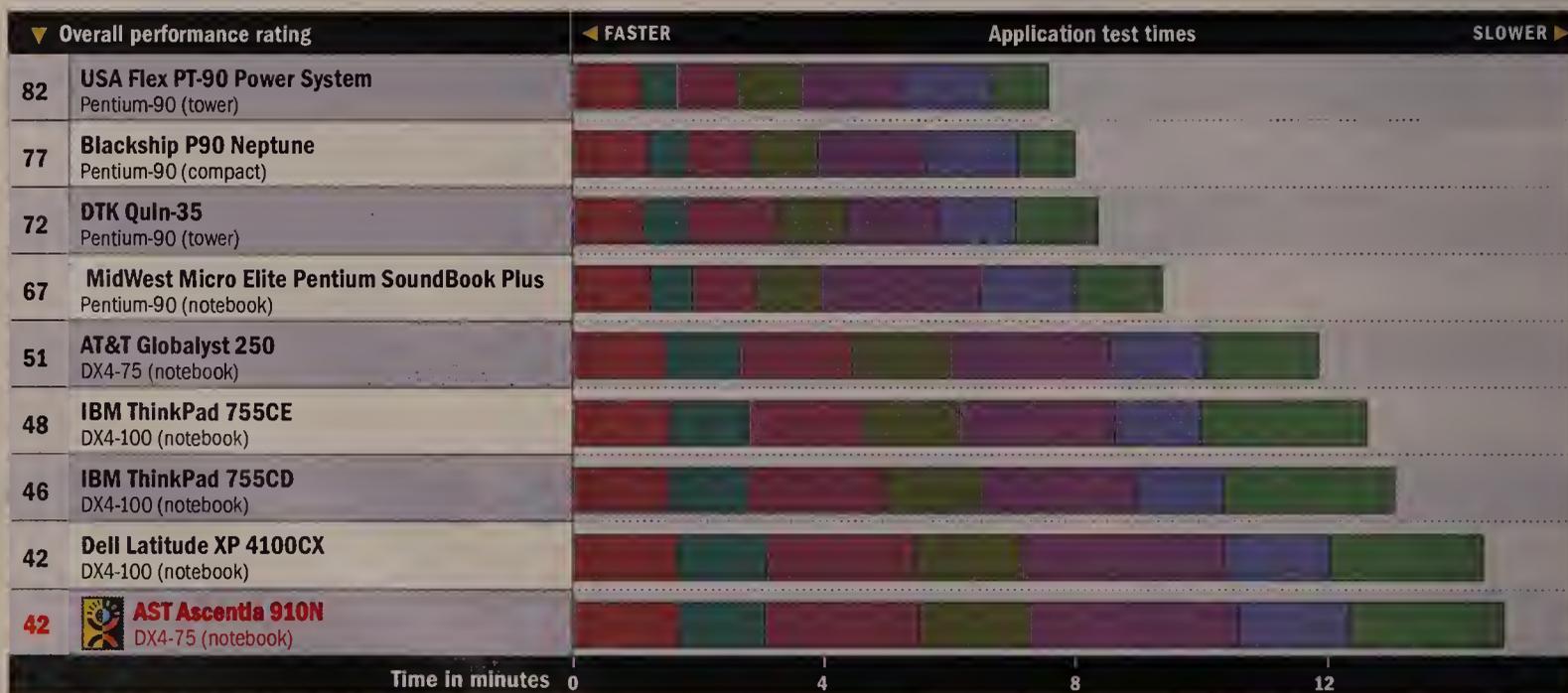
## Zeos Meridian 800C

**PROS:** 10.3-inch color passive screen, comfortable design

**CONS:** Ordinary one-year warranty

DX2-50 notebook, 8MB RAM, 350MB hard disk, 4.25-hour battery, 7.6 pounds, 24-hour support. \$2895; Zeos Int'l, 800/554-5220, 612/362-1234 Reader service no. 728

## TEST REPORT This Month's Contenders



Systems are arranged in order of overall performance from best to worst, based on the normalized, weighted scores from seven tests. A system may have a better overall performance rating than another system that took less time to complete our test suite.

### Methodology

We tested each system as supplied by the manufacturer, using the version of DOS supplied. If we installed Windows, we used the default installation. We configured Windows with an HP LaserJet III as the default printer, disabled Print Manager, and attached a null printer to LPT1. We set video resolution to 800 by 600 pixels in 256 colors using the supplied video driver where possible. We loaded the test applications and files and test automation software and scripts.

### Word 2.0 for Windows

We worked with 1-, 9-, and 28-page business documents. Operations included creating, saving, opening, scrolling, editing, checking spelling, formatting, previewing, and printing.

### Excel 4.0

We opened a file and performed several data extracts, entered new data, altered calculations, formatted, scrolled, moved blocks, previewed, printed, and saved.

### Paradox 1.0 for Windows

We used a custom form to add a moderate number of records to an existing table, performed several queries, and generated a report.

### Freelance 1.0 for Windows

We built a six-page presentation using a standard template, clip art, text, and charts; applied several views to the presentation; then previewed and saved it.

### WordPerfect 6.0 for DOS

We performed a variety of editing, formatting, previewing, and printing tasks on documents ranging from a single-page memo to a long report. Due to memory requirements, the amount of free memory for DOS in the first 640K dramatically affects this test.

### 1-2-3 release 3.4 for DOS

Using the graphical Wysiwyg add-in and working in three different files, we created and altered formulas, built graphs, saved, and printed.

### Paradox 3.5 for DOS

We tested Paradox 3.5 running under Windows in a DOS window. We entered data, searched records, updated, and generated reports from a simple customer list.

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

# COREL DRAW!™ 5

## The Best in Graphics and Publishing



With the new lenses in CorelDRAW 5 users can create incredible photographic effects such as transparency, magnify, grayscale, brighten, invert, heat maps, and more. Dynamic special effects can also be created using morphing, artistic filters, and masking. With 60 new additional fractal textures, CorelDRAW 5 allows for unlimited design variations.



Exciting New Filters



Amazing Morphing

**CorelDRAW 5** combines the graphics power of CorelDRAW and the advanced publishing capabilities of Corel VENTURA 5 within an integrated user interface. With a revolutionary color management system, major performance gains and hundreds of improvements, CorelDRAW 5 retains the ease of use for which Corel is renowned. CorelDRAW 5 is the most exciting value-packed graphics and publishing software available.

### INCLUDES

- CorelDRAW 5
- Corel VENTURA 5
- Corel PHOTO-PAINT 5
- CorelCHART 5
- CorelMOVE 5
- CorelSHOW 5

### PLUS

- 825 fonts
- 22,000 clipart images & symbols
- 100 high-resolution photos

*CorelDRAW 5—"the best has gotten better!"*

InfoWorld, August 1994-USA

*"OUTSTANDING!  
CorelDRAW 5 really is the best graphics package ever!"*

PC Answers, June 1994-U.K.

*xcellence*

Versatile Charting



Power Publishing

Call for the location of the Egghead Software store nearest you. To order directly from our Eggspress Ordering Service, please call 1-800-EGGHEAD.

**EGGHEAD SOFTWARE**

North America's Software Eggsperts.

Hearing and Speech Impaired customers can reach us by calling 1-800-949-3447 TDD.



CorelDRAW 5  
**\$449.98\***  
CUE  
CD-ROM version

\*US\$ plus applicable taxes

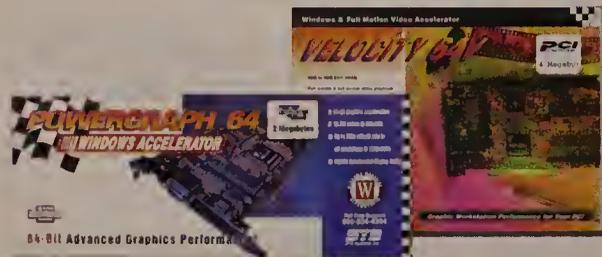


Circle 93 on reader service card

**WE GOT  
COOL 64-BIT  
GRAPHICS.**

**WE GOT  
A LIFETIME  
WARRANTY.**

**WE GOT A  
HOT PRICE:  
\$ 199\*.**



**THEY GOT  
COOL 64-BIT  
GRAPHICS.**

**THEY GOT  
A PART-TIME  
WARRANTY.**

**THEY GOT A  
PROBLEM.**

**JUST THE FACTS.**

**STB VELOCITY 64V - \$299\*\* 84.3'**

**STB POWERGRAPH 64 - \$199\*\* 78.2'**

**DIAMOND Stealth 64 VRAM - \$399\*\* 77.1'**

**ATI Graphics Expression - \$249\*\* 75.1'**

\*Overall performance scores (measured in WITS) as published in the February issue of PC World.  
\*\*Performance scores for VELOCITY 64V obtained by STB using a comparably equipped system and test.



#1 February 1995



(214) 234-8750

**STB: We've Taken The Lead.**

STB is the world's largest manufacturer of DRAM video accelerators. So it should come as no surprise that we make the fastest video boards on the planet. But here's the surprising part: our POWERGRAPH 64 DRAM card actually outperforms their VRAM\*. Of course, STB boards offer full virtual screen capabilities. Astronomical

refresh rates (some as high as 100 Hz). Unbelievable resolutions, up to 1600 x 1200. Up to 16.7 million colors. Our VELOCITY 64V adds full-motion video playback. Your choice of PCI or VL bus. And all at prices that are very refreshing indeed. Enough already. Go buy one. And see for yourself.

\*Get the POWERGRAPH 64 with 2MB DRAM for just \$199, or the VELOCITY 64V with 2MB VRAM for just \$299.

Call for store nearest you  
1-800-843-2489

Call for store nearest you  
1-800-266-7872

© Copyright 1995 STB Systems, Inc. All rights reserved. VELOCITY 64V and POWERGRAPH 64 are trademarks of STB Systems. All other names are trademarks of their respective companies.

Circle 210 on reader service card

# RELIABILITY AND SERVICE MONITOR

# Win a Dell Dimension XPS P90



Have you ever contacted your PC maker for service and support? Or has your PC been trouble-free? Tell us about it! Fill out and fax in the questionnaire below—even if you have no problems to report, and even if you have responded to this survey before—and we'll enter you in a drawing to win a Dell Dimension XPS P90, a Best Buy Pentium-90 PC.

**HOW TO ENTER:** Fax your completed questionnaire to *PC World* at 415/974-7367. Do NOT fax a cover page. If you don't have a fax machine, you can mail your survey to Fax Survey, Box 4-SS, *PC World*, 501 Second St. #600, San Francisco, CA 94107-1496.

Surveys must be received by April 30.

**PRIZE:** One entry per person. IDG employees and their families are not eligible. One prize will be awarded through a random drawing. *PC World* will make reasonable efforts to contact prize winners at the telephone and fax numbers they provide. If *PC World* is unable to do so within 30 days of the drawing, a substitute winner will be selected. No purchase necessary. Void where prohibited by law.

**HOW TO FILL OUT THE FORM:** Clearly print your name (use block capital letters) and your fax number at right; fill the appropriate circle for each digit of your daytime phone number. Then fill out the rest of the questionnaire. **WHEN FILLING THE CIRCLES, AVOID GOING OUTSIDE THE LINES!**

LAST, FIRST NAME																				
FAX NUMBER																				
ZIP CODE																				

Please fill in your daytime phone number below.

1	<input type="radio"/>																			
2	<input type="radio"/>																			
3	<input type="radio"/>																			
4	<input type="radio"/>																			
5	<input type="radio"/>																			
6	<input type="radio"/>																			
7	<input type="radio"/>																			
8	<input type="radio"/>																			
9	<input type="radio"/>																			
0	<input type="radio"/>																			

How did you get this copy of *PC World*?

- By subscription  On the newsstand  From someone else

## ABOUT YOUR PC

Who is the manufacturer of the PC you use most frequently?

- |                                  |                                     |                                       |                                    |   |
|----------------------------------|-------------------------------------|---------------------------------------|------------------------------------|---|
| <input type="radio"/> Acer       | <input type="radio"/> CompuDyne     | <input type="radio"/> Future Tech     | <input type="radio"/> Mitac        | <input type="radio"/> Tangent                 |
| <input type="radio"/> Acma       | <input type="radio"/> Comtrade      | <input type="radio"/> Gateway 2000    | <input type="radio"/> NEC          | <input type="radio"/> Texas Instruments       |
| <input type="radio"/> ALR        | <input type="radio"/> Cornell       | <input type="radio"/> Hewlett-Packard | <input type="radio"/> Netis        | <input type="radio"/> Toshiba                 |
| <input type="radio"/> Apple      | <input type="radio"/> CTX           | <input type="radio"/> Hyundai         | <input type="radio"/> Packard Bell | <input type="radio"/> Tri-Star                |
| <input type="radio"/> AST        | <input type="radio"/> Dell          | <input type="radio"/> IBM             | <input type="radio"/> Panasonic    | <input type="radio"/> Twinhead                |
| <input type="radio"/> AT&T (NCR) | <input type="radio"/> Diamond       | <input type="radio"/> Insight         | <input type="radio"/> Pionex       | <input type="radio"/> USA Flex                |
| <input type="radio"/> Austin     | <input type="radio"/> Digital (DEC) | <input type="radio"/> Intelesys       | <input type="radio"/> Polywell     | <input type="radio"/> VTech (Expotech, Laser) |
| <input type="radio"/> Axik       | <input type="radio"/> DTK           | <input type="radio"/> Leading Edge    | <input type="radio"/> Quantex      | <input type="radio"/> Winbook                 |
| <input type="radio"/> Blackship  | <input type="radio"/> Eltech        | <input type="radio"/> Micro Express   | <input type="radio"/> Samsung      | <input type="radio"/> Zenith (ZDS)            |
| <input type="radio"/> Canon      | <input type="radio"/> EPS           | <input type="radio"/> Micron          | <input type="radio"/> Sharp        | <input type="radio"/> Zenon                   |
| <input type="radio"/> Compaq     | <input type="radio"/> Epsom         | <input type="radio"/> Midwest Micro   | <input type="radio"/> Swan         | <input type="radio"/> Other                   |
| <input type="radio"/> CompuAdd   | <input type="radio"/> Everex        | <input type="radio"/> MIS             | <input type="radio"/> Tandy        |   |

What size is this PC?

- Desktop  
 Notebook/laptop  
 Hand-held

What is the CPU?

- PowerPC  
 Pentium  
 80486  
 80386  
 Other

Where did you buy this PC?

- Local dealer  
 Mail/phone order  
 Direct from field sales force  
 Membership discount store  
 Computer superstore  
 Home electronics store  
 Retail store  
 VAR  
 Other

After ordering, how long did it take to get your PC?

- Less than 1 week  
 1-2 weeks  
 3-4 weeks  
 More than 4 weeks

Who set up your PC?

- Dealer/retailer/VAR  
 Staff computer technician  
 Self or coworker

## WHEN YOU FIRST GOT YOUR PC

When did you buy this PC? (Specify month and year.)

- Jan  Mar  May  July  Sept  Nov  90  92  94  
 Feb  Apr  June  Aug  Oct  Dec  91  93  95

When you first set up your PC, were any components "dead on arrival" (DOA)?

- Yes  No  Don't know

If so, which component was it? (Mark all that apply.)

- |                                    |  |                                       |                                    |
|------------------------------------|--|---------------------------------------|------------------------------------|
| <input type="radio"/> Battery      | <input type="radio"/> Graphics/video board | <input type="radio"/> Modem/fax board | <input type="radio"/> Power supply |
| <input type="radio"/> CD-ROM       | <input type="radio"/> Hard drive           | <input type="radio"/> Monitor/screen  | <input type="radio"/> Sound board  |
| <input type="radio"/> CPU          | <input type="radio"/> Keyboard             | <input type="radio"/> Motherboard     | <input type="radio"/> Other        |
| <input type="radio"/> Floppy drive | <input type="radio"/> Memory               | <input type="radio"/> Mouse           |                                    |

Did your problem occur only after you added your own hardware or software?

- Yes  No  Don't know

Would you buy this brand of PC again?

- Yes  No  Not sure

How many times have you had a problem with this PC?

- No problem ever  Three  
 One  Four  
 Two  More than four

## NEW PROBLEM REPORT

Please answer for the most recent problem—other than DOA—not reported in a previous survey.

When did this problem occur? (Specify month and year.)

- Jan  Mar  May  July  Sept  Nov  90  92  94  
 Feb  Apr  June  Aug  Oct  Dec  91  93  95

How long was this after you purchased your PC?

- Less than 1 month  4-6 months  More than 12 months  
 1-3 months  7-12 months  Not sure

Did the problem occur as a result of adding new hardware or software?

- Yes  No  Don't know

Did the problem occur under warranty?

- Yes  No  Don't know

What was the problem finally identified as? (Mark all that apply.)

- Faulty component  Wrong configuration  Device conflicts  Other  
 Incorrectly installed software  Faulty peripheral  OS problem  Don't know

If a component failed, which one was it? (Mark all that apply.)

- |                                    |  |                                       |                                    |
|------------------------------------|--|---------------------------------------|------------------------------------|
| <input type="radio"/> Battery      | <input type="radio"/> Graphics/video board | <input type="radio"/> Modem/fax board | <input type="radio"/> Power supply |
| <input type="radio"/> CD-ROM       | <input type="radio"/> Hard drive           | <input type="radio"/> Monitor/screen  | <input type="radio"/> Sound board  |
| <input type="radio"/> CPU          | <input type="radio"/> Keyboard             | <input type="radio"/> Motherboard     | <input type="radio"/> Other        |
| <input type="radio"/> Floppy drive | <input type="radio"/> Memory               | <input type="radio"/> Mouse           |                                    |

## SERVICE

Please use this section to describe the service and support you received for the problem reported above or the DOA reported at left.

Who fixed your PC?

- Manufacturer  
 Dealer/store where purchased  
 Manufacturer's authorized repair technician  
 Self  Other

What types of service and support did you receive? (Mark all that apply.)

- Phone  System swap  
 On site  Component swap  
 In store  Factory return

If you received phone service, how long were you on hold?

- Not at all  1-2 minutes  6-10 minutes  More than 20 minutes  
 Less than 1 minute  3-5 minutes  11-20 minutes

How long did it take before you talked to the person who finally helped you?

- Less than 15 minutes  2-5 hours  11-24 hours  3-5 days  
 15 minutes-1 hour  6-10 hours  1 1/2-2 days  1 week or more

How long did it take to resolve the problem completely?

- 1-2 days  More than 1 month  
 3-7 days  Never resolved  
 1 1/2-4 weeks  Awaiting resolution

Was the problem resolved to your satisfaction?

- Yes  No

How would you rate the person(s) who helped you?

- |                |                       |                       |                       |
|----------------|-----------------------|-----------------------|-----------------------|
|                | Poor                  | Good                  | Excellent             |
| Courtesy       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Knowledge      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Follow-through | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Based on the service and support you received, would you buy this brand of PC again?

- Yes  No

On the whole, how satisfied are you with the service and support you received?

- Not at all  Satisfied  Extremely satisfied

If you have had a problem that you have not reported in a previous survey, please fill out the right column. If you are reporting a DOA for the first time, skip to the service section.

PLEASE FAX TO 415/974-7367

# THE FIRST ORGANIZER SOFTWARE THAT DOESN'T SUCK.

The hard drives of America are littered with the unused remains of worthless personal organizer software. • Well, erase it. And install Espresso software from Berkeley Systems.

• So, will you really use this Espresso? Do toasters fly? (Actually, since we invented "After Dark<sup>®</sup>," they do.) • Espresso's so intuitive you don't



need the manual. No weird menus or cruel, scary dialog boxes. Just a calendar, address book and to-do list that work the way your brain works. Click and type to make new entries. Drag and drop to reschedule. Laugh and sing when you see how easy it all is. • Espresso's always right on your desktop, instantly accessible from any application.

*EXPRESSO  
CALENDAR AND  
ADDRESS BOOK.  
You can pay over  
\$100 for crappy  
software.  
Which makes  
Espresso's \$49  
price all the more  
incredible.*

SOM	Last Name	First Name	Work
<input type="checkbox"/>	Felover	Richard	555-1234
<input type="checkbox"/>	Fenster	Eddy	555-2341
<input type="checkbox"/>	Fernwood	Frances	555-3412
<input type="checkbox"/>	Finkle	Carl	555-4123
<input type="checkbox"/>	Fitz	Debra and Brian	555-5678
<input type="checkbox"/>	Frank	Jay	555-6785
<input type="checkbox"/>	Fusselman	David	555-7856
<input type="checkbox"/>	Futernick	Jennifer/Norman	555-8567

8 items in list



And with a wide choice of graphical backgrounds, you can match its personality to your own. • Don't take our word for how cool it is. We could be lying. So call **1-800-344-5541**

**FREE  
SAMPLE  
DISK**

**x125** for a free sample disk that gives you the full guided tour.

**BERKELEY.**  
S Y S T E M S

# Top 10 Windows Accelerators: Video Comes Alive

The latest graphics accelerators are on the move—moving pictures, that is. CD-ROM-based titles use demanding full-motion video, yet traditional graphics boards do little to help. A new class of boards enhances playback by accelerating video functions—just as they've accelerated graphics for years. Meanwhile, price cuts have once again shaken up our list, while the STB Nitro 64 gets renewed life thanks to new driver software.

One of the first video-aware boards is the MiroVideo 20TD from Miro Computer. The 20TD's separate video coprocessor enhances digital video playback by converting color data into standard graphics format. The chip also expands video windows by averaging pixel colors for smooth playback at 640 by 480 and higher resolutions. An integrated TV tuner even lets you watch programs in a window. On the graphics side, the 20TD's ET4000/W32p chip helped drive the PCI version to an impressive 77.3 overall Windows Integrated Test Suite (WITS) score. The VL version posted a 72.7 score. The 2MB DRAM MiroVideo 20TD is intriguing, but at \$499 it's too pricey for our Top 10.

**The MiroVideo's separate coprocessor enhances digital video playback.**

For high-end graphics, you can't beat the Number Nine Imagine 128—its 80.7 overall WITS score is the fastest we've ever seen. The PCI board uses Number Nine's own Imagine 128 chip and 4MB of fast VRAM to offer blazing performance and 100-Hz refresh rates at 1280 by 1024 resolution. It also features the same impressive graphics

software that's found on the company's #9GXE64 line. But the \$849 street price makes this a board for professionals.

Finally, we tested the PCI version of two boards for mainstream users. The Winner 1000 Pro is based on S3's Vision-

864 chip and has 2MB of DRAM—similar to the PraeTek FastMax P20 and other Top 10 contenders—but it suffers from a high \$265 street price and disappointing 67.6 WITS score. The \$424 Winner 2000 Pro uses S3's Vision964 chip and 2MB of fast VRAM to handle heavy-duty graphics. The board supports impressive 100-Hz refresh rates at 1280 by 1024 resolution, but its 72.6 WITS score is unexceptional.

*WITS was developed by Jon Peddie Associates, a PC graphics consulting firm. Jon Peddie and Fred Dunn are the firm's principal officers.*

## TOP 10 ACCELERATORS

- ▶ New this month
- ▲ Up from last month
- ◀ No change from last month
- ▼ Down from last month

Overall value	Estimated street price	Windows Integrated Test Suite scores								Overall WITS score	Bus type	RAM (MB/type) <sup>1</sup>	Chip Driver date	Reader service number
		Windows Word 2.0 for	Excel 4.0	3.0 CorelDraw	1.1 PhotoStyler	3.11 QuarkXPress	Graphics 2.01	Freelance	score					
1	▶	STB Powergraph 64 800/234-4334	99	\$180	13.6	16.5	13.7	11.7	16.7	6.1	78.2	2 / D PCI	Trio64 7/11/94	610
2	▶	ATI Graphics Xpression 905/882-2600	95	\$215	13.4	16.6	13.2	11.6	15.6	4.8	75.1	2 / D PCI	88800CX 4/11/94	611
3	▶	PraeTek FastMax P20 800/752-8033	94	\$189	13.1	16.2	13.4	11.5	15.3	6.6	76.1	2 / D PCI	Vision864 6/1/94	612
4	▲	Paradise Bahamas 64 800/568-9272	94	\$179	13.7	16.4	13.3	11.3	16.6	6.3	77.4	2 / D PCI	Vision864 7/11/94	613
5	▼	STB Powergraph Pro 800/234-4334	93	\$219	12.8	15.6	12.2	11.7	14.6	6.6	73.4	2 / D PCI	Vision864 5/9/94	610
6	▶	STB LightSpeed 800/234-4334	93	\$179	12.5	14.5	12.6	11.4	14.7	5.9	71.5	2 / D VL	ET4000/W32p 4/10/94	610
7	▼	Hercules Stingray 64 800/532-0600	92	\$179	13.8	16	13.7	11.8	16	3.8	75	2 / D PCI	Ark2000PV 10/27/94	614
8	▶	Hercules Dynamite Power PCI <sup>2</sup> 800/532-0600	91	\$199	13.2	15.2	13.3	12.8	15.3	5.7	75.5	2 / D PCI	ET4000/W32p 5/11/94	614
9	▶	Genoa Phantom 64 <sup>2</sup> 800/934-3662	91	\$210	14	16.9	13.4	11.5	16.9	6.3	79	2 / D PCI	Vision864 8/2/94	615
10	▲	STB Nitro 64 800/234-4334	90	\$189	12.2	13.4	13.1	12.6	14.7	4.1	70.2	2 / D PCI	GD5434 2/18/94	610

**Methodology** Boards were tested at 1024 by 768 resolution at 256 colors and a minimum 70-Hz refresh rate on a 486DX2-66 with 16MB of RAM and 256K of secondary cache. Application scores are the factor by which a board exceeds our baseline system, an unaccelerated ET4000-based VGA adapter on a 386DX-25 with 16MB of RAM. The overall value score balances performance, estimated street price, and features. The overall WITS score is the aggregate of the application scores. For all scores, higher is better.

<sup>1</sup> D = DRAM, V = VRAM.

<sup>2</sup> Comparable value offered by other bus versions tested.

For more information about all products in this table, circle reader service no. 902.

HP quality in  
value-priced PCs.

### HP Vectra VL2



from  
**\$1,119<sup>1</sup>**

- Intel 50-MHz 486SX2, 50- and 66-MHz 486DX2, 100-MHz DX4, upgradeable to Pentium™ Overdrive™ processor; Intel 60-MHz Pentium processor
- Chip upgrades to higher performance
- On-board accelerated local-bus video
- 210-MB hard drive<sup>1</sup>
- 4-MB RAM, expandable to 64-MB
- 512 KB or 1 MB of Video RAM standard
- ISA Plug-n-Play compliant
- Desktop Power Management
- EPA Energy Star certified
- Local bus Fast-IDE hard disk interface\*\*
- 1280 x 1024 video resolution\*\*
- Optional 128- or 256-KB cache memory\*\*
- Free three-year limited warranty for parts and labor<sup>2</sup>

High-performance  
network-ready PCs  
in a slimline package.

### HP Vectra N2



from  
**\$1,459<sup>1</sup>**

- Intel 50-MHz 486SX2, 50- and 66-MHz 486DX2, upgradeable to Pentium Overdrive processor
- Optional 128- or 256-KB second level cache
- 270-MB, 14-ms Fast-IDE hard drive<sup>1</sup>
- 32-bit Fast-IDE local-bus hard disk interface
- 8-MB RAM, expandable to 96-MB
- Ultra VGA<sup>2</sup> local-bus accelerated video supporting up to 1280 x 1024 resolution
- 1 MB of video RAM standard, expandable to 2 MB
- Slimline package with two mass storage shelves and three ISA slots
- Optional integrated 10Base-T networking
- Multilevel security
- EPA Energy Star certified
- ISA Autoconfiguration utility (Plug-n-Play)
- Integrated Desktop Management Interface (DMI)<sup>3</sup>
- Free three-year limited warranty for parts and labor<sup>2</sup>

High-performance  
PCs for the  
connected office.

### HP Vectra M2



from  
**\$1,509<sup>1</sup>**

- Intel 50-MHz 486SX2; 50- and 66-MHz 486DX2, 100-MHz DX4, upgradeable to Pentium Overdrive processor
- Optional 128- or 256-KB second level cache
- Four mass storage shelves; four expansion slots
- One available 32-bit VL-bus slot
- 270-MB, 14-ms Fast-IDE hard drive<sup>1</sup>
- 32-bit Fast-IDE local-bus hard disk interface
- 8-MB RAM, expandable to 96-MB
- Ultra VGA<sup>2</sup> local-bus accelerated video supporting up to 1280 x 1024 resolution
- Optional integrated 10Base-T networking
- Systems Diagnostics Utility
- EPA Energy Star certified
- ISA Autoconfiguration utility (Plug-n-Play)
- Integrated Desktop Management Interface (DMI)<sup>3</sup>
- Free three-year limited warranty for parts and labor<sup>2</sup>

Exceptional 486 performance  
advanced business use

### HP Vectra XM2



from  
**\$1,779<sup>1</sup>**

- Intel 50- and 66-MHz 486 100-MHz DX4, upgradeable to Pentium Overdrive
- PCI architecture
- Standard 256-KB second write-back cache
- Four mass storage shelves expansion slots
- Two available 32-bit PCI expansion slots
- 210-MB, 14-ms Fast-IDE drive<sup>1</sup>
- 32-bit PCI IDE hard disk interface
- 8-MB RAM, expandable to 96-MB
- PCI Integrated 64-bit S3 Vision-864 graphics accel supporting up to 1280 x 1 resolution
- Optional PCI Integrated 32-bit 10Base-T networking
- Integrated Desktop Management Interface (DMI)<sup>3</sup>
- EPA Energy Star certified
- Free three-year limited warranty for parts and labor<sup>2</sup>



<sup>1</sup>Source: 1994 J.D. Power and Associates Desktop PC Customer Satisfaction Study. <sup>2</sup>Study conducted among business users and based on 1,528 user responses. <sup>3</sup>Feature included with some models. All HP Vectra PCs come with MS-DOS® 6.2 and MS Windows for Workgroups 3.11 pre-installed; HP mouse and keyboard included. <sup>4</sup>U.S. list price, dealer prices may vary. Monitor not included. <sup>5</sup>Other capacities available. <sup>6</sup>First year on-site, 24-hour service. Second and third year return to depot. MS-DOS is a U.S. registered trademark and Windows is a trademark of Microsoft Corporation. Pentium, Overdrive and the Intel Inside logo are U.S. trademarks of Intel Corporation. ©1994 Hewlett-Packard Company PPG412

ultimate PC for advanced business and technical applications.

## HP Vectra XU



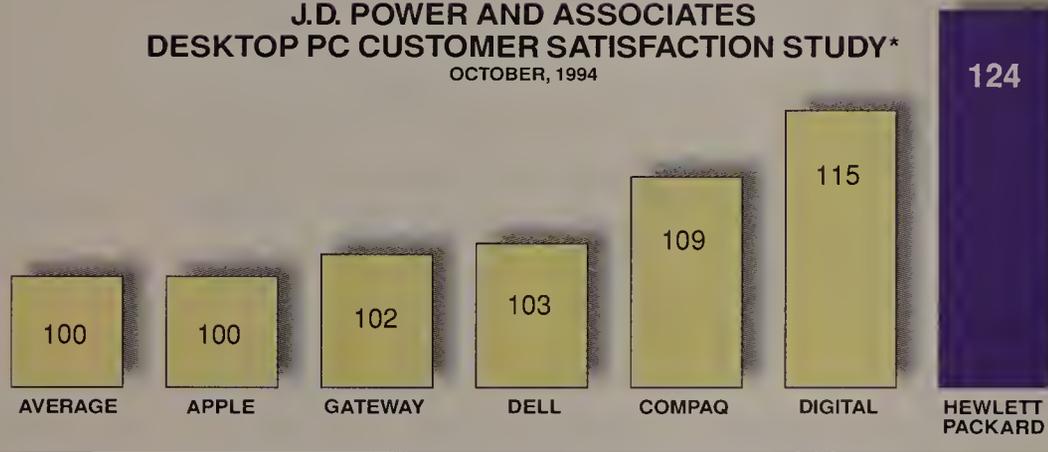
from  
**\$3,279<sup>†</sup>**

90-MHz Pentium processor  
processor socket for MP  
1.1 multi-processing  
standard 256-KB second level  
asynchronous or burst  
asynchronous write-back cache  
architecture  
mass storage shelves  
(front accessible); five  
expansion slots  
available 32-bit PCI  
expansion slots  
MB, 12-ms Fast SCSI-2  
drive<sup>1</sup>  
integrated 32-bit PCI SCSI-2  
interface  
integrated 64-bit S3  
graphics with 1280  
x 1024 resolution or PCI MGA  
Plus graphics with up  
to 1280 x 1200 resolution  
integrated PCI IDE hard disk  
interface  
6 MB of RAM, expandable  
to 16 MB  
integrated 32-bit 10Base-T  
networking  
integrated Desktop Manage-  
ment Interface (DMI)<sup>3</sup>  
three-year limited  
warranty for parts and labor<sup>2</sup>



# No other PC can display this icon.

J.D. POWER AND ASSOCIATES  
DESKTOP PC CUSTOMER SATISFACTION STUDY\*  
OCTOBER, 1994



**J.D. Power and Associates ranks HP highest in customer satisfaction among desktop personal computer business users.**

Not to be boastful, but people are taking a lot more notice of HP PCs lately. After all, they're the only computers that carry the symbol of one of the most prestigious awards in the business. Fact is, in overall scoring HP outpaced every other vendor in the field.

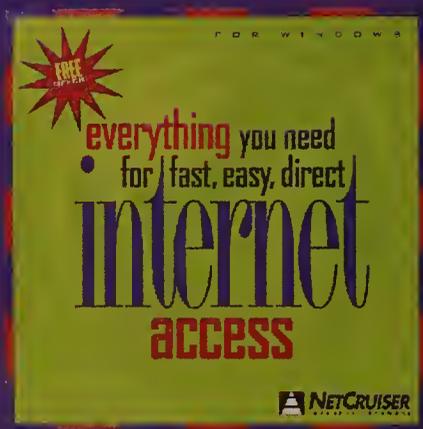


Of course, HP PCs also lead the pack in value, with all the features you need, at prices you can afford.

For a copy of *The Power Report*<sup>SM</sup> on the Desktop PC Study, or the name of the dealer nearest you, call us at 1-800-322-HPPC, Ext. 8998 today. And join the ranks of the most satisfied PC customers in America.



# EASIEST WAY TO GET ON THE INTERNET.



**NetCruiser Software**

# EASIEST WAY TO STAY THERE.



**NetCruiser Service**

## ONLY \$19.95 A MONTH!

- **FREE SERVICE ACTIVATION!\***
- **420+ HRS/MO. AT NO CHARGE!**

**800-353-6600**

How can you get the best Internet access software and the best nationwide Internet service? Easy. Just pick up the phone and order NetCruiser™ for Windows™ from NETCOM.

NetCruiser Internet Service gives you 40 prime-time hours, and hundreds of week-end and off-peak hours, every month for under \$20. That's enough access time for just about anybody who's planning a stay on the Internet.

"NetCruiser...the hands-down favorite of our first-time Internet users."

**PC World**

"...NetCruiser from NETCOM is one of the most comprehensive Internet packages available. This one-stop interface will have you on the Internet within minutes..."

**LAN Times**

"NetCruiser—best Internet front end."

**Online Access Magazine**

"NetCruiser is great for people who are intrigued by the Net but intimidated by the commands usually required for access."

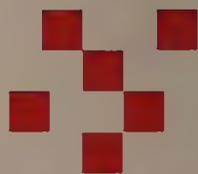
**PC/Computing**



Plus NetCruiser includes World-Wide Web, IRC, Gopher, FTP, Usenet, Telnet, E-mail—all the most popular Internet resource discovery tools.

Best of all, with NetCruiser service you get NetCruiser software FREE. It's fun. It's easy. And, with simple point-and-click icons to guide you along the way, it can have you up and running in only minutes.

Order now and we'll even give you FREE activation too. So call us today. It just doesn't get any easier than this.

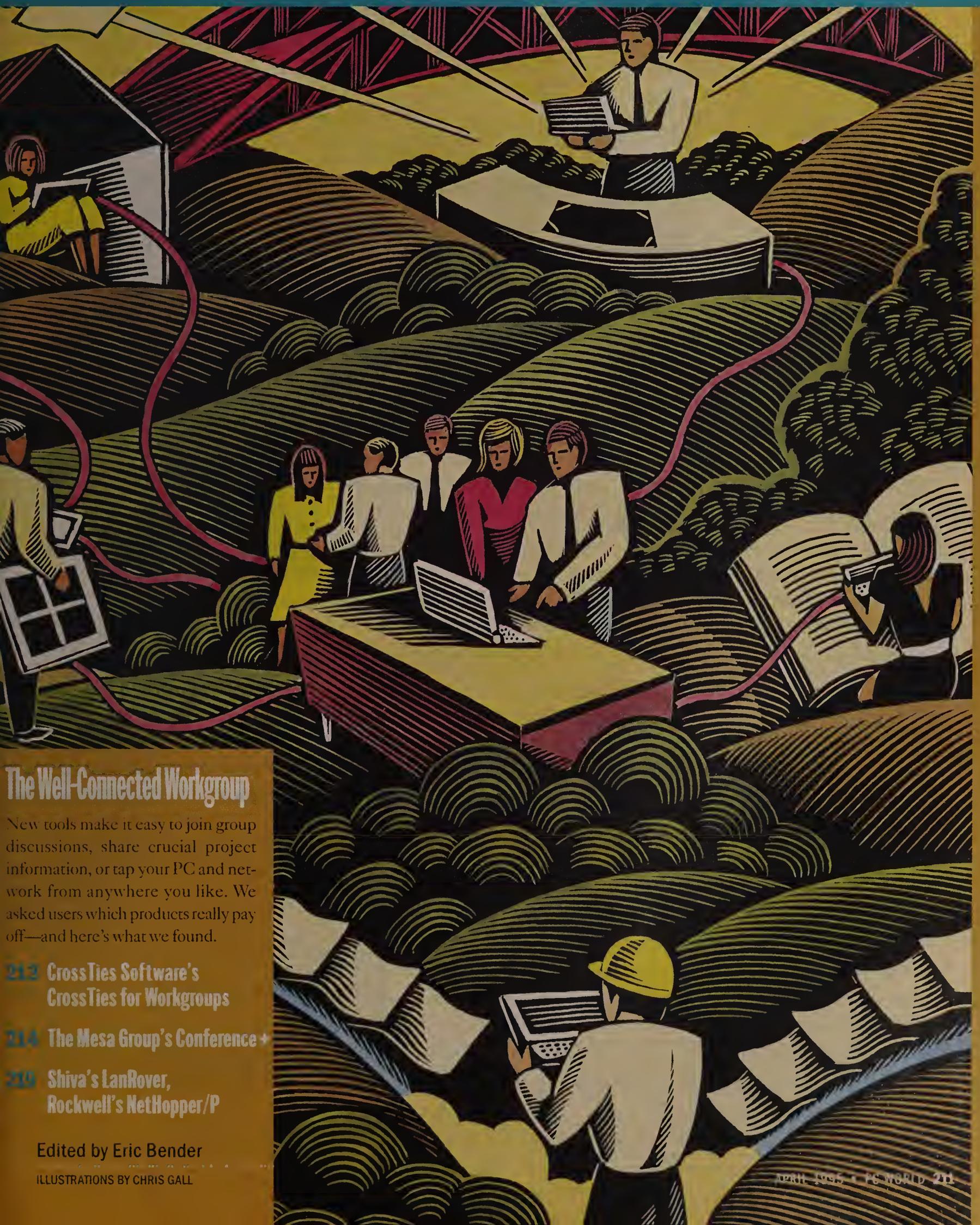


**NETCOM**  
The Leading Internet  
Service Provider

# WORKGROUP COMPUTING

EXPLOIT YOUR NETWORK TO SOLVE YOUR BUSINESS PROBLEMS

SPECIAL REPORT

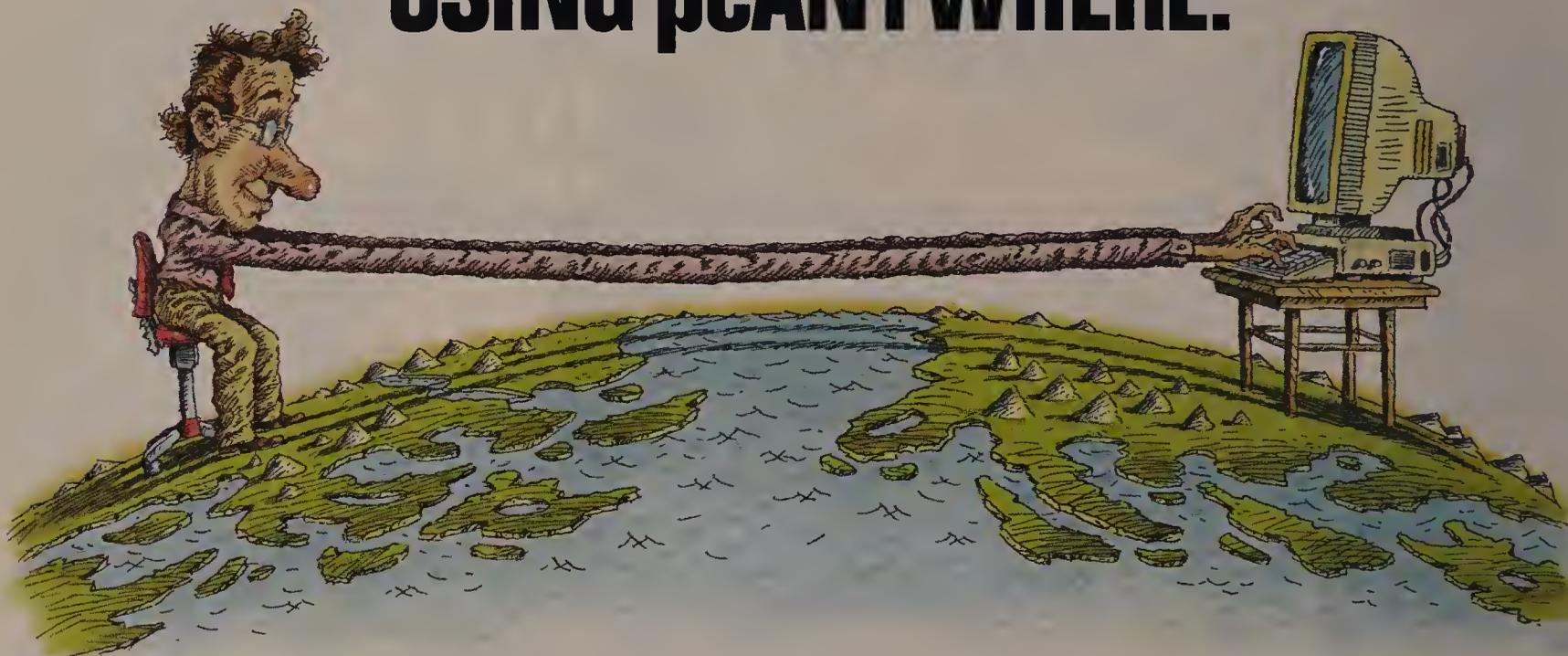


**The Well-Connected Workgroup**  
New tools make it easy to join group discussions, share crucial project information, or tap your PC and network from anywhere you like. We asked users which products really pay off—and here's what we found.

- 213** CrossTies Software's CrossTies for Workgroups
- 214** The Mesa Group's Conference +
- 219** Shiva's LanRover, Rockwell's NetHopper/P

Edited by Eric Bender  
ILLUSTRATIONS BY CHRIS GALL

# IF YOU THINK REMOTE COMPUTING IS A HASSLE, YOU'RE PROBABLY NOT ONE OF THE MILLIONS OF PEOPLE USING pcANYWHERE.



What good is working away from the office if you can't access your PC? Unfortunately, most remote computing software has become so complex, you may waste more time setting up your call than getting work done. Luckily, now there's Norton pcANYWHERE™ 2.0 for Windows.



pcANYWHERE doesn't replace any system .INI drivers, so you don't have to change your Windows environment to use it. pcANYWHERE is actually the only remote access software available today that offers this unique feature set combination.

Of course, to make sure you're always working with the most recent version of your file, our new file manager saves you time by allowing you to synchronize your files and directories on remote and office PCs.

## LEAVE YOUR HASSLES AT THE OFFICE.

But the real beauty of Norton pcANYWHERE is it's easy to use. And to make it even easier, we've included Smart Set-Up™ and Norton Assistant to help you get up and running right out of the box. And a graphical user interface with long file name support



*The Peter Norton Group has made remote computing easier for everyone with Norton pcANYWHERE.*

already built in to help you in the transition to Windows 95. So stop by your local software store today. After all, millions of people can't be wrong.

## GET A \$30 REBATE

For a limited time get a special \$30 rebate when you purchase Norton pcANYWHERE for Windows or DOS. That's almost 30% off the estimated street price.



# SYMANTEC.®

## THE BEST GETS BETTER.

Norton pcANYWHERE is the most advanced implementation of remote computing technology available, made easy. But don't take our word for it. Millions of people have already expanded their growing work environment with Norton pcANYWHERE.

And why wouldn't they? Norton pcANYWHERE doesn't require TSRs, freeing up memory for other applications you may need. Moreover,



Symantec is a registered trademark and Norton pcANYWHERE and Smart Set-Up are trademarks of Symantec Corporation. All other trademarks or registered trademarks are the property of their respective holders. Not valid where prohibited by law. Offer good for end-user purchases of Norton pcANYWHERE for Windows between 2/20/95 and 5/31/95 with redemption through July 31st. All rebates must be accompanied by proof of purchase and coupons must be postmarked on or before 7/31/95. Not applicable to upgrade, and other specially priced products. Not valid with any other promotion. Offer includes 60-day money-back guarantee. Offer not available to resellers. Offer valid in U.S.A. only. Prices listed in U.S. dollars. Limit one rebate per customer. Allow 4-6 weeks for delivery. For more information in Canada, call 1-800-667-8661, ext. 5513. In Australia, call 2-879-6577. ©1995 Symantec Corp. All rights reserved.

Circle 167 on reader service card

# Get Your Group Organized

**CrossTies for Workgroups lets you share all your information with other employees.**

PEOPLE WERE THE TROUBLEMAKERS at Artec Elegant Designs, a small millwork manufacturer and graphic design company in Springfield, Missouri. Or rather, difficulties in keeping tabs on the hundreds of architects, designers, contractors, manufacturers, distributors, and vendors assigned to client projects prevented the business from reaching peak efficiency.

"We needed a way to track not only people but also the key pieces of information on projects," says co-owner Tim Dobyms. CrossTies for Workgroups, a personal information manager extended for group use, provides the necessary tools for doing just that.

At Artec, all employees worked with the same client base and the same paper-based project files, and each department tracked its own project-related information. Not surprisingly, this often produced duplicate information and miscommunications.

CrossTies for Workgroups has changed all that. "Anyone can access project files, link information to that project, then link all proj-



ARTEC OWNERS RON HILL AND TIM DOBYMS TRACK clients, vendors, and projects with CrossTies for Workgroups.

ect-related info to the client, and the information passes right through the company," explains Dobyms. "I can quickly access all of the information—faxes, letters, and spreadsheets—related to a project without going to a file cabinet or hunting for the project file."

### All Data Is Related

Creating information and linking it together is easy in CrossTies, but figuring out what to create and what links make sense is tricky at first. The key concept, and the real beauty behind CrossTies for Workgroups, is that it treats *everything you create on your PC* as an object, whether it's a word processing document, a spreadsheet, a fax, a

phone call, or an E-mail message. And CrossTies doesn't care which application created the object.

Objects are categorized by type, such as project, activity, person, or file, which makes it easy to prioritize and manage day-to-day activities. You can also link objects any way you like. You can, for example, link every telephone call, fax, and memo to the person or project to which they relate. Every time you view an object, all of

the objects linked to it are instantly accessible.

Since everything is an object, CrossTies doesn't need to separate information into distinct sections that each work somewhat differently. To enter a new contact or client, for instance, you don't need to move to a separate address section; instead, you select the Person object from the list of object types.

CrossTies provides four views of your data. The Shelf view lists frequently used objects. The Trail view displays a chronological list of the last 100 objects

you've worked with. The Inbox lists all the information you've received. The Calendar shows your activities in a daily, weekly, or monthly view.

These features extend across the network. For example, you can define a workgroup for a particular project and share all related objects (such as documents and comments) with the other workgroup members. When any of the objects are modified or if new objects are added, every member is notified. You can also perform group scheduling and participate in discussion forums. And mobile users can synchronize data between their laptop and office PCs. In addition, CrossTies for Workgroups comes with its own E-mail package and supports most of the common E-mail programs.

—Anne Fischer Lent

Anne Fischer Lent is a freelance writer in Peterborough, New Hampshire.

### CROSSTIES FOR WORKGROUPS 1.0

Workgroup information manager stores all your key business information as objects and makes it easy to share that information with your coworkers.

**List price:** \$299, 10 users \$1800

**CrossTies Software Corp.**

214/407-9996

**Reader service no. 768**

Name	Date	Status
Meeting Brendan McGrath	04/09/95 11:00 AM	New
Task: Wellesley Project	04/11/95 8:30 AM	To-do
Call: Brendan McGrath	04/15/95 8:20 AM	New
Site Inspection	04/09/95 10:58 AM	
To: Bob Reynolds	04/09/95 3:49 PM	Send
Misc Files		
89 Worcester Road	04/09/95	New Listing
Marketing Brochure	04/09/95 3:46 PM	Active

**KEY DATA** such as phone logs, to-do items, and documents can be linked to a project and then shared with your coworkers.

## ONLINE DISCUSSIONS

# Collaborate via Mail

**Conference+ lets you share solutions and discussions—right within Microsoft Mail.**

**G**EORGE NOLTE IS AN EXPERT ON infrastructure, so he knew when his civil engineering design firm needed to concentrate on its own infrastructure. Whenever new projects started, he wanted to be able to move the mountain of relevant data to employees, rather than making employees travel to a different office to retrieve it.

With 300 employees scattered across two states and nine offices, making information accessible was no simple problem, and E-mail alone couldn't solve it. Nolte wanted to distribute information quickly, without a blizzard of mail messages. "Whenever we needed to send files, update project data, or even change a meeting time, we had to send a message to everyone in the project group, which was a pain," explains Nolte.

To combat this, Nolte added The Mesa Group's Conference+ to his company's Microsoft Mail system. His staff now uses electronic *conferences*—online discussion areas—to distribute information, requests for help, and solutions. Surveyors use one con-



**GEORGE NOLTE SLASHED EMPLOYEE TRAVEL TIME** at his civil engineering firm by installing Conference+.

ference to schedule equipment and to discuss problems with their application software. A marketing group, spread across four offices in Northern California, uses another conference to share sales leads. Yet another conference offers a forum for branch administrators. And both project managers and design engineers use Conference+ to cut down on telephone tag when coordinating schedule changes.

### Open Conferences Inside Your Mail

Electronic conferencing and electronic mail should go together like peanut butter and jelly. But usually you must run one application for E-mail and another for conferencing.

Not so with Conference+. The package consolidates and centralizes access to elec-

ed—each reply is indented below the previous message, which allows you to tell at a glance who said what to whom.

Both individual users and mail administrators can create and maintain conferences, assigning reading, writing, and editing privileges to individuals, groups, and default "guest" users.

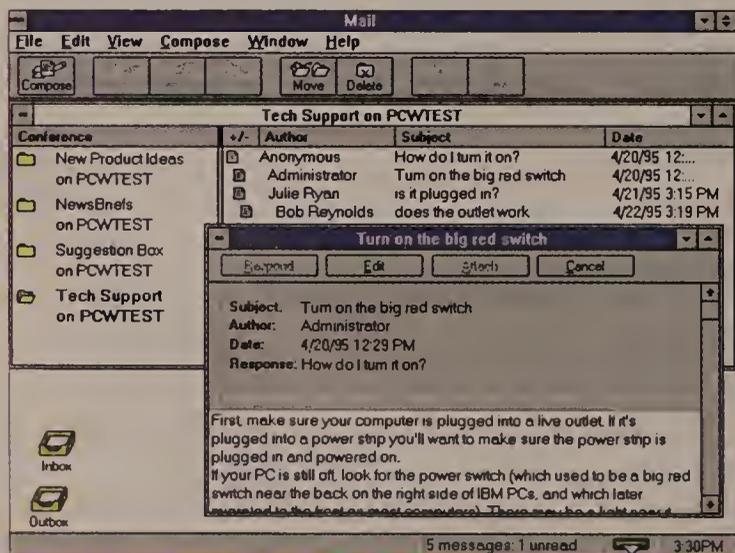
Connecting to a conference is simple—even if it's on a distant network rather than your local mail server. Just choose *Select Conference* from the File menu,

then highlight the desired conference on the resulting list and click the *Add* button. Reading and responding to conference messages is equally straightforward. If you're working remotely, you can still access Conference+ directly through Microsoft Mail, without a special remote client.

Conference+ installs on your mail server painlessly, as long as you have properly installed Microsoft Mail (or the upcoming Microsoft Exchange). Mesa's nomenclature can get slightly confusing, though; and the rather slim Administrator's Guide offers sufficient help to get going, but not enough for troubleshooting. Macintosh users will have to wait a few more months before they can buy a client version.

Despite a few omissions and rough edges, Conference+ provides an inexpensive way to add powerful discussion and collaboration features to Microsoft Mail. —Peter Loshin

*Peter Loshin is a freelance writer and networking expert in the Boston area.*



**CONFERENCE+ RUNS AS A MENU OPTION** within Microsoft Mail, giving you a consistent interface for handling all your messages.

tronic bulletin boards and conferences within Microsoft Mail. You don't need to learn yet another application, remember yet another password and user ID, and repeatedly check yet another application while you work. Select Conference+ from Microsoft Mail's File menu, and you're in business.

Conferences are structured like Mail's private folders. Conference messages look just like E-mail messages except that they can be nest-

### CONFERENCE+ 1.1

Collaborate and take part in group discussions from within Microsoft Mail.

**List price:** 25 users \$1750, 100 users \$6000

**The Mesa Group**

617/964-7400, 617/964-4240 (fax)

**Reader service no. 769**

# Introducing DTK QUIN Series!

## High Performance

Intel Chipset

### Quin-52

Dual Pentium™ 75/90/100Mhz Processor  
8MB RAM, Up to 256MB  
256K/512K Cache  
PCI/EISA Architecture  
3 PCI + 3 EISA + 1PCI/EISA slots  
PCI Local Bus Graphics-1MB or 2MB  
Green Functions

### Quin-51

Pentium 75/90/100Mhz Processor  
8MB RAM, Up to 128MB  
256K Cache  
PCI/ISA Architecture  
2 PCI + 4 ISA + 1 PCI/ISA slots  
PCI Local Bus Graphics-1MB or 2MB  
Built-in PCI IDE & I/O

### Quin-02/33

Pentium 60/66Mhz Processor  
8MB RAM, Up to 192MB  
256K/512K Cache  
PCI/ISA Architecture  
3 PCI + 3 ISA + 1 PCI/ISA slots  
PCI Local Bus Graphics-1MB or 2MB  
Built-in PCI IDE

## Value For the Buck

SIS Chipset

### Quin-34

Pentium 60/66Mhz Processor  
8MB RAM, Up to 128MB  
256K/512K/1MB Cache  
PCI/ISA Architecture  
3 PCI + 3 ISA + 1 PCI/ISA slots  
PCI Local Bus Graphics-1MB or 2MB  
Built-in 2 Enhanced PCI IDE Interface

### Quin-35

Pentium 75/90/100Mhz Processor  
8MB RAM, Up to 128MB  
256K/512K/1MB Cache  
PCI/ISA Architecture  
3 PCI + 3 ISA + 1 PCI/ISA slots  
PCI Local Bus Graphics-1MB or 2MB  
Built-in 2 Enhanced PCI IDE Interface,  
2 Serial (16550), 1 Game, 1 parallel port



## Multimedia Options

Double-speed or Quad-speed CD-ROM  
15" CRT monitor w/built-in Speakers  
14400 Fax Modem

### Multimedia Kit

16-bit Sound Card & 2X CD-ROM, 2 Speakers,  
& 6 CD Titles (Encyclopedia, Animal, World Atlas,  
U.S. Atlas, Chessmaster, Mavis Beacon Teaches Typing)

## Software Choices

MS-Encarta™, Money, Works, Entertainment Pack  
MS-Windows for WorkGroups, Windows, & DOS  
IBM-OS/2 Warp

## Peripheral Choices

All systems are available with your choice of  
memory upgrades, hard drives, monitors, case  
type (mid-tower and desktop), tape drives,  
network cards, floppy drives, keyboards,  
and mice.

Discover the DTK QUIN series, a wide range of Pentium systems; from 60Mhz to 100Mhz, available with PCI/ISA or PCI/EISA architecture, single or dual processor, Intel or SIS chipset, and much more. Combined with the Pentium processor and high-speed PCI local bus, the QUIN series offer maximum power and speed for any task at home or at the office.

*For more information, please call your local DTK branch office.*



pentium™  
PROCESSOR



**DTK Computer, Inc.** Discover the Difference™!

Los Angeles

Tel: (818) 810-0098

Houston

Tel: (713) 568-6688

Chicago

Tel: (708) 593-3080

Miami

Tel: (305) 597-8888

New York

Tel: (908) 562-8800

Atlanta

Tel: (404) 246-0100

DTK Logo is a registered trademark of DTK Computer Inc. Discover the Difference is a trademark of DTK Computer Inc. The Intel Inside and Pentium Processor Logos are trademarks of Intel Corporation. Other trademarks are properties of their respective owners. Specifications subject to change without notice. © DTK Computer Inc.

Circle 84 on reader service card

WHAT HAPPENS

WHEN YOU ADD **SIZE**

TO AN ALREADY

**EXTRAORDINARY** PACKAGE?



At 7 feet 2 inches tall, Kareem Abdul-Jabbar has got some serious size. But that's only half the story. The fact that he added superior basketball skills to an already imposing frame is what made him a dominant force in the NBA for two solid decades.

The new ergonomically and aesthetically designed Elite series of monitors from MAG InnoVision have features that other monitors just can't touch. And the fact that they only come in the larger 15-inch, 17-inch and 21-inch sizes with the most advanced CRT technologies makes them truly fantastic. Advance Display Calibration, Green Energy and LCD displays combined with ultra high resolutions up to 1600 x 1280, lightening-quick refresh rates and crystal clear dot pitches make them impossible to beat. And since they're so reliable, we'll even throw in a 3-year limited warranty.

So pick one up at a MAG InnoVision dealer near you. Their larger size and imposing features are liable to dominate the market for years to come and they cost a lot less than, say, an NBA draft pick these days.

WHAT DO YOU THINK?



# “IBM only makes servers for huge companies with unlimited budgets.”

*(Hello, how does starting at \$3,000 sound?)*

The days when only FORTUNE 500® companies could afford IBM are most definitely over. Because now, for about the price of other brands, any business can choose the IBM PC Server 300 and enjoy what IBM customers have come to expect.

Namely, servers that are easy to upgrade and work perfectly with other computers and peripherals you might already have. Precision IBM reliability. And HelpWare®, a comprehensive service and support package that includes telephone help 24 hours a day, 7 days a week.

What's more, if making your life easier is high on your list of options, you can choose an option of ours—NetFinity™ 2.01 software—which makes managing your network a lot simpler.

For details on how to get the most out of your PC budget by getting the most PC Server, see the IBM Authorized Business Partner near you. Or, for product info by fax, call 1 800 IBM-4FAX and key in ID# 3078 or 3079.



**IBM PC Server 300:**

486 DX2/66MHz; 728MB hard drive; 8MB parity memory expandable to 128MB; 9 Bays; 8 Open Slots; 30-day money-back guarantee; 3-year, next-day, on-site warranty; EISA/PCI architecture.

There is a difference™



# Take Your Net With You



BAXTER EXPORT'S TAMMY CHOI CAN WORK AT HOME without a problem, via the company's Shiva LanRover remote access system.

**Wherever you are, remote access systems like Shiva's LanRover and Rockwell's NetHopper/P let you pick up anything you need from your net.**

LIKE MOST OF US, TAMMY CHOI WORKS longer than nine to five. An international distribution coordinator for Baxter Export, a medical products exporter in Chicago, Choi often works late and on the weekends. And when she does, she needs to run not just her standard desktop applications but also network-based software such as Baxter's order-handling system (did that shipment *really* arrive in Bangladesh?).

Unlike most of us, however, Choi can do all of this from home.

She borrows a laptop that's stocked with her applications and is set up to dial into a Shiva LanRover remote access system on the office net. That way, she can get E-mail, up-to-date ordering information, and any of the other crucial business data that lives on the net rather than on an individual PC. "The Shiva system really helps me," Choi says. "I can work at home without a problem."

## Dialing for Data, From Anywhere

Today's office networks are vital information pipelines, and the more important the net becomes, the less effective you are when you're cut off from it.

But once your group installs a remote access system, you don't have to work without a net when you're at home or on the road. Such a system is basically a black box with a network adapter, modems, and special hard-

ware and software designed to trick the net into thinking that your remote PC is present and accounted for. The system comes with client software for your remote PC, and administrative software that your net manager can run on any net PC.

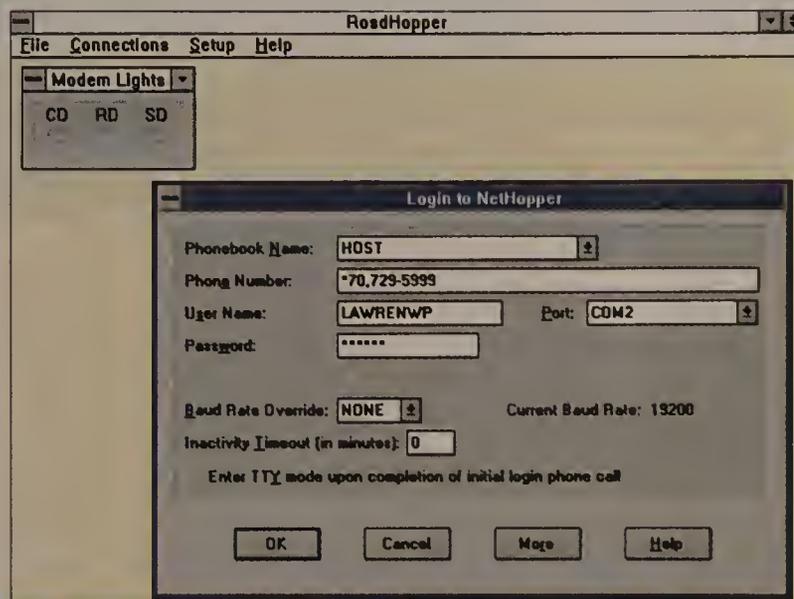
Once your net manager connects the system to your net, you install the client software on any PC with a modem. Dial in, and that remote PC acts just as if it were on the net, with the phone line behaving like an extended (but very slow) network cable. You install your applications on your remote PC, and retrieve only the data you need from the net.

How tolerable is the performance? We

tested both LanRover and Rockwell Network Systems' NetHopper/P with V.32 modems connecting at 19.2 kilobits per second. On a well-tuned ethernet or token-ring network, data moves from a server to PCs at speeds measured in megabytes per minute. We clocked both these remote access products at a fraction of that rate (about 100K per minute at best). That's slow, but still plenty workable when you have no other choice.

Performance improves with V.34 modems and connection speeds of 28.8 kbps, and you can connect ISDN or synchronous modems to get speeds up to 64 kbps.

By the way, this kind of remote access (dubbed *remote node*) differs from the remote control approach offered by packages such as Stac Electronics' ReachOut. remote control packages let you dial up and take over an individual computer, either directly or via the network. With remote control, you don't need to buy special hardware, and performance may be quicker running DOS applications or database packages than it is with LanRover or NetHopper. But performance running Windows applications with the remote control packages is far worse—often unworkably so. However, the line between these two approaches is rapidly blurring; now remote control software is often bundled with remote node systems.



NETHOPPER'S CLIENT SOFTWARE, called RoadHopper, lets you store frequently used network connections in an address book.

## LanRover, LanRover, All Users Come Over

Shiva's LanRover covers all the communications bases. Remote PC users can dial in to nets running NetWare, Windows for Workgroups, or TCP/IP (the communications protocol preferred by UNIX workstations and mandatory on the Internet). UNIX and Macintosh stations can dial in as well. And net users can make outbound calls through

LanRover's pool of modems. Additionally, some customers buy LanRover to connect small nets at remote offices with the net at corporate headquarters.

As a remote PC user, you can choose either Windows or DOS software to launch your call to the network, and this remote software is easy to learn. If you connect to multiple destinations, you can create a Windows icon or DOS batch file to automate each connection. The remote software has no address book; you store each destination network's phone number as a separate configuration file.

To both boost security and minimize the long-distance charges billed to your home or hotel phone, you can tap LanRover's dial-back feature. Just place an incoming call, and LanRover answers, identifies you, and calls you back. When you dial in you must enter a password to gain access, and your net administrator can filter your access to include only the appropriate parts of the net.

LanRover also keeps you from overusing the phone line in another way: You can run an optional Guardian utility that warns you if you mistakenly try to execute a program that will take unbearably long to load over your connection.

This kind of virtuosity comes at a price. LanRover includes either four or eight modem ports and can be configured to connect to an ethernet or token-ring network directly. Prices run from \$4899 to \$9899, depending on the number of ports and the number of bundled modems, if any. A lower-priced unit, LanRover 2/E, includes one built-in V.34 modem, a serial port for an external modem, and an ethernet port for \$2799.

How many ports do you need? That depends on how many inbound or outbound calls you want to handle at the same time. If employees are simply checking E-mail after-hours or from the road, you'll be surprised how many folks one modem will cover. If you're providing inbound access for more heavy-duty purposes, such as for sales reps who dial in frequently to look up prices and

## The more important your net becomes, the less effective you are when you're away. remote access systems can solve that problem.

inventory levels, you'll need more breadth.

Your network manager will probably be pleased with LanRover's ease of administration. It can be configured, managed, and monitored from any PC on the network.

### Hopping Onto the Net

**R**ockwell's entry-level NetHopper/P isn't a communications jack-of-all-trades like LanRover, but at \$1695 it doesn't have to be. NetHopper includes a single built-in V.32 or V.34 modem and comes ready to connect to your ethernet network. The unit allows PCs to dial in to NetWare or TCP/IP networks. UNIX workstations can also dial in to NetHopper if they are equipped to communicate via TCP/IP using a modem.

Though some of the frills available with LanRover, such as outbound modem sharing

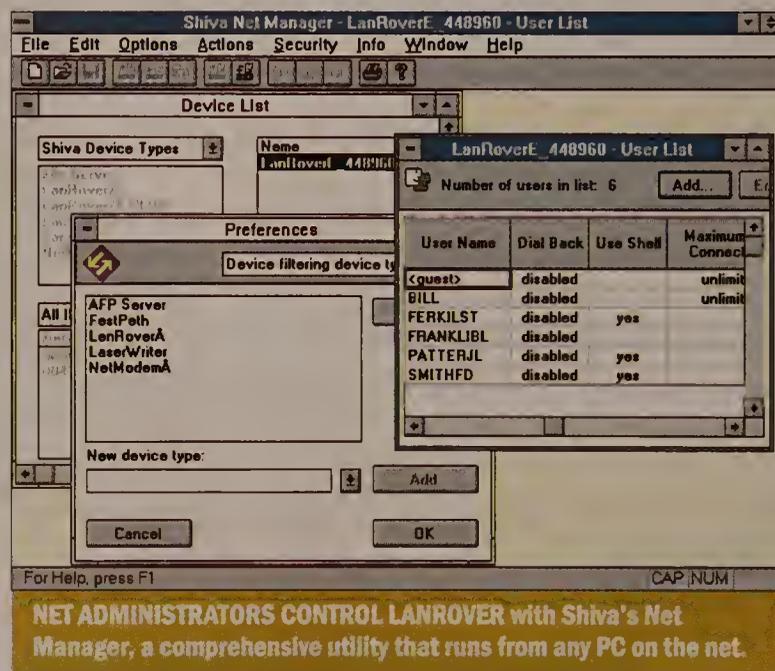
back after you place a call into the net.

Your network administrator may chafe a little at the awkwardness of NetHopper's management and configuration interface. To set up and monitor NetHopper on a NetWare net, for example, your administrator must connect a terminal to NetHopper or run a special cable from the unit to his or her PC. There is also no way to create a user list from the net server automatically.

NetHopper provides the same main security capabilities as LanRover: enforced password use and the ability to restrict incoming callers to certain parts of the network. If you need more modems, you can buy versions with as many as five modem ports, at prices up to \$4495.

Both of these systems have their strong points—and offer a lot of power for the price of an office PC. You can get started with remote access for under \$2000. If you need more ports, you can deploy LanRover (with both inbound and outbound modem sharing) for around a grand per line, or a five-port NetHopper for about \$900 per line. Your dial-up link will be slow compared with the speed of your local net connection, but isn't that better than no connection at all? —Bill Lawrence

*Bill Lawrence helps manage a 3000-workstation network for a large public utility in California.*



or dial-in support for Macintoshes, are lacking, NetHopper does do double duty in one respect. You can establish both net-to-net links and user-to-net links if you need to connect a small remote site to the corporate net.

NetHopper comes with remote software, called RoadHopper, in both Windows and DOS versions. RoadHopper doesn't create a separate icon for each network you call, but it does include an address book for listing nets. Like LanRover, NetHopper can dial you

### SHIVA'S LANROVER, ROCKWELL'S NETHOPPER/P

Connect your PC to your office network with these remote access systems.

**List prices:** LanRover \$2799 and up, NetHopper \$1695 and up

**Shiva Corp.**

617/270-8300, 617/270-8599 (fax)

**Reader service no. 770**

**Rockwell Network Systems**

805/968-4262

**Reader service no. 771**

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

# EXPLORE the INTERNET!



# FREE\*

Delphi Internet™ offers you full access to the Internet and now you can explore this incredible resource with no risk. You get 5 hours of evening and weekend access to try it out for free!\*

Use Delphi Internet's mail gateway to exchange messages with over 30 million people at universities, companies,

and other online services such as CompuServe® and MCI Mail®. Download programs and files using **FTP** or connect in real-time to other networks using **Telnet**. You can also meet people on the Internet. **Internet Relay Chat** lets you "talk" with people all over the world and **Usenet News** is the world's largest bulletin board with over 20,000 topics!

To help you find the information you want, you'll have access to powerful search utilities such as **Gopher**, **Hytelnet** and **WAIS**. If you aren't familiar with these terms, don't worry; Delphi Internet has hundreds of expert online assistants and a large collection of help files, books, programs, and other resources to help get you started.

Over 850 local access numbers are available across the country. Explore Delphi Internet today. You'll be amazed by what you discover.

now supporting  
**9,600  
and  
14,400  
bps**  
at no extra charge!

## FIVE HOUR FREE TRIAL! \*\*

Dial By Modem 1-800-365-4636, Press return until you get a prompt  
At Username, enter JOINDELPHI. At Password, Enter PCW495

\*Free offer applies to new members only. Limit one per household and is valid for a limited time. A valid credit card is required for immediate access. Free time may be used only during the remainder of the calendar month of becoming a member. Telcom surcharges apply during business hours (8am to 6pm weekdays) via Tymnet or SprintNet and for access outside the mainland US. New members must agree to Terms and Conditions of membership when joining. Complete details and other restrictions are provided during the toll-free registration. DELPHI INTERNET is a trademark of Delphi Internet Services Corporation.

**Attention Current Internet Users:** See what Delphi Internet can offer you! Stock quotes, Grolier's Encyclopedia, newswires, and hundreds of other services are just a few keystrokes away. Telnet to delphi.com and enter the username and password above for a free trial.



Questions? Call 1-800-695-4005.  
Send e-mail to INFO@delphi.com

©1995 Delphi Internet Services Corporation

Circle 49 on reader service card

## HELP LINE Q & A



## Tip of the Month

**PREPARING TO PLUG AND PLAY:** Be careful when looking for a PC ready for Plug and Play (PnP), the industry specification meant to simplify installation and removal of devices in PCs. "Plug and play" doesn't mean a PC meets the spec.

A true PnP PC uses devices, a BIOS, and an operating system that all support PnP. If a vendor claims a PC lets you plug and play, ask if the PC has a PnP BIOS and, if possible, start up the PC and watch the screen to see if it identifies a PnP BIOS. If a PC has an updatable flash BIOS that doesn't support PnP, make sure the vendor plans to offer an update for PnP.

Until Windows 95 arrives, no operating system integrates PnP support. Some vendors whose PCs have a PnP BIOS advertise their systems as "PnP-ready," but that may mean you must wait for Windows 95. Others bundle utilities with Windows 3.1 that enable PnP capability now. If a vendor claims its PC has such a utility, ask about a configuration manager or look for a Windows program icon identifying it.

Finally, devices that come with such a PC may not be PnP-ready themselves. An included graphics card, for example, may lack the circuitry or drivers for PnP.

Shane Rau, Technical Editor

### DriveSpace versus DoubleSpace

**Q** I just upgraded from MS-DOS 6.0 to 6.22 and noticed that Microsoft has replaced the DoubleSpace disk-compression utility with a new one called DriveSpace. I've seen very little analysis of this change in computer circles. Have any problems been reported? How does the program work? Is it as good (or bad) as DoubleSpace?

Charles Burrows, *CompuServe*

**A** There's been little talk of the differences between DoubleSpace and DriveSpace—the lawsuit-inspired replacement for DoubleSpace—because the differences are few. DoubleSpace isn't perfect; many people, including me, have had serious problems even with the supposedly improved version of DoubleSpace that shipped with MS-DOS 6.2. MS-DOS 6.22's DriveSpace uses different file names and a slightly different compression algorithm but otherwise works about the same as DoubleSpace. There's no benefit I'm aware of in converting from one utility

to the other; DriveSpace may even expose you to potential data loss in the same ways DoubleSpace does (see *Consumer Watch's Bug Watch* in the March issue for an example of a compressed volume file bug that afflicts both DriveSpace and DoubleSpace).

I advise that you avoid disk compression for two reasons. First, since hard disk prices continue to drop dramatically, capacious disk storage gets more affordable all the time. Second, disk-compression utilities, even when they function perfectly, add a sometimes frustrating layer of complexity to configuring and troubleshooting your PC.

If you still want to use MS-DOS's disk compression, here's what you need to know: If you try to use any DoubleSpace-compatible third-party disk utilities with DriveSpace, they may not work, because the compressed volume files have different names and different internal formats. Fortunately, if you've upgraded from DOS 6.0 or 6.2 to 6.22, you can still use DoubleSpace, which the DOS 6.22 installation

program doesn't delete. If you don't own a licensed copy of DOS 6.2 (if, say, you are moving up from version 5.0, or you just purchased a system with version 6.22 installed), you'll have to live with DriveSpace and hope that the manufacturers of any disk utilities you use will soon release DriveSpace-compatible updates.

### One-Dimensional Mouse Fix

**Q** When I try to use my serial mouse, the pointer moves up and down only—it won't go left and right. I've tried everything, from installing new drivers to shaking around the 9-pin connector to troubleshooting COM port and IRQ conflicts. Nothing seems to help. What else is left to check?

Gordon Lee Shyy, *Cupertino, California*

**A** Well, you've checked everything but the mouse's innards. Even on a tidy desk, your mouse ball still picks up dust and oil from your hand and transfers it to the rollers inside, impairing smooth mouse movement.

Since it appears that one of your rollers isn't moving at all, it probably has a bunch of fuzz wound around it. Turn the mouse over, slide or twist off the ball cover, pop out the ball, and see if you can pull out the fibers with a pair of tweezers; while you're in there, gently scrape any goo off the rollers using a wooden toothpick or a similarly firm but nonabrasive implement. (Don't use a pen, pencil, or eraser, since they can leave more stuff inside the mouse than was there to start with.)

Remove whatever remaining detritus you can by just putting your lips together and blowing it out. Also, give the ball a quick bath in warm water and dry it with a lint-free towel.

If after all this deep-cleaning your mouse still doesn't work right, try using it on a different computer. If it works fine, check again for hardware or driver conflicts. If the mouse still doesn't work, don't waste another minute on it (unless you can return it under warranty). You can find a brand-new generic mouse at computer stores or office supply emporiums for as little as \$10; top-of-the-line models cost less than \$60.

### Mute the Boot

When I start my computer, the various drivers and programs launched from CONFIG.SYS and AUTOEXEC.BAT display almost two screens' worth of information I could live without. The Norton Utilities Disk Doctor and Image programs are particularly drawn out. Is there any way I can avoid having all that text on screen?

*Ian Anderson, Brossard, Quebec, Canada*

While most device driver and TSR messages are simple copyright notices, they sometimes contain important troubleshooting information. And programs run by AUTOEXEC.BAT usually test the integrity of the system (for example, Disk Doctor checks the hard disk) or prepare for problems

(Image saves information to aid the recovery of lost or damaged files).

Certainly, you want to know if a program finds a problem or fails to complete its safeguarding errands. Therefore, I suggest you choose prudently which messages to eliminate; don't silence those that may someday save your system. With that caveat in mind, here are some techniques to reduce that torrent of text to a single screenful or so. (You can apply these tips to any batch file as well.)

The first step is to suppress the display of AUTOEXEC.BAT commands (CONFIG.SYS commands don't show on screen). Just add @ to the beginning of any batch file command to prevent it—and the DOS prompt—from displaying. Alternatively, place @ECHO OFF at the beginning of the batch file to suppress the display of its commands (that is, until it encounters an ECHO ON command or the end of the file). But if your AUTOEXEC.BAT contains ANSI Escape commands (which are often incorporated in PROMPT statements) to do, say, something fancy to the screen, make sure they're preceded with ECHO ON. Use @ECHO OFF again after the ANSI commands to keep any subsequent lines in the batch file from appearing on screen.

The second step is to turn off the messages that device drivers, TSRs, and programs issue when they first load. Use any available device-driver or command-line switches that prevent on-screen display. Also, avoid switches, such as HIMEM.SYS's /VERBOSE, that increase message size. Another technique (which doesn't work for CONFIG.SYS or for output written directly to the screen) is to send the messages into the digital void by adding >NUL to the end of each command.

### Works Works With 2MB

I have a 25-MHz 386-based laptop with 2MB of RAM and run Windows 3.1 in Standard mode. When I try

### USER GROUP OF THE MONTH

## Tampa Bay Computer Society

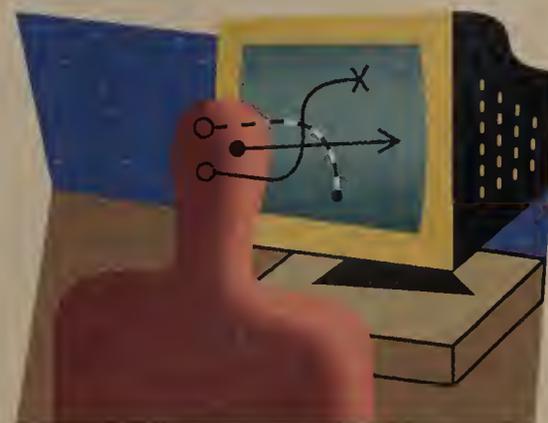
The April user group tips come from the Tampa Bay Computer Society. The Florida group is all volunteer and meets on the third Tuesday of each month at 5:30 p.m. at Clearwater Catholic High School on Haines-Bayshore Road near U.S. Highway 19. The group offers many special interest groups including ones for DOS, Windows, OS/2, databases, the Internet, modems, hardware, and small businesses. Its BBS contains more than 1GB of shareware and public domain programs and has a large message base. Bytes & Bytes, a 48-page newsletter, is included with membership and features hardware and software reviews, product discounts, and Member's Help Line, a listing of volunteers available to answer questions.

For more information, write Dick Kellerman, president, at 1510 Barry St., Unit J2, Clearwater, FL 34616-4427; call the group's 24-hour information line at 813/443-4433; or leave a message at 813/443-6525. The group's BBS number is 813/733-8693. Membership costs \$25 a year.

Reader service no. 644

**UNDOING MEMMAKER:** To undo the last changes that DOS 6.x's MemMaker made to your CONFIG.SYS and AUTOEXEC.BAT, type MEMMAKER /UNDO at the DOS prompt. Your original CONFIG.SYS and AUTOEXEC.BAT will be restored.

Dick Kellerman  
Tampa Bay Computer Society



to print documents of five pages or more using Microsoft Works for Windows, I get an error message telling me I can't print due to insufficient memory to run Print Manager. Can I do anything to solve this problem, short of buying more RAM, which is difficult to obtain for my computer?

*Gustin Burke Johnson,  
Calgary, Alberta, Canada*

**A** Two megabytes is a pretty slim amount of RAM for running Windows; that's what causes it (by default) to run in Standard rather than in Enhanced mode. As a result, you lose out on virtual memory, a technique that Windows uses to run more programs than can fit into your system's available RAM.

You can try forcing Windows to run in Enhanced mode by starting Windows with the command **WIN/3**, which may give Print Manager some breathing room. But it's probably better simply to turn off Print Manager. Just uncheck the *Use Print Manager* box in Control Panel's Printers applet, and Windows will output directly to the printer port instead of first spooling documents to an intermediate file.

If you absolutely must use a print spooler, almost any commercial replacement for Print Manager will give you significantly better performance and features. My favorite is Zenographics' SuperPrint 3.1, a program that is faster than Print Manager, is fully compatible with Windows for Workgroups (not all print spoolers are), and provides various dithering options for improving image quality.

- **SuperPrint 3.1** \$49.95; Zenographics, Inc.; 800/366-7494, 714/851-6352  
Reader service no. 645

### COM Port Cooperation

**Q** I run WinFax Pro 3.0 with auto-answer enabled at all times. However, I occasionally dial in to America Online, which requires me to manually exit WinFax Pro, run the AOL software, and then relaunch WinFax after I finish with AOL. Is there some way

that I can automate all these steps with a batch file or a macro?

*David Jacks, PC World Online*

**A** You could probably write a program in Visual Basic that does exactly what you want—but why bother when someone has already done it for you? The wickedly named Voodoo/Assassin, a \$20 shareware utility by Wayne Erffling and Rich Johnston, does the dirty work for you. Voodoo/Assassin is a Windows program that you insert into the command line of an application (America Online, for example) when you want the app to usurp COM-port control from another program. Subsequently, double-clicking the Voodoo/Assassin-equipped icon closes the first program (which relinquishes the COM port) and starts the second. When you exit the second program, Voodoo/Assassin automatically restarts the first one. You can find this utility and its documentation on PC World Online in the file ASSA04.ZIP.

Erffling reports that you may have difficulty using Voodoo/Assassin with some versions of WinFax Pro 4.0 and with Prodigy for Windows' Autologon feature. If you use one of these programs—or don't want to use a software kludge to keep your fax-modem in auto-answer mode reliably—do what I do: Employ two COM ports, each with its own fax-modem or data-only modem. On the system I use every day, COM1 hosts an old 9600/2400-bps fax-modem that remains in auto-answer mode at all times. On COM2 is a newer, faster modem I use 10 or 20 times daily to connect to online services, the Internet, and *PC World's* LAN. Both modems are connected to the same data/fax phone line, but since they use different COM ports they never have a conflict.

### POWER to the People

**Q** Could someone please tell me of what use DOS 6.x's POWER command is? Does it conserve electricity, reduce computer wear and tear, or what? Likewise, does pressing the

<Pause> key do anything to save power or to spare hardware?  
*anonymous, America Online*

**A** The short answer is that the POWER command (which requires you to first load the POWER.EXE device driver) won't do much for you unless your computer conforms to the Advanced Power Management API, a specification devised by Microsoft to provide a standard way for applications to interact with your computer's power-saving features. Using POWER.EXE on an APM-aware system can cut power consumption—and, more important, extend portable systems' battery life—by as much as 25 percent, according to Microsoft. Surprisingly, the driver can also reduce power consumption by about 5 percent on non-APM systems by shutting down the CPU during periods of inactivity. Unfortunately, the utility can also slow down your system.

It would be nice if pressing <Pause> put your computer into sleep mode, but it doesn't. In fact, most applications ignore the <Pause> key—so most of us use it simply to freeze the execution of DOS commands, such as DIR, TYPE, and TREE, when the text is about to scroll off screen. But you're better off paging multiple-screen text output using **DIR /P, MORE<document.txt**, and **TREE|MORE**; pressing almost any key resumes execution.

You can also use the <Pause> key to stop execution of CONFIG.SYS temporarily—especially useful when trying to spot fleeting error messages. But since CONFIG.SYS messages fly by so quickly, I recommend that, instead of <Pause>, you press <F8> when you see the 'Starting MS-DOS' prompt. That way, you can step through CONFIG.SYS one line at a time.

**By Scott Spanbauer**

*Scott Spanbauer is a contributing editor for PC World. Help Line welcomes your questions; PC World pays \$50 for published items. See page 12 for contact information.*

# All Eyes Are On Quantex!

It's no wonder. After all, Quantex offers such



terrific systems, incredible features and



great prices folks just can't wait to see what we

come up with next. We're always on the



leading edge of technology



for both performance and

speed. And when you add in the kind of CD



bundles we include, it's just bound to catch your

eye and your imagination.

*Just don't blink...you might miss something.*



# Take a Good Look at All We Have to Offer!

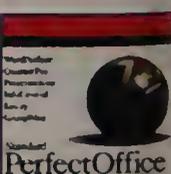
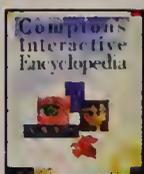
**You won't believe your eyes.**

When it comes to power, seeing is believing. Charging at speeds of **75MHz**, **90MHz** and **100MHz**, Pentium™ processors snap images onto your screen up to 174% faster than a 486DX2/66! Gargantuan

**850MB** and **1.2Gig** (1280MB) Western Digital® Caviar™ hard drives deliver virtually limitless storage space with sleek seek times. **64-Bit PCI Graphics Engines** swiftly produce highly detailed, sharply colored images. With performance that'll make you sit up and take notice, Quantex is an industry visionary.



System Picture with tower case and 17" MAG monitor.



**Bundle 1-**Compton's Interactive Encyclopedia, Dragon Lore, CardShop Plus Deluxe, Mayo Clinic Family Health Book, Quicken SE and Main Street select.

**Bundle 2-**The Complete Reference Library, Dragon Lore, EveryWhere USA Travel Guide, Quicken SE, and PerfectOffice Standard.

(Main Street includes Works, Infocentral, Grammtik, Webster's Dictionary, Clip Art for the home, Wallobee Jack "The Lost Lionardo" and Paper Planes)

(PerfectOffice Standard includes WordPerfect 6.1, Quattro Pro 6.0, Infocentral, Presentations, Envoy and GroupWise)



## Catch a Glimpse of the Future.

Quantex invites you to take a peek "under the hood" -- you'll find these systems packed with the market's hottest new technology. Like **Quad Speed CD-ROM** drives with 190ms Random Access time and a 256KB data buffer capacity -- that means smoother video display with no delays! We also provide your "on-ramp" onto the Information Superhighway with our speedy **14,400 baud FAX/modem**, plus one month's free access to **America On-Line**®, **CompuServe**®, and **Prodigy**® on-line services. Don't worry, your eyes are not deceiving you. Quantex's performance hardware gives you the ability to envision tomorrow's technology today.

## Stop. Look. And Listen.

Our CD bundles will put a sparkle in your eyes and music in your ears. Dive into multimedia with **Compton's Interactive Encyclopedia '95**. Get financial advice from **Quicken SE**, or medical advice from the **Family Health Book**. Create personalized greetings from **CardShop Plus Deluxe**, or enter the adventures of **Dragon Lore**. For business software, look no further than the **Wordperfect PerfectOffice** suite. Or make it a family affair with **WordPerfect Main Street**. You'll see -- Quantex bundles are love at first sight!

## We're Looking Out for You.

We look after your system long after your purchase. Check out our 30-day Money Back Guarantee, One Year Free On-Site Service, One Year Free Parts & Labor Warranty along with a lifetime of toll-free phone support. Plus, we even offer the **GE Service Protection Plus Plan** option, which keeps your Quantex system covered for up to four years. The more you read, the better we look!



OCT. 94  
NOV. 94  
DEC. 94  
JAN. 95



“★★★★” (7/94)

“The Quantex QP5/90PM-2 is as close to a turnkey multi-media PC as any machine we've seen.” (11/94)  
Feature Story (8/94)



## Q486DX2/66 XM **\$1649**

- IntelDX2™ 66 Processor
- 8MB RAM, 128KB Fast Cache\*
- 540MB 11ms IDE Hard Drive
- 3.5" 1.44MB Floppy Drive
- 64-Bit PCI Bus Graphics Engine w/ 1MB
- PCI Local Bus IDE Controller
- 15" Digital .28mm Flat Color Monitor
- 11-Bay Mid-Tower Case
- 101-Key enhanced keyboard & Mouse
- 14,400 Baud Fax/Modem
- **Toshiba 4X CD-ROM Drive**
- 16-Bit Stereo Sound Card w/Speakers
- MS-DOS & Windows for Workgroups 3.11
- Quicken® financial manager-Special Edition
- CD Discs: Compton's Interactive Encyclopedia 95, Dragon Lore, Mayo Clinic Family Health Book, CardShop Plus Deluxe, and WordPerfect Main Street Select

Q486DX4/100 XM.....\$1779  
 QP5/75 XM.....\$1899

## QP5/75 XM-2 **\$1999**

- Intel Pentium™ Processor
- 8MB RAM, 256KB Fast Cache
- 730MB 10ms IDE Hard Drive
- 3.5" 1.44MB Floppy Drive
- 64-Bit PCI Bus Graphics Engine w/ 2MB
- PCI Local Bus IDE Controller
- 15" Digital .28mm Flat Color Monitor
- 11-Bay Mid-Tower Case
- 101-Key enhanced keyboard & Mouse
- 14,400 Baud Fax/Modem
- **Toshiba 4X CD-ROM Drive**
- 16-Bit Stereo Sound Card w/Speakers
- MS-DOS & Windows for Workgroups 3.11
- Quicken® financial manager-Special Edition
- CD Discs: The Complete Reference Library, Dragon Lore, EveryWhere USA Travel Guide, and WordPerfect PerfectOffice™ standard.

Q486DX2/66 XM-2\*..... \$1749  
 Q486DX4/100 XM-2\*..... \$1879

## QP5/75 XM-1 **\$1999**

- Intel Pentium™ Processor
- 8MB RAM, 256KB Fast Cache
- 850MB 10ms IDE Hard Drive
- 3.5" 1.44MB Floppy Drive
- 64-Bit PCI Bus Graphics Engine w/ 1MB
- PCI Local Bus IDE Controller
- **Award-Winning 15" MAG Monitor**
- 11-Bay Mid-Tower Case
- 101-Key enhanced keyboard & Mouse
- 14,400 Baud Fax/Modem
- **Toshiba 4X CD-ROM Drive**
- 16-Bit Stereo Sound Card w/Speakers
- MS-DOS & Windows for Workgroups 3.11
- Quicken® financial manager-Special Edition
- CD Discs: Compton's Interactive Encyclopedia 95, Dragon Lore, Mayo Clinic Family Health Book, CardShop Plus Deluxe, and WordPerfect Main Street Select

QP5/90 XM-1..... \$2249

## Q486DX4/100 ZM **\$1979**

- Intel DX4™ 100 Processor
- 16MB RAM, 128KB Fast Cache
- 730MB 10ms IDE Hard Drive
- 3.5" 1.44MB Floppy Drive
- 64-Bit PCI Bus Graphics Engine w/ 1MB
- PCI Local Bus IDE Controller
- 15" Digital .28mm Flat Color Monitor
- 11-Bay Mid-Tower Case
- 101-Key enhanced keyboard & Mouse
- 14,400 Baud Fax/Modem
- **Toshiba 4X CD-ROM Drive**
- 16-Bit Stereo Sound Card w/Speakers
- MS-DOS & Windows for Workgroups 3.11
- Quicken® financial manager-Special Edition
- CD Discs: Compton's Interactive Encyclopedia 95, Dragon Lore, Mayo Clinic Family Health Book, CardShop Plus Deluxe, and WordPerfect Main Street Select

Q486DX2/66 ZM.....\$1849

## QP5/90 XM-3 **\$2549**

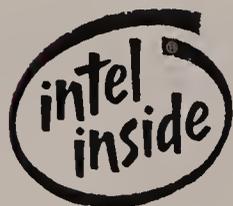
- Intel Pentium™ Processor
- 16MB RAM, 256KB Fast Cache
- 850MB 10ms IDE Hard Drive
- 3.5" 1.44MB Floppy Drive
- 64-Bit PCI Bus Graphics Engine w/ 2MB
- PCI Local-Bus IDE Controller
- 15" Digital .28mm Flat Color Monitor
- 11-Bay Mid-Tower Case
- 101-Key enhanced keyboard & Mouse
- 14,400 Baud Fax/Modem
- **Toshiba 4X CD-ROM Drive**
- 16-Bit Stereo Sound Card w/Speakers
- MS-DOS & Windows for Workgroups 3.11
- Quicken® financial manager-Special Edition
- CD Discs: The Complete Reference Library, Dragon Lore, EveryWhere USA Travel Guide, and WordPerfect PerfectOffice™ standard.

Q486DX4/100 XM-3\*.....\$2049  
 QP5/75 XM-3.....\$2299  
 QP5/100 XM-3.....\$2699

## QP5/100 XM-4 **\$3099**

- Intel Pentium™ Processor
- 16MB RAM, 256KB Fast Cache
- **1280MB 10ms IDE Hard Drive**
- 3.5" 1.44MB Floppy Drive
- 64-Bit PCI Bus Graphics Engine w/ 2MB
- PCI Local Bus IDE Controller
- **Award-Winning 17" MAG Monitor**
- 11-Bay Mid-Tower Case
- 101-Key enhanced keyboard & Mouse
- 14,400 Baud Fax/Modem
- **Toshiba 4X CD-ROM Drive**
- 16-Bit Stereo Sound Card w/Speakers
- MS-DOS & Windows for Workgroups 3.11
- Quicken® financial manager-Special Edition
- CD Discs: The Complete Reference Library, Dragon Lore, EveryWhere USA Travel Guide, and WordPerfect PerfectOffice™ standard.

QP5/75 XM-4.....\$2699  
 QP5/90 XM-4.....\$2949



**QUANTEX**  
 Microsystems, Inc.

**1-800-896-4898**

400B Pierce Street, Somerset, NJ 08873 Tel: (908) 563-4166, Fax: (908) 563-0407



\*All Pentium systems come with 256KB cache; 486DX2/66, 486DX4/100 systems come with 128KB cache standard. Some software packaging may be cosmetically different than pictures shown. CD Titles do not include Manuals. On-Site Service may not be available in certain remote areas. All returned items must have a Return Merchandise Authorization (RMA) number and must be in original packaging. The cost for returned freight is not included with any Money-Back Guarantees; shipping charges are non-refundable. Due to volatility of prices, Quantex does not offer a price protection policy. Prices and product descriptions subject to change without notice. Quantex Microsystems cannot be responsible for errors in typography or photography. The Intel inside Logo, Intel486, IntelDX2, and Pentium are trademarks of Intel Corporation. Some of the names or trademarks shown herein may be the property of other companies. Screen images simulated. Quantex 1995. All Rights Reserved.

## SPREADSHEETS Q & A

### Setting Up Data for 3-D Charts in Excel

**Q** I'm trying to set up some 3-D surface charts in Excel 5.0 to analyze human resources data. After a lot of hair-pulling, I figured out that I must take the three sets of variables that come to me in a conventional list layout and arrange them in a matrix before building my chart. But performing this task by hand is very time-consuming. Can I use a macro to speed up the process?

*Steve Haack, Minneapolis*

**A** Yes, Steve, you could, but why go to all that trouble when you can use a formula and a couple of sorts instead?

I've whipped up a simplified example of your worksheet, shown in **FIGURE 1**. The data for variables *x*, *y*, and *z* arrives on your desk arranged as shown in range A2:C8.

What you need in order to create the graph is the arrangement shown in H13:N19. Figure 1 provides step-by-step instructions for creating the 3-D surface chart.

The formula in step 5, `=IF(I$2=$G4, INDEX($A$3:$C$8,$G4,3), "")`, uses the index numbers in G4:G9 and I2:N2 to arrange the *z*-axis values in their proper positions in the table. The formula compares the index numbers in row 2 and column G. If these numbers are equal, INDEX displays the *z*-axis value from the corresponding row in the data table; otherwise, INDEX shows an empty label ("").

The copy procedure in step 6 duplicates the table of transformed data, but it converts the formulas to numbers so you can sort them. In step 8, you select *Data • Sort*, click *Options*, click *Sort Left to Right* in the Orientation box, and click *OK*. Then choose *Row 13* in the Sort By box.

Use the Chart Wizard to create the 3-D surface chart. In step 4, be sure to designate one row for the *x*-axis labels and one column for the *y*-axis labels.

### What's It Worth? Present Value in Any Spreadsheet

**Q** I want to answer questions such as how much I would have to invest at, say, 7 percent to have \$100 after four years. I need a table that calculates the present value of an investment at the end of each of several years, using various interest rates. I've looked at the @NPV, @PV, and @PVAL functions, but they're oriented toward a stream of payments, not individual amounts.

*Steven J. Evans, Internet*

	A	B	C	D	E
1	AMT:	\$100.00			
2		6.0%	6.5%	7.0%	7.5%
3	1	\$94.340	\$93.897	\$93.458	\$93.023
4	2	\$89.000	\$88.166	\$87.344	\$86.533
5	3	\$83.962	\$82.785	\$81.630	\$80.496
6	4	\$79.209	\$77.732	\$76.290	\$74.880

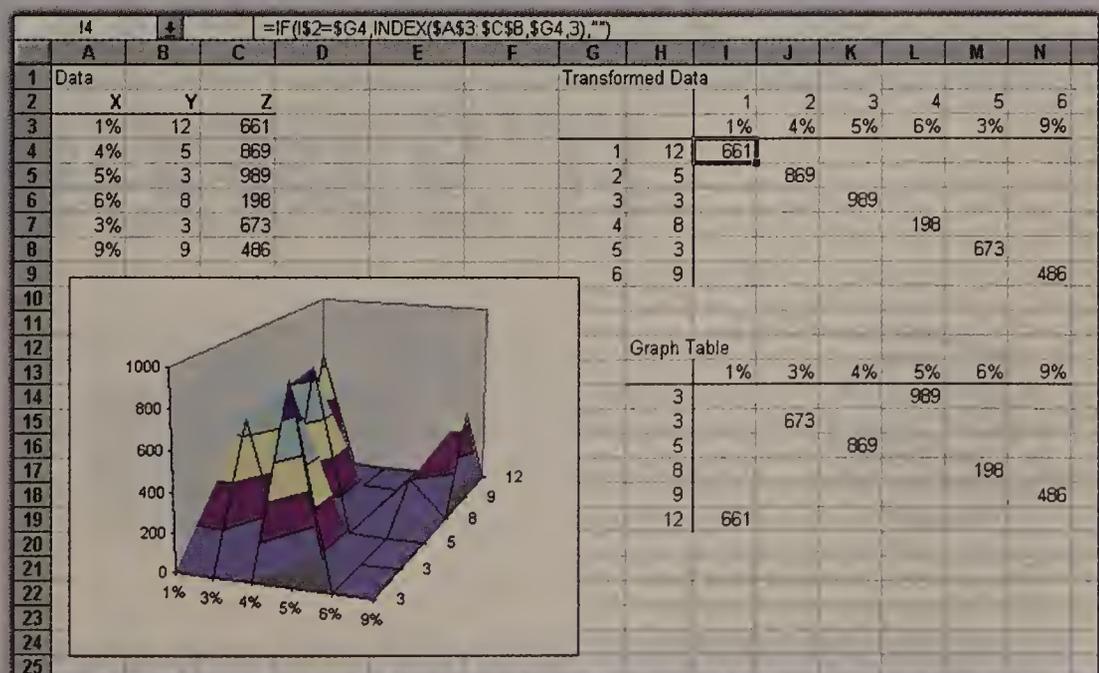
**A** You're right; the present-value functions aren't what you want. Try setting up your table as shown above,

with the investment's present value in cell B1, the interest rates in row 2, and the number of years in column A.

Then enter the following formula in cell B3 and copy it into the rest of the table: `+$B$1/(1+$B$2)^$A3`. In this formula, which is a simple inversion of the familiar compound interest calculation, \$B\$1 represents the future value of the investment, B\$2 the yearly interest rate, and \$A3 the number of years.

### Copying Formulas in Quattro Pro

**Q** I use Quattro Pro for Windows' multipage worksheets to project income from my rental properties. The calculations for each property appear on a separate notebook page. I spent a lot of time setting up the formulas for the first property on sheet A, using absolute cell addresses to copy the formulas correctly. When I tried to duplicate the model on other sheets, be-



- 1 Enter the data as shown in A1:C8.
- 2 Enter the index numbers in G4:G9 and I2:N2.
- 3 Copy the y-values (B3:B8) to H4.
- 4 Copy the x-values (A3:A8) to I3 using *Edit • Paste Special • Transpose*.
- 5 Enter the formula shown in the formula bar for I4 and copy it to I4:N9.
- 6 Using *Edit • Paste Special • Values*, copy H3:N9 to H13.
- 7 Sort H14:N19 by column H, with *No Header Row* selected.
- 8 Sort I13:N19 columnwise by row 13.
- 9 Select H13:N19 and use the *Chart Wizard* button to create the graph.



**FIGURE 1: CREATE A 3-D GRAPH in Excel that plots three sets of variables, shown in range A2:C8.**

The T2450CT boasts a 9.5" diagonal color active matrix screen with 64K simultaneous colors to provide vivid images and brilliant graphics for any presentation.



The AccuPoint™ integrated pointing device works in conjunction with click and drag buttons located comfortably beneath the thumbs.



# THE NEW SATELLITE PRO

## IT'S ABOUT POWER



Two separate PCMCIA slots (Type II and III) offer instant connection to your LAN, fax/modem and more.



Connect your CD-ROM drive or nearly any other peripheral through the standard SCSI-II port.



#### T2450CT FEATURES:

- 75MHz IntelDX4™, 3.3v
- 16KB cache
- 9.5" dia. color TFT-LCD active matrix display
- 520 Million Bytes (=500MB) or 340 Million Bytes (=320MB) HDD
- 8MB RAM expandable to 32MB
- 6.6 lbs.

#### T2400CT FEATURES:

- i486™DX2/50MHz, 3.3v
- 8KB cache
- 8.4" dia. color TFT-LCD active matrix display
- 340 Million Bytes (=320MB) or 260 Million Bytes (=250MB) HDD
- 8MB RAM expandable to 24MB
- 6.5 lbs.

#### T2400CS FEATURES:

- i486™DX2/50MHz, 3.3v
- 8KB cache
- 9.5" dia. color Dynamic-STN dual-scan display
- 340 Million Bytes (=320MB) or 260 Million Bytes (=250MB) HDD
- 4MB RAM expandable to 20MB
- 6.5 lbs.

#### ALL MODELS:

- Integrated math coprocessor
- Two PCMCIA slots (14.5mm/5mm)
- VL local-bus video
- SCSI-II Port
- NiMH battery with Toshiba MaxTime™ Power Management
- 3.5" 1.44MB floppy disk drive
- MS-DOS™, Microsoft Windows™ for Workgroups pre-installed
- Toll free technical support – 7 days a week, 24 hours a day



**3 YEAR  
LIMITED  
WARRANTY**



Now you only need one computer.  
Replace your desktop system with a Satellite Pro™  
and an optional Port Replicator, for easy  
connection to your monitor, keyboard and printer.

# SERIES. IT'S ABOUT VALUE. IT'S ABOUT TIME.

Introducing the Satellite Pro™ Series:  
high-performance notebooks at an  
affordable price. Offering scorching  
i486™ processors up to 75MHz and hard  
drives as big as 500MB.

These notebooks have impressive flexibility,  
with instant Plug and Play connection to all  
your peripherals. A built-in SCSI-II port and

**Satellite Pro™**  
**\$2999\***

Prices starting at

optional 16-bit sound card give you  
access to multimedia: audio, video  
and CD-ROM.

Loaded with all these features, yet light  
enough to go anywhere and rugged enough to  
come back in one piece. Isn't it about time for a  
Satellite Pro™ notebook?

For a dealer near you call 1-800-457-7777.

In Touch with Tomorrow  
**TOSHIBA**

©1995 Toshiba America Information Systems, Inc. The Intel Inside logo is a trademark of Intel Corporation. All products indicated by trademark symbols are trademarked and/or registered by their respective companies. \*T2400CS, 250MB HDD. Reseller prices may differ. All prices and specifications are subject to change. Shipping, handling, and applicable sales tax not included.

Circle 228 on reader service card

# Master Class: Quick DDE Links

Say you're trying to print a spreadsheet that consists of a list of information one page wide and several pages long. You want to format it with title information on the first page and column headings, page numbers, the date, and so forth, on all the pages. That was the case for reader Milton J. Minneman of Potomac, Maryland, whose letter prompted this Master Class.

You can't create such a report with a spreadsheet alone. But you can use your spreadsheet to set up the report and, by means of a simple DDE link, use your word processor to print it. I've illustrated the technique with 1-2-3 release 4.0 and WordPerfect 6.0, but it also works with most Windows spreadsheets and word processors. Note that step 7 tells WordPerfect to repeat the column headings in the table's top row. In Word 6.0 or Ami Pro, use the command *Table • Headings*.

Next time you want to print the report, the DDE link makes it easy. First open the spreadsheet file and make any changes you wish, then launch your word processor and open the report document. Select *Edit Links*, click *Update Now*, and you're ready to go. Using a manual link instead of an automatic one ensures that your spreadsheet won't slow down.

1 In 1-2-3, set up the table. Apply fonts, lines, and other formatting.

2 Select the entire table and assign it the range name **TABLE**. Select *Edit • Copy*.

3 Switch to WordPerfect; type the title text; format it, if desired; then press **<Enter>**.

4 Select *Edit • Paste Special*, choose **Rich Text Format**, and click *Paste Link*.

5 Select *Edit • Links* and click **Manual** under *Link Options*. Click *Change Link*.

6 Enter the range name **TABLE** in the *Item* field, then click **OK** and **OK** again.

7 Select the column headings, then select *Table • Format*. Click *Row* and check the **Header Row** box.

8 Use formatting commands to adjust margins and set up page headers.

9 Save the file and select *File • Print*.

	A	B	C
1	Name	Location	Salary
2	Newbranch	Wilmington	\$350,000
3	O'Brien	Sanford	\$450,726
4	Allen White	Greensboro	\$756,729
5	Buxton	Elizabeth City	\$758,210
6	Lathan	Chapel Hill	\$641,767

The image shows a WordPerfect document titled "North Carolina All Stars Dream Team" containing a table with columns for Name, Location, and Salary. The table data is identical to the one shown above. Overlaid on the document are three dialog boxes from the spreadsheet application:
 

- Links**: Shows a list of links with "TABLE" selected. The "Link Options" are set to "Manual".
- Edit DDE Link**: Shows the "Link Name" as "A:A1..A:C67", the "Application" as "123W", the "Topic/Filename" as "C:\DOWRITING\SSCOL\BIGPRINT.W", and the "Item" as "TABLE".
- Format**: Shows the "Table" format selected, with "Header Row" checked. The "Row Height" is set to "Auto" and "Row Margins" are visible.

 Red arrows from the numbered steps point to these elements: Step 1 points to the table; Step 2 points to the table selection; Step 3 points to the title text; Step 4 points to the "Rich Text Format" option; Step 5 points to the "Manual" link option; Step 6 points to the "Item" field; Step 7 points to the "Header Row" checkbox; Step 8 points to the "Format" dialog box.

cause of the absolute cell addresses many formulas ended up referring to cells on sheet A, not to the corresponding cells on the destination sheet. What's the secret for making this work? *Chester Fillmore, Saratoga Springs, New York*

**A**You've identified a common difficulty for users of 3-D worksheets. Fortunately, Quattro Pro's Model Copy feature lets you copy cells with the formulas and cells they refer to, adjusting the absolutes accordingly.

The worksheet at right represents a fragment of the complex model you sent. The formula in A:C6—namely,  $+B6*(1+\$A:\$B\$3)$ —calculates project-

ed rent for 1996 based on a 5 percent increase. In building the formula, you selected cell A:B3, then pressed **<F4>** to make the cell reference absolute (as the dollar signs indicate). When you

	A:C6	$+B6*(1+\$A:\$B\$3)$		
	A	B	C	D
1	Unit	15 Webster St.		
2	Rent	\$650		
3	Increase	5.0%		
4				
5		1995	1996	1997
6	Total Rent	\$7,800	\$8,190	\$8,600

copied the formula into the other cells in row 6 to calculate rent for 1997 and beyond, each copy referred to A:B3.

If you just select range A:A1..A:D6, copy it to the clipboard, and paste it to B:A1, the formula in B:C6 refers to cell

A:B3 rather than B:B3. Instead, select the entire section that you want to copy—in this case, A1:D6—then select *Block • Copy*. In the *To* field, enter **B:A1**, click the *Model Copy* check box, and click **OK**. Check the formula in B:C6, and you'll find it refers to cell B:B3 for the projected increase. You can change the values in sheet B as you wish.

**By Richard Scoville**

*Richard Scoville is a PC World contributing editor and a software training consultant based in Chapel Hill, North Carolina. Spreadsheets welcomes your questions and pays \$50 for published items. (See page 12 for contact information.)*

# One World. One Communications Software.

PROCOMM PLUS for Windows.

Integrating  
fax with data  
opens up a  
whole new world in  
communications software.

PROCOMM PLUS for Windows 2.1 is here with new features which are above and beyond all other communications software programs.

First up, you have access to complete fax capabilities including a fax viewer, scheduling, broadcast send, and the ability to receive faxes in the background; all from right within PROCOMM PLUS for Windows.

Plus, you can access your local area net or the vast global village via the Internet with our TCP/IP support for Telnet

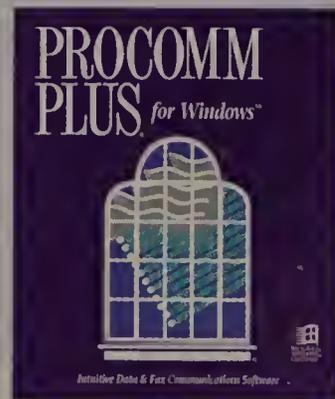
connections and an easy-to-use FTP file transfer and file management utility. With the fully-customizable Action Bar,

you can easily activate frequently used features with immediately understandable icons. You'll find our new Dialing Directory smart enough to serve as a single phone source to organize voice, fax and data calls. Enhanced ASPECT

scripts automate on-line sessions with services like CompuServe and MCI Mail. Our GIF viewer displays graphics as you download them. And in the intuitive PROCOMM PLUS tradition, everything is extremely powerful and easy to use.

**Call us at 1.800.315.3282  
to upgrade for just \$69.**

To start fresh, visit your computer retailer. PROCOMM PLUS for Windows 2.1...a whole world is waiting.



**PROCOMM  
PLUS** for Windows™

TOTALLY CONNECTED

To make multimedia  
accessible to the masses,  
we made it affordable  
to the masses.





Ah, the American Dream! Two cars in every garage and a multimedia kit in every household. Because Sound Blaster

**Sound Blaster Upgrade Kits.  
The Best Value In Multimedia.**

multimedia kits are now at prices we all can afford. Inside every kit, you get everything you need to turn an ordinary PC into a screamin' machine. Like a

---

*Each kit has a collection of today's hottest software. Sound Blaster Value CD™ includes 12 titles like Grolier Multimedia Encyclopedia™. Sound Blaster Discovery CD™ New Edition has 18 titles including Strike Commander® and Eagle Eye Mysteries™. For a more educational package, get either Sound Blaster Digital Schoolhouse™ with 20 titles like KidWorks™ 2, or the Sound Blaster Edutainment CD™ 16 with 42 titles including Seawolf™ and Scooter's Magic Castle™. And gamers will go berserk for Game Blaster CD™ 16 and its 17 titles like Rebel Assault™ and Return to Zork™.*

---

genuine Sound Blaster 16-bit sound card—the PC sound standard. Plus a super-fast CD-ROM drive and stereo speakers.

Of course, these kits are easy to install and are WaveTable upgradeable. And they all sport the Sound Blaster Compatibility Logo to ensure quality. They're the best deal in town since a gallon of gas was a nickel. Find them in stores everywhere or call 1-800-998-5227 Ext. 122.

**CREATIVE™**  
CREATIVE LABS, INC.  
multimedia iSS: Creative

## WORD PROCESSING Q & A

### Custom Label Sizes in Ami Pro 3.1

**Q** I recently bought some custom labels, preprinted with my company's name and address. Sadly, they don't match any of the standard label sizes that Ami Pro supports. Is there any way that I can add my custom label sizes to the list in Ami Pro's `_LABEL.STY` style sheet?

*Angela Jackson, Dubuque, Iowa*

**A** Sure, you can add custom label sizes to Ami's already extensive list of Avery label formats, but it's not a simple job. Here's how to do it:

1. First, you'll need to exit Ami Pro and load `AMILABEL.INI` into Windows' Notepad. Switch to Program Manager, press `<Alt>-FR` (or select *File • Run*), type `notepad amilabel.ini` in the Command Line box, and press `<Enter>`.

2. In Notepad, scroll down about 15 lines until you find a line that reads `'NextCustomLabelKey=Labelxxx'` (the *x* characters indicate the number of label formats in the file). Edit the value following the equal sign to indicate the number of label formats you want to add; for example, if you're adding one new format and the default value is 118, change the last word to read `Label119`.

3. Press `<Ctrl>-<End>` to jump to the end of the file. Now you need to add an additional line of information for

each new label style. Remember to start this line with a number that's one higher than the last line in the file (such as `Label120`). Use a decimal ruler to measure the labels, or use measurements supplied by the manufacturer; then enter this data in the format shown in **FIGURE 1**.

This format is very precise, so make sure each line contains the correct information in exactly the right order, with all entries on a single line of text and no spaces following the commas. Make certain the last field entry (for page type) matches the kind of paper your printer can use, since Ami displays only those labels suitable for your printer settings.

After typing the new entry, check it carefully, then save `AMILABEL.INI` and exit Notepad. Load Ami Pro, select *File • New*, and choose the `_LABEL.STY` style sheet. Your new label format should appear in the list that pops up when the style sheet loads. Select it, then print a sheet of test labels to make sure everything is correct before printing a batch of new labels.

### Reading WinWord 6.0 Documents in Ami Pro

**Q** I switched to Ami Pro 3.01 a few months ago, even though most of the people in my office use Word for Windows. Everything was just fine

until the others installed WinWord 6.0. Now when my coworkers send me their documents, I can't import them. Is there an Ami Pro import filter that can handle WinWord 6.0 documents?

*Patricia Everson, Chicago*

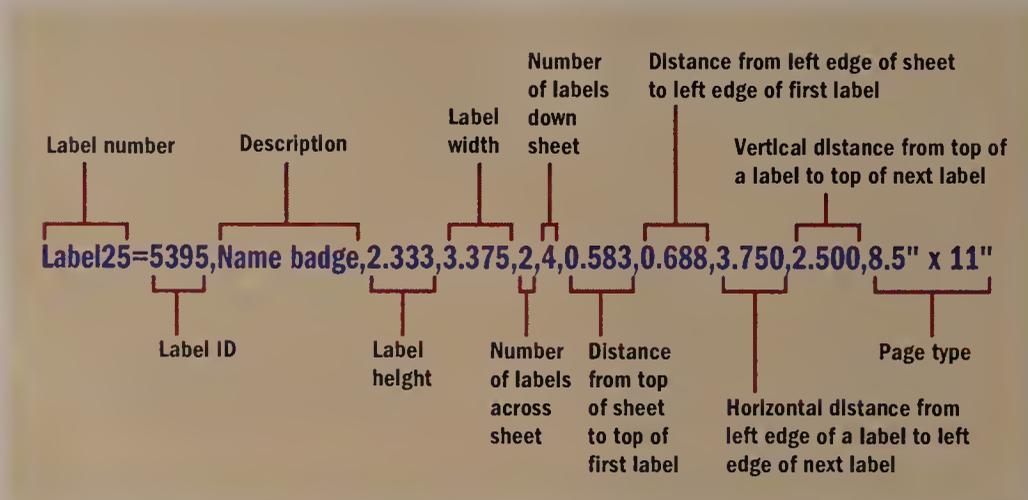
**A** I'm sorry to report there is no WinWord 6.0 import filter available for Ami Pro 3.01. However, Ami Pro 3.1 handles both WinWord 6.0 and WordPerfect 6.0 files easily. Upgrading from 3.01 to 3.1 isn't free, but at a cost of \$19.95, it's pretty cheap. To order the updated version directly from Lotus, call 800/872-3387.

### No Background Printing for the DeskJet Set

**Q** I use a Hewlett-Packard DeskJet 550c with Word 6.0a for Windows. The printouts look just fine, but no matter what settings I choose in the Print Options dialog box, I can't get Windows to print my pages in the background. So instead of working on other documents, I stare at the DeskJet's Printing dialog box for minutes on end. What gives?

*Derek Ryter, PC World Online*

**A** Blame Windows' DeskJet printer driver. The driver you have doesn't use the Windows Print Manager properly to spool the print job in the background while you work. Fortunately, Hewlett-Packard recently released version 5.0 of its DeskJet driver, which solves this and some other problems. You can obtain a copy of the new driver from the company's support BBS (208/344-1691), from the HP Peripherals forum on CompuServe (type `GO HPPER` at any prompt), or from PC World Online. The file to download is `D5W3-US.EXE`. You can also call Hewlett-Packard's printer driver support line at 303/353-7650 to have the new driver sent to you on a floppy disk for a nominal shipping charge.



**FIGURE 1:** TO MAKE AMI PRO PRINT on custom-size labels, add lines like this to your `AMILABEL.INI` file. Unless otherwise indicated, all measurements are in inches.

# We're Becoming Very Big In Monitors.



Imagine this: Once every 15 seconds someone in the USA buys a new CTX color monitor.

That's a million last year alone – more even than sold under big names like NEC, Sony, IBM and Mitsubishi\*.

And that's before the international experts started raving about our bigger, new, high-performance 1765GM and 1785GM 17-inch "green" monitors:

*"Best 17-in. monitor"* (Monthly PC Magazine, Japan).

*"Best overall performance"* (Soft & Micro Magazine, France).

*"One of the best monitors...bright, sharp display and excellent colors"* (Windows Magazine, Sept. '94).

*"Symbol of Excellence Award"* (CETDC/ Business Week Asia, Taiwan).

*"Best Display Products"* (Computex/Byte, Taiwan).

Not only does the larger, flat-square tube give you

more display area for Windows®, an ultra-fine .26mm dot pitch and flicker-free 1280 x 1024 at 75Hz resolution bring your graphics to life as never before.

Users thrive on the ergonomic design; anti-glare, anti-reflection, anti-static screens; and its front-mounted, full-featured digital touch-panel.

These new low-radiation (MPR II-compliant) "green" monitors use only five watts of power when "on" but inactive. That's six times better than even the US EPA's own Energy Star guidelines.

So how did we get so big so fast? Simply by giving you more for less. For more information, call your nearest CTX office.

**CTX**

CHOICE OF THE PROS

USA Headquarters 20530 Earlgate Street, Walnut, CA 91789, 909-595-6146, Fax 909-595-6293 Technical Support 1-800-888-2012 BBS 909-594-8973 Southern Region 6624 Jimmy Carter Blvd., Norcross, GA 30071, 404-729-8909, Fax 404-729-8805 Eastern Region 481-A Edward Ross Drive, Elmwood Park, NJ 07407, 201-646-0707, Fax 201-646-1998 Midwestern Region 500 Park Blvd., Ste. 295C, Itasca, IL 60143, 708-285-0202, Fax 708-285-0212 Southwestern Region 1225 E. Crosby Rd., Ste. A21, Carrollton, TX 75006, 214-416-9610, Fax 214-245-7447.



©1994 CTX International, Inc. All brand names are trademarks or registered trademarks of their respective owners.  
\*Official 1993 Monitrak U.S. monitor sales research.

Circle 74 on reader service card

**Marginal Characters in WinWord 6.0**

**Q** I use Word 6.0a for Windows to edit tariff documents for a public utility. Each time a document changes, I need to identify the change by inserting a letter code in the right margin. When I used WordPerfect 5.1 for DOS, I was able to change the right margin for a single line, then insert the code; this method doesn't work in WinWord. Can you tell me how to do this seemingly simple task?

*Chris Clark, Dubuque, Iowa*

**A** As you've discovered, WinWord 6.0a lets you set margins only by paragraph, not by line. But you can still insert your codes easily, using the Text Box button on WinWord's Drawing toolbar. This handy little tool works like a Post-it note, letting you insert text anywhere in a document.

Start by displaying the Drawing toolbar: Right-click on any WinWord toolbar, then select *Drawing* from the drop-down list. The toolbar should appear at the bottom of the screen. If you're not already in Page Layout mode, switch to it by clicking the *Page Layout*



*View* button or selecting *View • Page*

*Layout*. Now click the Drawing toolbar's *Text Box* button. Click on the page where you want to insert the code letter, hold down the mouse button, size the box by dragging with the mouse, then release the mouse button. To insert the letter, simply type it in the box, then click anywhere outside the box to return to your document.

The box may be surrounded by a thin border. To get rid of the border lines, right-click the border and select *Format Drawing Object*. In the dialog box that appears, click the *Line* tab, select *None*, then click *OK*. This formatting becomes WinWord's new default; all subsequent text boxes that you insert will also appear without borders.

You can use this technique to insert text anywhere on the page, not just in the margins, and move or resize the box to your heart's content.

**Easy Math in WordPerfect 6.0a for Windows**

**Q** I often need to do math while working in WordPerfect 6.0a for Windows. I was thinking of adding a button to the standard button bar that pops up the Windows Calculator. Is there a way I can do this without too much trouble?

*Jacob Ninan, Bangalore, India*

**A** It's really no trouble at all. Start with the button bar that you want to modify on the screen. Right-click the button bar and select *Edit* from the pop-up menu. In the Button Bar Editor dialog box, click the *Launch a Program* radio button, followed by the *Select File* button. You'll see a standard file selection dialog box. Change to your main Windows directory, then scroll down to *CALC.EXE* in the File name list and double-click it. Click *OK* in the Button Bar Editor dialog box, and you're done. A new button that launches Windows' Calculator will appear on one end of the bar.

If the toolbar is already crowded, the calculator button may not immediately be visible on screen. To view the new icon, you'll need to click the scrolling arrow at the right side of the button bar. You could also move the Calculator button to a more accessible spot on the toolbar. Just right-click the button bar, select *Edit* from the pop-up menu, and drag the button to its new location.

**WordPerfect Quotes Get Smart**

**Q** In your April 1994 column, you discussed how to make WordPerfect 5.2 substitute typographically correct quotation marks automatically for those ugly keyboard equivalents the program normally inserts. Try as I might, I can't seem to enable this feature in WordPerfect 6.0a for Windows. Am I missing something?

*Doug Candler, PC World Online*

**A** Not really. Like version 5.2, WordPerfect 6.0a lets you create so-called smart quotes, which look like the quotation marks you see in typeset materi-

als (" ") instead of a set of inch marks ("). However, the steps are a little different in 6.0a. Here's the process:

First, select *Tools • QuickCorrect*. If this command doesn't appear in your Tools menu, you'll need to add it.

Fortunately, WordPerfect supplies a macro that adds the command automatically. To run the macro, select *Tools • Macro • Play*, then press <F4> to pop up the Select File dialog box. Choose *QCSETUP.WCM* from the Filename list, and click *OK*. (*QCSETUP.WCM* is normally found in WordPerfect's *MACROS* subdirectory; if you can't find this file, you'll need to run the WordPerfect setup program to install the macros.) Click *Play* in the Play Macro dialog box. As the macro runs, it adds the QuickCorrect menu item to the Tools dialog box. You'll then need to restart WordPerfect to enable the feature.

Once you've selected *Tools • QuickCorrect*, mark the *Enable SmartQuotes* check box. Click the *SmartQuotes* button to open the Configure SmartQuotes dialog box. The cursor will be in the Single field of the Open Quotes frame. Press <Ctrl>-W to call up the WordPerfect Characters dialog box. Choose *Typographic Symbols* in the Character Set list, then select the single open quote from the display, click *Insert*, and then select *Close*. You'll now have to tab to each of the remaining SmartQuotes frames, press <Ctrl>-W, and repeat the above steps to insert the correct characters. When you're through, click *OK* and then *Close* to return to your documents.

From this point on, every keyboard quotation mark you type will be replaced automatically by the correct typographical symbol.

**By George Campbell**

*George Campbell is a contributing editor for PC World and a contributor to The PC Bible (Peachpit Press, Berkeley, California, 1995). Word Processing welcomes your questions and pays \$50 for published items. See page 12 for contact information.*



## The success of AutoCAD has inspired dozens of cheap imitations.

If you need a CAD package but don't need all the sophistication of AutoCAD® software, don't settle for a cheap imitation. Get new AutoCAD® LT for Windows™. Unlike those "bargain" packages, it's based on the world standard—AutoCAD—and gives you features the others can't duplicate. Like more accurate 2D drawing tools for designing

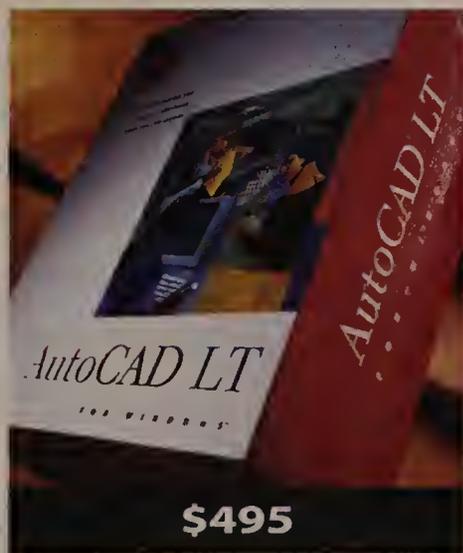
discrete parts. 3D design and layout tools and full support for layers and blocks. And drawings you can link, so changes on the master are automatically reflected in other drawings. What's more, making these drawings is as easy as using a few simple icons and tools. But if you do find

yourself with a question, you'll have access to on-line help as well as free 90-day product support. And since AutoCAD LT reads and writes data just like AutoCAD software, your work will be compatible with over a million AutoCAD users worldwide. Chances are your clients and colleagues are among them. So beware of cheap imitations. Visit your

## And one inexpensive one.

Authorized

AutoCAD Dealer or leading retail software store. Or, for a free demo disk, call 1-800-228-3601 and ask us for Demopack A216. Outside the U.S. and Canada, fax 415-491-8311.

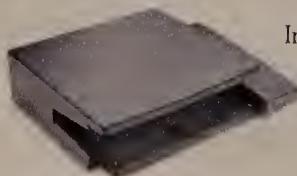


 Autodesk.

# THE COMPAQ CONTURA 410C.



*Intelligently Designed.  
Sensibly Priced.*



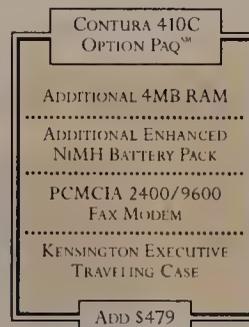
Add desktop convenience to your Contura 410C with the optional Docking Base. Features a battery charger and available Ethernet.

In the world of tray tables, hotel rooms and waiting areas, the design of your notebook matters as much as the processor and RAM. So we gave the Compaq® Contura® 410C smart, road-ready features like a detachable carrying handle, a vibrant color display, a big, comfortable center-mounted trackball and an adjustable full-size keyboard. You also get two PCMCIA slots,

COMPAQ  
CONTURA 410C  
**\$2,499**  
OR \$90  
PER MONTH\*

an upgradable 486 processor and a new wall-mount AC Adapter. Yet we kept the weight under six pounds.

Of course, we also made the Contura 410C highly affordable, so that it fits your budget every bit as comfortably as it fits your hands. So why not call and order yours today?



#### CONTURA 410C FEATURES:

- \* 486DX2/50MHZ PROCESSOR
- \* 350MB HARD DRIVE
- \* 4MB RAM (UPGRADABLE TO 20MB)
- \* TWO PCMCIA TYPE II SLOTS (OR ONE TYPE III)
- \* 3.5" DISKETTE DRIVE
- \* 9.5" COLOR DUAL SCAN DISPLAY
- \* INTEGRATED TRACKBALL
- \* TILTING, FULL-FUNCTION KEYBOARD
- \* WALL-MOUNT AC ADAPTER
- \* ENHANCED NIMH BATTERY
- \* 11.9" X 8.9" X 2", 5.9 POUNDS
- \* MULTILOCK SECURITY FEATURES
- \* PORTS: SERIAL, ENHANCED PARALLEL, DOCKING BASE CONNECTOR, EXTERNAL VGA AND EXTERNAL KEYBOARD
- \* PRE-INSTALLED MS DOS® 6, MS-WINDOWS™ 3.1, TABWORKS® AND LOTUS ORGANIZER
- \* 3-YEAR PICK-UP WARRANTY†

**COMPAQ**  
DirectPlus



**1-800-888-3429**  
WEEKDAYS 7-7, SAT 10-4 CST

ASK FOR OUR LATEST  
FREE CATALOG.

\*Leasing is provided by GE Capital Services for a term of 36 months, and is subject to approved credit and certain terms and conditions. †Restrictions and exclusions apply. Compaq Contura 410C is covered by a Three Year Pick Up Warranty. Monitors, battery packs and certain options are covered by a One Year Warranty. ©1995 Compaq Computer Corporation. All rights reserved. Compaq and the Compaq Logo Registered U.S. Patent and Trademark Office. DirectPlus is a registered service mark and Option Paq is a service mark of Compaq Computer Corporation. Contura is a registered trademark of Compaq Computer Corporation. Products, prices and programs are subject to change without notice. Other products are trademarks or registered trademarks of their respective companies. Microsoft and MS DOS are registered trademarks and Windows is a trademark of Microsoft Corporation. TabWorks is a registered trademark of Xerox Corporation. Offer available in the U.S. only.

Circle 35 on reader service card

# Choose Your Weapon.



## Plextor's 4PleX Quad Speed CD-ROM Drives. Now Available in 256K and 1MB Buffer.

It's a war out there. And if you're engaged in the battle for multi-media performance or fast data access, your first line of attack is a quad speed CD-ROM drive from Plextor. Designed to plow through reference data, archives, and today's most sophisticated multimedia applications, the 4PleX line of reliable drives boasts an arsenal of features including a 600KB/sec transfer rate, access to the world's largest CD-ROM drive buffer, blinding access speeds, the security of a two-year warranty and unlimited toll-free technical support.

Plextor offers you a choice of weaponry. The 4PleX 256 provides quad speed multimedia performance with fast access to key data. To triumph over new high-demand video applications and games, or to impress your allies with sophisticated multimedia presentations, choose the original 4PleX

with a 1MB buffer. Like a reconnaissance scout, the buffer looks ahead and anticipates your needs. As a result, every frame of video advances through your computer. Both drives give you smooth, fast, winning performance without over-taxing your computer in strategic multi-tasking situations.

No wonder *PC Computing* gave the 4PleX a four star ranking and the title "King Quad." Today's CD-ROM explosion promises to take no prisoners. So arm yourself with a 4PleX and rest easy knowing you are equipped to win the battle. For your nearest Dealer and a free copy of our latest book "18 Questions to Ask Before Purchasing a CD-ROM Drive" call 1-800-4PLEXTOR (1-800-475-3986).



 PLEXTOR



## WINDOWS Q & A

### Easy Access to Groups

**Q** I use Program Manager's Window menu to switch among program groups. The menu lists nine groups, then offers an option for 'More Windows'. Unfortunately, the first nine groups are ones I don't use often, so I have to hassle with the More Windows dialog box. How can I get my favorite groups into the nine prime spots?

*James W. Pearson, Aurora, Colorado*

**A** Program Manager gets the order for this menu from the PROGMAN.INI file. By editing this text file, you can customize the Window menu, giv-

ing you quick access to your most frequently used Program Manager groups.

Here's what you should do: First, if Options•Save Settings on Exit is checked, uncheck it for the time being (you can check it again later after you've finished). Choose *File•Run*, type **PROGMAN.INI**, and press **<Enter>**. Under the [Settings] heading, you should see a line that begins 'Order=' followed by several numbers separated by spaces. The numbers in this line correspond to the group numbers listed, appropriately enough, under the [Groups] heading later in the file.

To determine the first eight groups on the Window menu, you must rearrange the first eight numbers in the 'Order=' line to correspond with the eight groups you want easy access to. For example, if you want your Accessories group to be first, and you see a line under [Groups] that says **Group5=C:\WINDOWS\ACCESSOR.GRP**, edit the order line to begin **Order=5**.

Make sure that no numbers are repeated on the line, or Program Manager may simply ignore your work and do things its own way. Don't bother customizing the ninth number in the order list; the ninth group on the menu always changes to show the currently selected group if it's not one of the first eight that you specified, or the previously selected group if the current group is one of your first eight. Finally, save

the PROGMAN.INI file and restart Windows. Your Window menu should now show the group files you want.

### Cache Value, Part I

**Q** I recently upgraded to Windows for Workgroups 3.11, which comes with a 32-bit file access cache. How is this cache different from DOS's and Windows' SmartDrive cache? Is it a waste of memory to use both? Which one should I disable? I have 8MB of RAM.

*Raymond Chi, Berkeley, California*

**A** Both SmartDrive and 32-bit file access speed up Windows by providing a cache for disk information—a storage area in RAM in which the most recently used information is held. This way, your computer doesn't have to access your hard drive as often. The 32-bit file access feature of Windows for Workgroups 3.11 is much faster than the 16-bit SmartDrive, though when running many disk repair and maintenance utilities you'll have to turn it off (or simply exit Windows and run DOS versions of these programs). However, 32-bit file access doesn't cache information from floppy or CD-ROM drives, whereas SmartDrive does. So what should you do? That depends on your needs. Here are some scenarios; pick the one that best describes your situation:

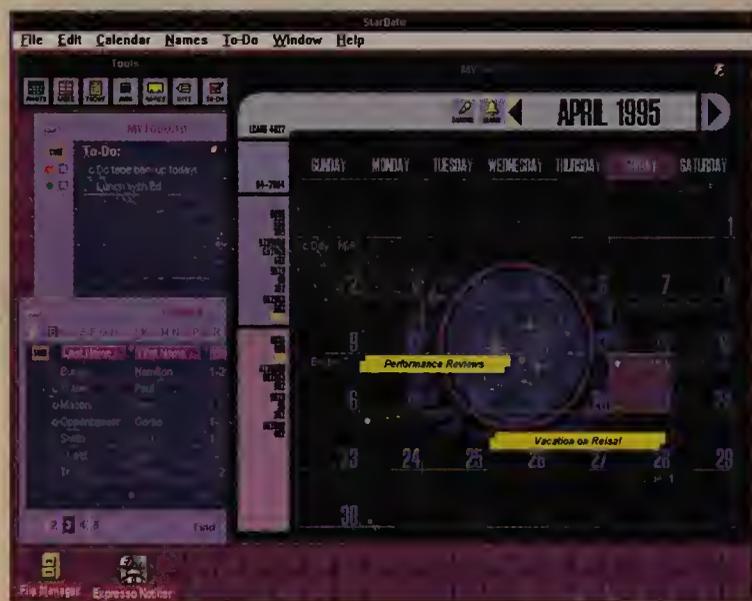
• **You don't care about caching floppy or CD-ROM drives, and you rarely work outside of Windows.**

In this case, you can save some memory by removing the SmartDrive line from your AUTOEXEC.BAT file (or simply disabling it by typing **REM** at the beginning of the line).

• **You want the performance benefit of a disk cache while working in DOS, but you don't care about caching your floppy or CD-ROM drives.**

Reduce to zero the amount of memory that SmartDrive uses for a cache in Windows. To do this, modify the

## Windows Toolbox



If you're a Trekker in need of a capable calendar, try Berkeley Systems' StarDate. This version of the Espresso Calendar & Address Book comes with a choice of visual designs based on *Star Trek: The Next Generation* and provides an intuitive scheduling interface that looks and acts much like a paper calendar—just point and type. You can send the calendar to the back as Windows wallpaper, then bring it back to life when you need it. You can also set alarms and schedule recurring events. The Address book is a little anemic (with an inadequate note-taking module and only enough address fields for one location), but the calendar itself will help you "make it so." StarDate's estimated street price is \$49.99. It's available from Berkeley Systems; 800/251-1733, 510/540-5535, 510/849-9426 (fax).

Reader service no. 634

# Everex STEP Note. The only notebook you'll ever need.

## Detachable, LCD Display

The STEP Notes' detachable LCD lets you easily upgrade from mono to color DSTN to color TFT when you're ready. Onboard VESA Local Bus VGA with 1MB video memory makes your graphics lighting fast, whichever display you choose.

## PCMCIA Support

The STEP Note supports two Type II or one Type III PCMCIA cards, letting you increase your productivity with an array of PCMCIA options.

## Road Ready Multimedia

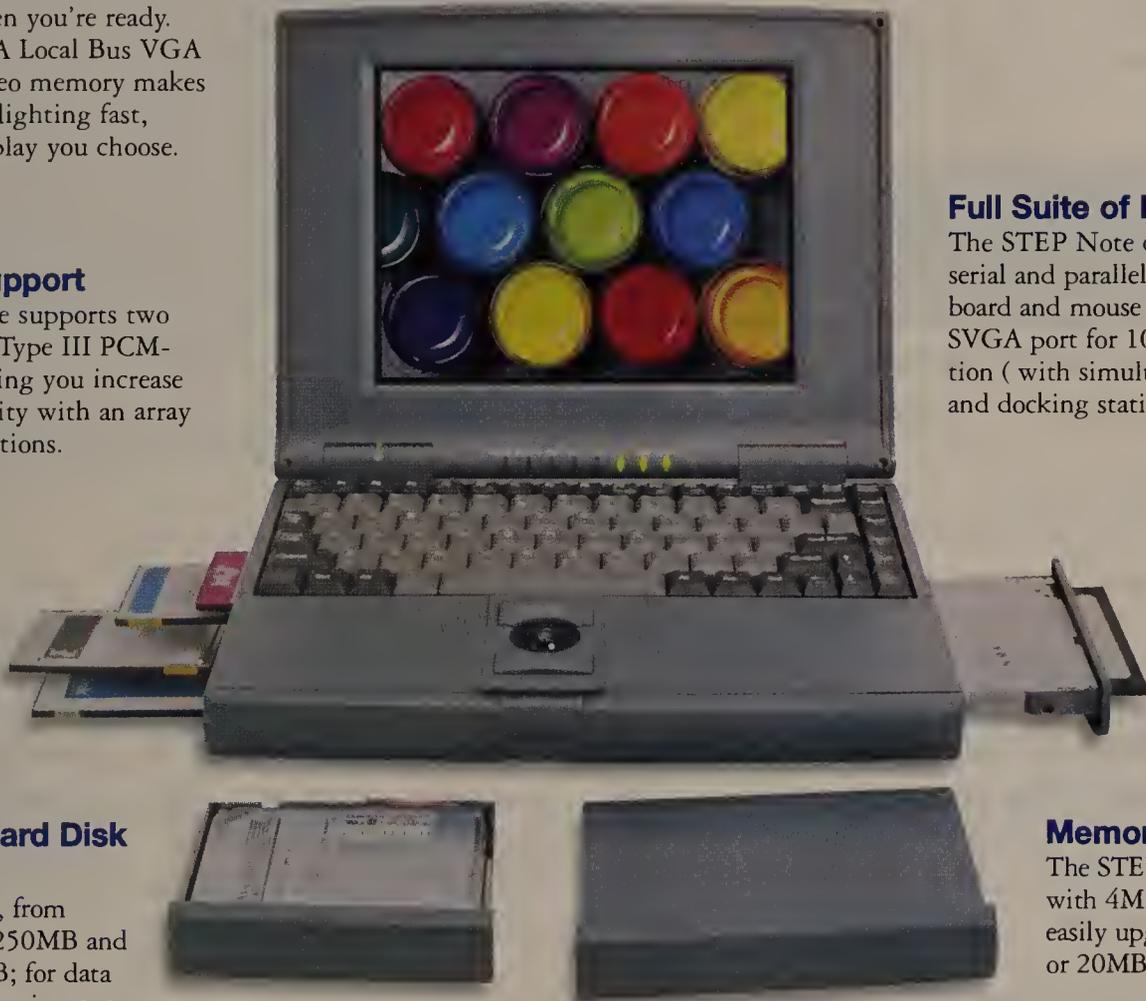
With built-in speaker, microphone, and digital sound chip, plus jacks for external speakers and external microphone.

## Full Intel Processor Support

The STEP Note supports Intel CPUs from 486SX-33 to 100MHz Intel DX4.

## Full Suite of Interfaces

The STEP Note comes with serial and parallel ports, PS/2 keyboard and mouse ports, external SVGA port for 1024 x 768 resolution (with simultaneous display), and docking station port.



## Removable Hard Disk Drives

For easy upgrades, from 170MB through 250MB and 340MB to 540MB; for data security, and for sharing one base notebook among multiple users.

## Docking Station Support

Docking stations are available now, providing up to four drive bays and up to three 16-bit ISA slots.

## Portable Power

The STEP Note's NiMH battery provides up to 4 hours battery life, with a fast one hour recharge feature.

## Memory Support

The STEP Note comes with 4MB RAM standard, easily upgradable to 8MB or 20MB.

We carry fax/modem, Ethernet and SCSI PCMCIA cards. We also maintain a complete line of key components for easy upgrades.

The Everex STEP Note carries on in the Everex tradition of excellence in performance and reliability. We also give you a two year warranty (first year on-site) for additional peace of mind.

486SX-33, Mono display, 4MB RAM, 120MB HDD starts at \$1,495

486SX-33, Color DSTN display, 4MB RAM, 120MB HDD starts at \$1,949

Intel DX4-75, Color TFT display, 4MB RAM, 200MB HDD starts at \$3,460

Call **1-800-EVEREX1** (1-800-383-7391)

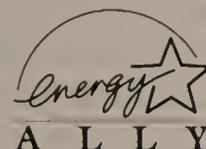
for the location of the dealer nearest you.

Sales and support hours: 8 AM to 5 PM, Pacific time.

5020 Brandin Court  
Fremont, California 94538

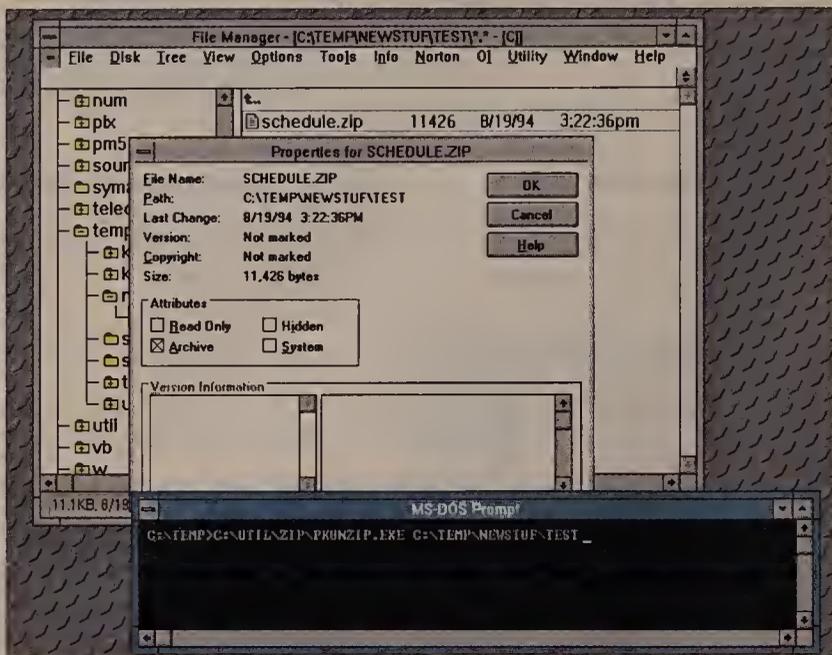
Fax (510) 683-2186

**EVEREX**  
EVER for EXcellence



The Intel Inside logo is a registered trademark of Intel Corporation. All other trademarks are the property of their respective owners. The EnergyStar emblem does not represent EPA endorsement of any product or service.

Circle 107 on reader service card



**AVOID TYPING A LENGTHY FILE PATH** by copying it from the file's Properties dialog box in File Manager and pasting it where needed.

SMARTDRV command line in your AUTOEXEC.BAT file, changing the second of the two numbers to 0. For example, if you change your SmartDrive command to read `C:\WINDOWS\SMARTDRV 6144 0`, you'll have a 6MB cache in DOS and no SmartDrive cache in Windows. For more details on SmartDrive command line parameters, see your Windows user manual, or type `SMARTDRV /?` or `HELP SMARTDRV` at the DOS prompt.

• **You want your floppy or CD-ROM drives cached for the speed advantage, but you don't use them all that often.**

Modify the SmartDrive command line to make the WinCacheSize smaller than the default (2MB on an 8MB machine) but still greater than zero. Experiment with WinCacheSizes of 128 or 512.

• **You use floppy disks and/or CD-ROMs extensively.**

Leave SmartDrive the way it is. If you're hurting for memory, consider turning off 32-bit file access and living with some loss of speed.

### Cache Value, Part II

Now that I have Windows for Workgroups 3.11, I use 32-bit file access instead of SmartDrive. But one thing is missing. SmartDrive lets me manually flush its cache, from the DOS prompt, forcing it to write pending data

to the hard drive. But how can I flush the 32-bit file access cache?

*Donna Bancroft,  
Shreveport, Louisiana*

**A** You normally don't need to flush the 32-bit file access disk cache; it gets flushed automatically when you exit Windows or when you reboot with `<Ctrl>-<Alt>-<Delete>`. Windows can't flush the cache if you switch off the power without exiting, but you shouldn't do that anyway.

However, if for some reason you really want to flush your 32-bit file access cache, do this: Start a DOS session inside Windows, and at the DOS prompt, press `<Ctrl>-C` or `<Ctrl>-<Break>`. The cache will then immediately write to disk any data in the write cache.

### The Long and Winding Path

**Q** I'm still sometimes forced to use the old DOS command line. My hard disk is organized with lots of directories within directories, and typing full paths and file names can be a pain. Can Windows help with this chore?

*Stuart Sorenson, Fort Wayne, Indiana*

**A** Sure thing, Stu. You can easily paste long path information into a DOS window (or any window) by using File Manager's Properties dialog box. In File Manager, locate and select the file whose path you want, then open the Properties box by selecting `File•Properties` or pressing `<Alt>-<Enter>`. Select the path by using the mouse or pressing `<Alt>-P`. Then press `<Ctrl>-<Insert>` to copy the path to the Clipboard. Switch to your destination window (`<Alt>-<Tab>` is fastest) and paste the path where you need it. If it's a DOS window, bring up the control menu with `<Alt>-<Space>`, then select `Edit•Paste`. Not only is this faster than typing (for some folks), but it keeps you from making typos.

If you really, really hate typing and want the file name too, you can switch back to File Manager and select that as well by using the mouse or pressing `<Alt>-F`, then copying it again with `<Ctrl>-<Insert>`. However, it's probably less trouble just to type the name.

Another point: File Manager's `File•Run` command gives you a prompt you can use for many of the same purposes as the one in DOS. And this prompt will always default to the directory you're currently viewing.

### Fast Escapes From Norton Desktop

**Q** I use Norton Desktop 3.0 as my shell. Whenever I quit, it prompts me before I can exit. Is there any way I can stop it from doing this?

*Larry Chester, Tempe, Arizona*

**A** No problem. Norton Desktop is nothing if not flexible. To turn off the exit confirmation message, select `Options•Customize`. In the Control Center dialog box, click the `Confirmations` button. Then uncheck the `Exit Norton Desktop` option near the top of the resulting dialog box and click `OK`. The next time you close Norton Desktop and Windows, you'll go right to DOS without the pushy prompt.

**By Scott Dunn**

*Scott Dunn is a contributing editor for PC World and coauthor of 101 Windows Tips (Peachpit Press, Berkeley, California, 1992). Windows Q&A welcomes your questions and pays \$50 for published items. See page 12 for contact information.*

### USER GROUP TIP

## A Total Selection

**To select every file and subdirectory in a Windows File Manager directory window, press `<Ctrl>-/.` To deselect all of them, press `<Ctrl>-\.`**

**Dennis Schulman  
Tampa Bay Computer Society**



# AN LCD PANEL SO ADVANCED, IT DOESN'T NEED A COMPUTER.

## Introducing the PanelBook™ LCD projection panel with LiteShow™

Now there are two ways to deliver outstanding electronic presentations. Plug in a computer. Or simply pop in a diskette.

The PanelBook LS is the first LCD panel to free you from the hassles of carrying and connecting a PC. Simply save your presentation to an ordinary diskette. (It's as easy as printing.) Pop the disk in the PanelBook and that's it.

LiteShow lets you add transition effects. Even change the order of your slides. Piece of cake.

Of course, PanelBooks are up to



**InFocus**  
SYSTEMS

Great ideas. Brought to light.™

40 percent smaller than most panels. So you can easily carry them anywhere. You can connect them to

a computer if you want. And because we're the world leader in LCD projection, you can choose from several PanelBooks, including active matrix for brilliant computer graphics and video.

PanelBook. It's how to get advanced presentations. Even without a computer.



**DISCOVER MORE ABOUT ELECTRONIC PRESENTATIONS.  
CALL 1-800-294-6400 FOR A FREE DEMO DISK.**

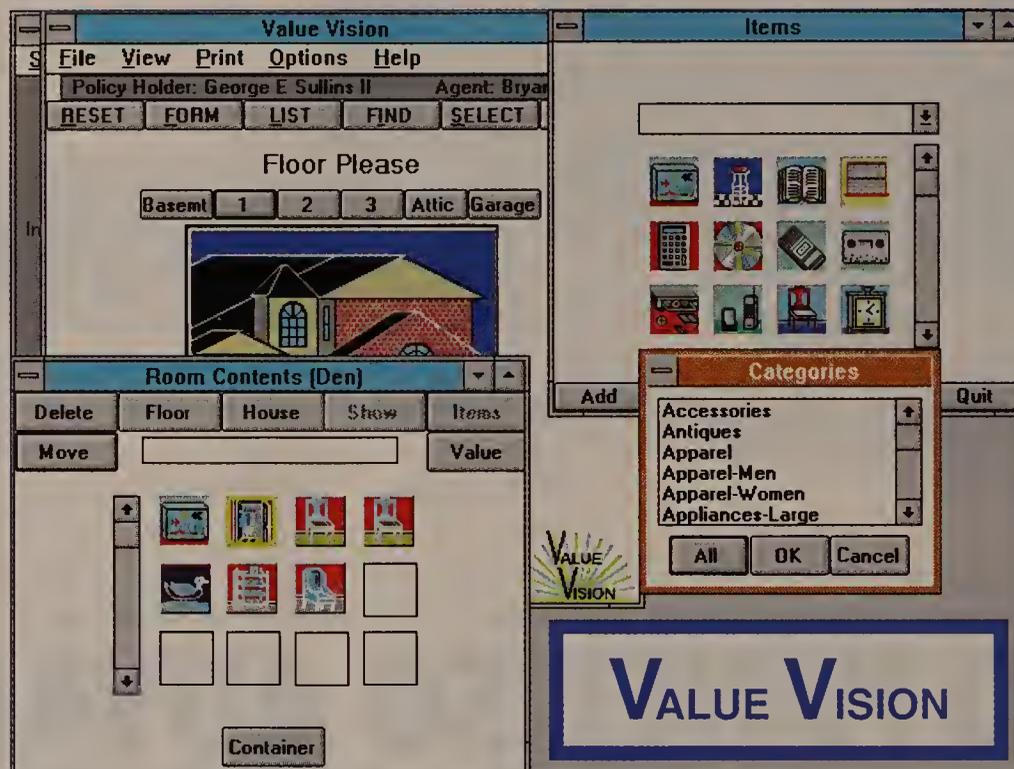
PBL503 ©1995 In Focus Systems, Inc. Phone (503) 685-8888 Fax (503) 685-8631. In Europe: Phone 31 (0) 2503 23200 Fax 31 (0) 2503 24388. In Focus Systems is a registered trademark, and PanelBook and LiteShow are trademarks of In Focus Systems, Inc.

Circle 132 on reader service card

# Free

## Personal Inventory Manager™

~~\$99.99~~  
**FREE!**  
 (while supplies last!)



**Will you know what you had when it's gone?  
 Could you prove it?**

**Finally, Personal Inventory Software That Is Quick, Easy, And Fun.**

Armed only with a mouse and Fusion Software's **Value Vision**, you can capture the contents of your home or office, and it's quick, easy, and fun. Now you can have the peace of mind you've always wanted, knowing that you are properly insured. And filing an insurance claim with **Value Vision** is as easy as clicking a mouse button. What used to be a boring, tedious, text operation with a database, word processor, or spreadsheet, is now fun, easy, and graphical with **Value Vision**. If you can drag and drop an icon, you can create a list of the contents of your home or office. It's that simple!

**A Personal Inventory Manager That Has Expert Insurance Advice.**

Over 500 colorful icons to help you identify rooms and items in your home or office. You may enter as little or as much information about each item as desired. You can even assign an heir. **Value Vision** will help you by highlighting insurance company requirements.

*To prove how important we think your records are we are giving away thousands of copies. But you have to act fast. Order your **FREE\*** copy of **Value Vision** now. That's right, get this \$99.99 product **FREE**.*

*All mail-in orders postmarked on or before June 1, 1995 will be **GUARANTEED** to ship for the shipping and handling charge only.*

**fusion**  
 Software

**ORDER TODAY!**

Call: **800-856-8566**  
 713-465-9721 (Houston)  
 713-465-9749 (fax)

Mail: **Fusion Software**  
 9337-B Katy Freeway, Suite 444  
 Houston, TX 77024  
 TX residents add 8.25% sales tax



\*There is a \$9.95 nonrefundable shipping and handling charge. Have your Mastercard or Visa ready. One copy per household. This offer only available in the U.S. and Canada. IBM PC or compatible running Windows 3.1, VGA or better, mouse or compatible device, and minimum 2MB ram required. This offer is subject to availability. Fusion Software reserves the right to end this offer at any time. CANADA add \$3.  
 © Fusion Software, Inc., Houston, TX 77024-2618. Value Vision is a trademark of Fusion Software. Windows is a trademark of Microsoft Corporation.

THE (our desktop laser printers  
keep no secrets from  
network managers) COMPANY



*Pssst... the guys in finance  
are hogging the printer again.*



4505 LASER  
600 x 600 DPI  
5 PPM  
UP TO 8.5 x 14  
16 MB RAM



4510 LASER  
600 x 600 DPI  
10 PPM  
UP TO 8.5 x 14  
16 MB RAM



4520 LASER  
800 x 800 DPI  
20 PPM  
UP TO 11 x 17  
UP TO 125 MB

Xerox desktop laser printers think about you. That's why the 4500 family of network printers have bi-directional, client and network software. It enables easy installation, allows remote configuration and gives usage and charge-back reports in real time. Your end-users stay happy because it takes them through the printing process step by step. Of course, it all comes with the Xerox Total Satisfaction Guarantee. So why settle for printers you don't have to think about, when you can get printers that think about you. To talk with us, call **1-800-34-XEROX ext.104.**

THE DOCUMENT COMPANY

XEROX



## DATA MANAGEMENT Q & A

### Printing Approach 3.0 Records in Sets

**Q** I have an Approach 3.0 database with fields for Case Name, Date, and Amount. I want to print the database's records on labels sorted by Case Name, with four records—all from the same case—per label. Do I somehow need to turn every set of four records into a new record in a separate file? There has to be an easier way.

*Ken Shapiro, Cedarhurst, New York*

**A** There is. I suggest you design a report with two summary panels: one to sort your records by Case Name and another to sort them into groups of four. You can then adjust the margins and other sections of the report so each set of four records fits properly on your labels. (Since you're printing more than one record per label, you can't just use one of Approach's Avery label layouts.)

First, select *Create • Report* to open a new report design. In Step 1 of the resulting assistant, select the *Leading Grouped Summary* SmartMaster layout. In Step 2, select the fields you want printed on your labels. In Step 3, click *Case Name* under 'Select a field that groups the records', then click *Done*.

At this point, Approach displays your new report in Design mode. Select *View • Zoom In* if it's hard to read. Next you must add your second summary panel to show records in sets of four. Select *Create • Summary* and enter **4** for 'Every n record(s)'. Set Location to *Leading* and close the dialog box.

If you use *File • Preview* to check your design, you'll see the case name shown only before the first group of four records with that particular name. Since you want to show the case name on each label, return to Design mode and zoom in until you can see either part of an actual case name or the label 'Case Name' under the 'Leading summary by Case Name' label (depending on how you set the *View • Show Data* option). The name you see here is part of a field object that shows Case Name in the summary header. Click the name or Case Name label to select the box it appears in, then drag it down into the top panel for the four-record leading summary. When you preview your report, you'll see Case Name listed at the start of each set of records.

The last step, of course, is to adjust the sections of your report design to make sure the output fits your labels. To shrink or enlarge a summary panel, select it by clicking to the left or right of its text, then drag on the bottom border until the panel is the size you need. You can adjust the areas labeled Header, Body, and Footer in the same way. Don't forget to delete the default report title and column labels.

### Saving a Value Calculated in an Access Form

**Q** My Access database includes an order entry form with a calculated field called Taxes. This field, which is calculated from the Total field, works

fine for displaying taxes on screen, but I need to save its value to my Orders table for reporting purposes. How do I calculate the taxes to show them on the form and at the same time save this amount to the Orders table?

*Rob Wardynski,  
PC World Online*

**A** The secret is to attach a macro to the Total field that calculates the tax amount and assigns it to a field. It's not much more complicated than defining a calculated field, which you've already figured out how to do.

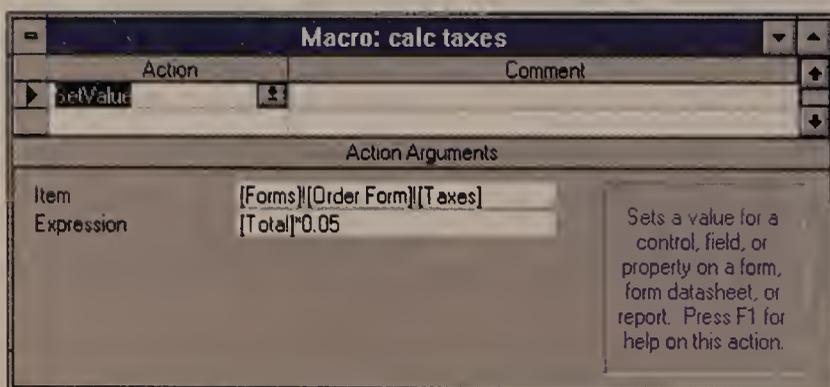
First, add a Taxes field to your table: In the Database window, click the *Table* tab, select your table, and click *Design*. In the resulting dialog box, go to the first blank line, type the field name **taxes**, and select the data type *Currency*. As you exit the dialog box, answer *Yes* when you're prompted to save the changes.

Next, change the Taxes field on your form into a regular rather than a calculated field: Open your Order Entry form in Design mode, select the *Taxes* field, right-click, and select *Properties* from the pop-up menu. In the Control Source text box, select *Taxes*.

Without closing the properties window, click the *Total* field on your form; Access now displays the Total field's properties. Scroll down the list in the Properties box until you find the option 'After Update'. Click the option's ellipsis (...), choose *Macro Builder*, and enter something like **Calc Taxes** for the new macro's name.

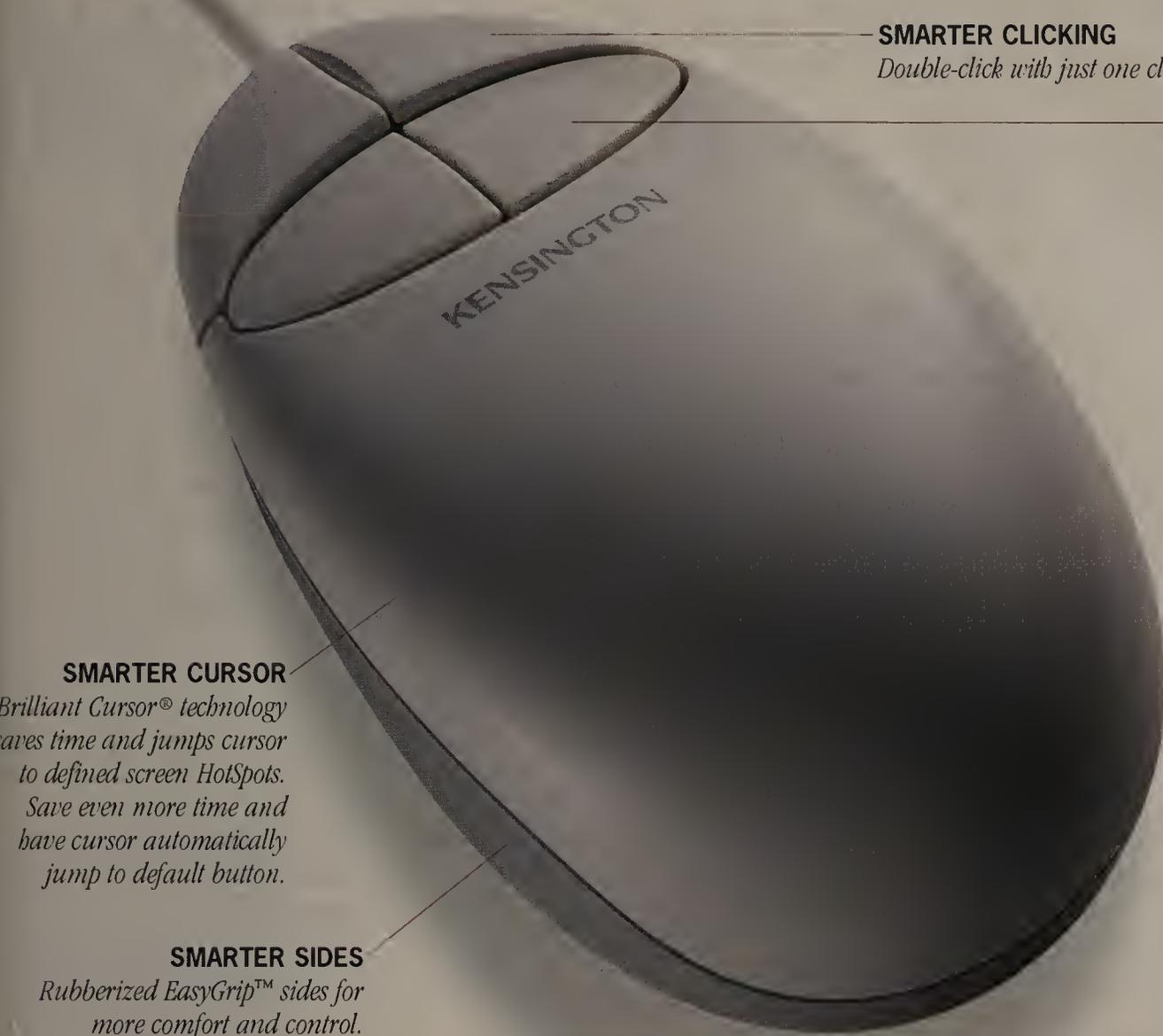
Access opens a window like the one shown in **FIGURE 1**. For the Action option select *SetValue*, and for the Item option type **[Forms]![Order Form]![Taxes]** (assuming Order Form is the name of your form and Taxes is the name of your tax field). The [Forms] statement writes the new value to the form, so it affects both the form itself and the underlying table. In the Expression text box, enter **[Total]\*.05**, where Total is the name of your order total field and .05 is your tax rate.

Once your macro definition is complete, close the Macro window to return to the Properties sheet. You should see the name of the new macro in the After Update text box. Close the Properties sheet, select *View • Form*,



**FIGURE 1: ACCESS'S MACRO WINDOW** allows you to easily automate such tasks as placing a calculation into a field.

# Anatomy of a Smarter Mouse.



## SMARTER CLICKING

Double-click with just one click.

## SMARTER BUTTONS

Program any mouse button to perform the following repetitive tasks:

- **LOCK BUTTON.** Just click once and you can drag, scroll, or highlight large blocks of text without having to hold the button down.
- **SEND KEYS.** Save time by executing multi-step commands with a single click. You can print a document, enter a block of text, log onto a network, download your e-mail, even send a fax from your fax/modem.
- **SHORTCUTS.** Work faster by automating frequently used Windows commands. You can open and close a file, copy, paste, switch to task list, and a lot more. Just click once to execute any command.

## SMARTER CURSOR

Brilliant Cursor® technology saves time and jumps cursor to defined screen HotSpots. Save even more time and have cursor automatically jump to default button.

## SMARTER SIDES

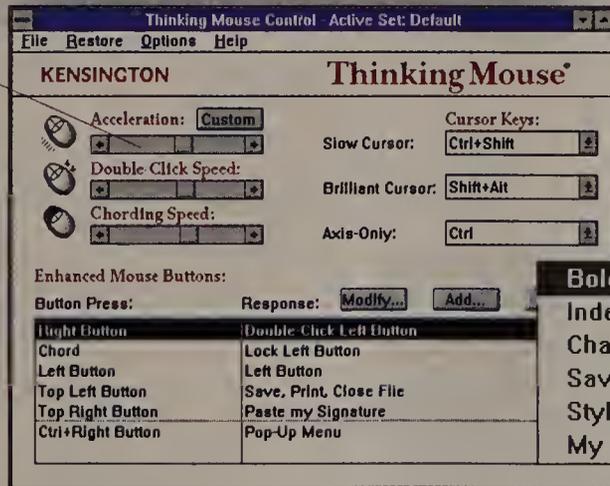
Rubberized EasyGrip™ sides for more comfort and control.

## SMARTER ACCELERATION

Change acceleration to match the way you work.

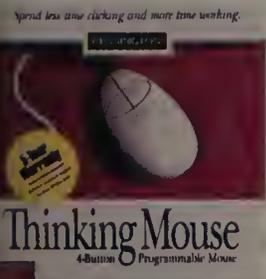
## SMARTER WARRANTY

5-year warranty, toll-free technical support, no risk 90-Day Trial.



## SMARTER MENUS

A single button click brings up a personalized pop-up menu. Use it to organize and execute commands within your favorite programs. Create a different menu for each program.



It has four programmable buttons. More than a dozen time-saving functions. You can even create a personalized pop-up menu for each of your favorite programs. And the hardware is as smart as the software—with rubberized EasyGrip™ sides for more comfort and control. Includes

software for Windows, OS/2 and DOS. Available in Serial & PS/2 and Bus versions. 100% Microsoft compatible. For more information, call Kensington at 800-535-4242. Outside the US and Canada, 415-572-2700. For information by fax, call and request document 324.

Thinking Mouse  
4-Button Programmable Mouse



and enter a value into the Total field to test your changes. Access should update the Taxes value automatically.

**Editing Selected Records in Paradox 5.0 for Windows**

**Q** I use Paradox for Windows to maintain a database of customer service information (mostly records of phone calls). I enter and update this data using a form that links two files, CUSTOMER.DB and CALLS.DB. My job would be much easier if I could filter out all but the calls from a particular place made in a given time frame, and edit just those records. When I got Paradox 5.0, I hoped the new live-query feature—which allows you to edit query results—would solve this problem, but I found it works only on single-table queries. Is there some other way to see and edit just part of my data?

*Ann Marie Sommers, Evanston, Illinois*

**A** In Paradox 5.0 for Windows, you can include a filter as part of a form design for working with selected records. The one

gotcha to such a solution is that if you want to set filters on fields from both of the tables, you need to link those tables in a one-to-many relationship.

Let's say you want to work with customers from Illinois who called during the month of December 1994. You'll need a form with CUSTOMER as your master table and CALLS as your detail table. If your existing form isn't set up this way, you'll have to make a new one: Select *File • New • Form • FormExpert* to bring up the Expert for creating new forms. In the Expert's first step, select the fifth option ('View one master record and multiple detail records...'). Follow the prompts through the rest of the Expert, and you'll have your form.

When you're in the finished form, select the *Form • Filter* command. In the resulting dialog box, go to the Table list on the left and select *CUSTOMER.DB*. The Filters on Fields list on the right side should now show the fields in *CUSTOMER.DB*. Type *IL* (or whatever text you use to indicate Illinois) in your state field. To limit the

calls to those occurring in December, select *CALLS.DB* on the Table list and enter *>=12/1/94,<1/1/95* in the date field. Then close the dialog box and either click the View Data icon or press *<F8>* to show the filtered records.



Why use *>=12/1/94,<1/1/95* when *12/./94* should do? Because the latter won't work. Paradox isn't as adept at reading expressions in form filters as it is at reading those in queries. The '.' wild card will work when it's placed at the end of a form filter expression, but not when it's in the middle of one. To find out about other filter limits, search the Help system for *Filters, Compared With Queries*, and go to the entry *Filters and Queries Compared*.

**By Celeste Robinson**

*Celeste Robinson is a contributing editor for PC World and the author of The Paradox 5.0 for Windows Handbook (Random House Electronic Publishing, 1994). Data Management welcomes your questions and pays \$50 for published items. (See page 12 for contact information.)* ■

**Free!**  
Bonus CD-ROM  
includes over 2,000 images!

**“You can't find a more complete set of image capture, conversion and cataloging tools.”**

— PC Magazine



Everything you need to organize, edit, convert, and place images with "drag-and-drop" ease.

**Ulead Systems**

**Special Offer  
IMAGEPALS® 2**

**\$129**

Save \$70 off the suggested retail price.



**ImagePals 2 does it all.**

**Dazzling documents made easy.**

Award-winning ImagePals 2 makes adding eye-popping images to all your documents and presentations a snap. You get everything you need to capture, organize, edit, and convert images in one easy-to-use program.

**Find images in seconds.**

ImagePals 2 organizes images into thumbnail albums so you can easily find the image you need visually. Or you can retrieve files by subject, description, or keywords.

**Instant "drag-&-drop" placement.**

Forget complicated importing routines. You simply "drag-and-drop" images directly into your applications to create documents that jump off the page with graphic power. You can even add special effects with the included Image Editor. Best of all, ImagePals 2 works the same way with your video, animation, and sound files.

**Order ImagePals 2 Today!  
Call 1-800-858-5323**

Ulead Systems and the Ulead logo are trademarks, and ImagePals is a registered trademark of Ulead Systems, Inc. All other trademarks are property of their respective holders.

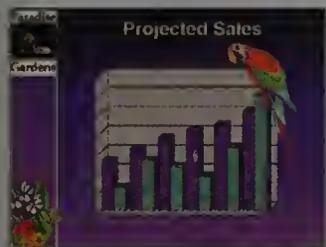
# WE TOLD YOU THAT HARVARD GRAPHICS 2.0 WAS THE ULTIMATE UPGRADE.

## WE LIED

Sort of. You see, Harvard Graphics 3.0 for Windows is now the ultimate upgrade.

As good as 2.0 was, 3.0 is faster, more powerful and even easier to use. Really.

For example, it gives you



Harvard Graphics 3.0 makes it easier than ever to create powerful presentations.

unprecedented creative power.

With the addition

of our new

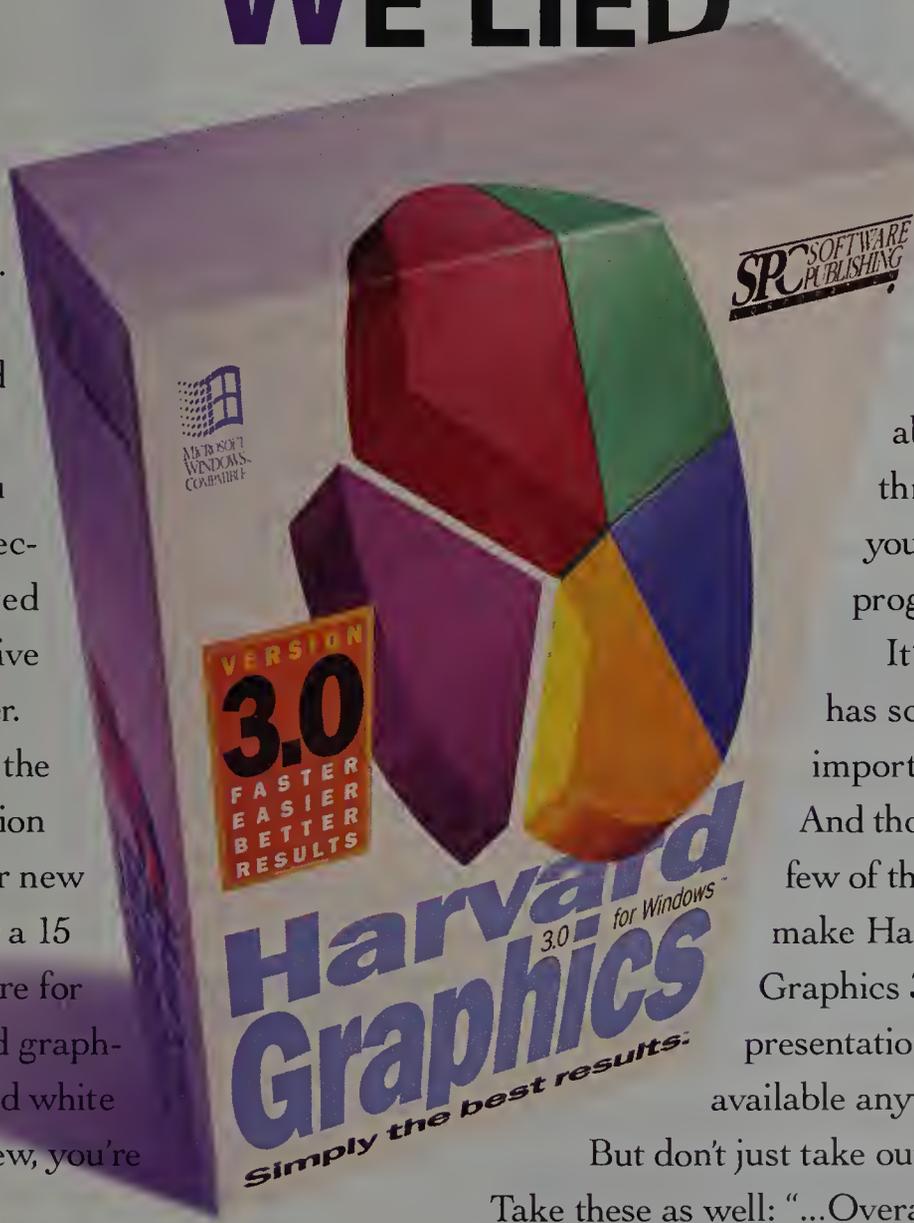
Animation Player featuring a 15 clip library, Autotrace feature for Harvard F/X—our text and graphics editor, and both black and white and transition effects preview, you're in control like never before.

But if you should get out of control, no problem. We've

expanded our Advisor System, adding Quick Advice and Design Checker to offer professional help to both novices and experienced users. We can even do most of the



Harvard Graphics won just about every award as 2.0, and 3.0 is cleaning up as well.



work for you, courtesy of Quick Presentations.

Harvard Graphics 3.0 is highly compatible, too.

It works better with just about any application, and through Icon Bar Launch, lets you run any Windows or DOS program right from the toolbar.

It's also e-mail enabled, and has scores of new import/export filters.

And those are just a few of the things that make Harvard Graphics 3.0 the best presentation package available anywhere.

But don't just take our word for it.

Take these as well: "...Overall, Harvard Graphics 3.0 wins the best of show..." —*InfoWorld* 9/5/94.

So upgrade to Harvard Graphics 3.0 for Windows. It's the ultimate presentation graphics upgrade.

And that's no lie.

**Harvard Graphics. Simply the best results.**



How do you make a price like this even better?

With a 90-day money back guarantee, that's how.\*

**TO ORDER, CALL YOUR LOCAL RESELLER OR 1-800-336-8360, EXT. 426.**



1-800-718-4740



**EGGHEAD SOFTWARE.**

1-800-344-1123



1-800-248-ASAP



For volume discounts, call 1-800-562-9909. \*Upgrade eligibility requires that you own a licensed version of Harvard Graphics or competitive presentation software. Other conditions apply, call for details. Harvard Graphics and the Software Publishing Corporation logo are registered trademarks of Software Publishing Corporation. Harvard Graphics is a product of Software Publishing Corporation and has no connection with Harvard University. SPC acknowledges the rights of the trademark owners for all trademarks referred to herein. © 1995 Software Publishing Corporation. All rights reserved.

## PUBLISHING & PRESENTATIONS Q & A

### Speedier Type Formatting in PageMaker

**Q** When I create documents in PageMaker 5.0, I usually use smaller type (such as 11-, 10-, and 9-point) rather than large (14-point and up). But when I use the Control palette to change type size, the larger choices show up first. As a result, I'm always scrolling through the list to get to the sizes I want. Is it possible to change the order of type sizes PageMaker displays so the ones I want are easier to find?

*Paul Gellman, Merrick, New York*

**A** No, PageMaker won't let you re-sort the Control palette's choices. But don't fret—there's a faster way to change the type size for selected text. Instead of scrolling in the palette's list box, simply use the keyboard instead.

First be sure you're in layout view with the Control palette activated. Double-click the type-size edit box to highlight the default setting (typically 12-point). Then type in your desired point size—for example, type **10**—and press **<Enter>**. PageMaker will change the size of the highlighted text.

While you're typing in your type-size choices, here's another shortcut: If you're not sure what type size you want, press **<Shift>-<Enter>** after typing

in the new point size. As before, PageMaker will change the highlighted text to the new point size, but it will also keep the Control palette active and the type-size edit box highlighted. This allows you to leave your hands on the keyboard, type in other sizes, and keep pressing **<Shift>-<Enter>** until you're satisfied with the results.

### Changing PowerPoint Templates

**Q** Using Microsoft PowerPoint 4.0, is it possible to remove a template after applying it to a presentation? I'll often try out different templates on the same presentation: First I save the base presentation file with my text and graphics in it, then I apply the template. Then, if I don't like the way it looks, I retrieve the saved file and try another template. Is there a faster way to do this?

*Paul de Klerk, CompuServe*

**A** You bet there is. Although PowerPoint templates provide different master layouts and color schemes—some of which may give your presentation a thoroughly different look—they don't affect the content of your presentation at all. Both text and graphics remain intact no matter how many templates you apply.

If you don't like the looks of a template-based presentation and would like to change templates, simply select **Format•Presentation Template** or click the **Template** button on the lower-right edge of the status bar. Then, in the resulting dialog box, locate and select a new template file, and click **Apply**.

For the best results, don't forget to use the appropriate template

for the medium you intend to use. By default, the templates are stored in three subdirectories of the PowerPoint TEMPLATE directory: SLDSHOW holds a collection of templates for 35mm color slides and screen shows, BWOVRHD has templates for black-and-white overheads, and the CLR-OVRHD templates are designed for color overheads.

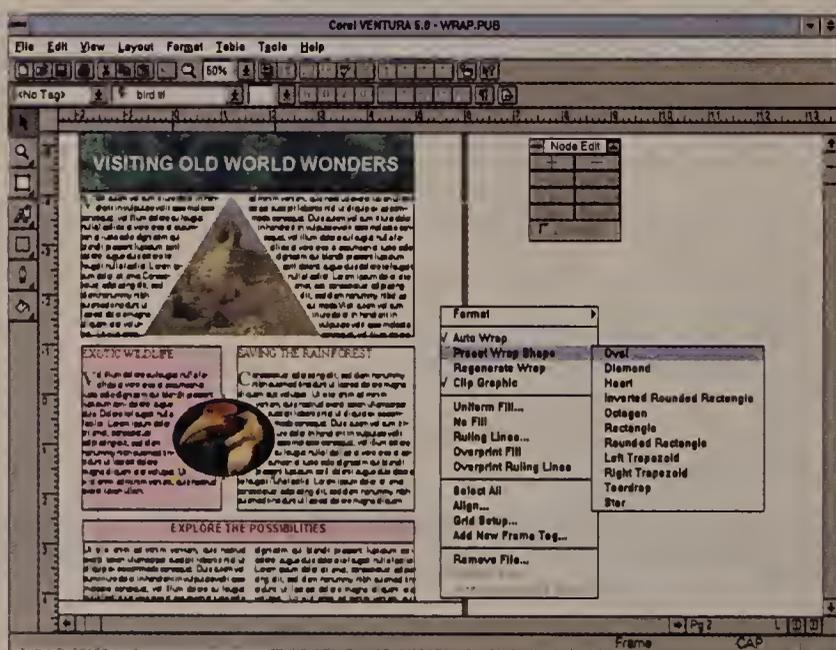
### Fancy Text Wraps with Corel Ventura

**Q** I'm having trouble getting Corel Ventura 5.0 to wrap text around an embedded Windows Paintbrush graphic. I select the graphic and right-click it, but the Preset Wrap Shape options in the pop-up menu are grayed out. What gives? And what can I do about it?

*Katie Canon, Hayward, California*

**A** You've discovered one of the limitations of Ventura's otherwise much-improved text-wrapping abilities. Although the program comes with a bunch of new options—including auto-wrap (for wrapping text around irregularly shaped graphics) and preset wrap shapes (such as ovals, diamonds, and octagons)—these and other text wrap effects work only with graphics that you've imported into your document using Ventura's **File•Load Graphic** command. They will not work with graphics, such as those Paintbrush images, that you've linked or embedded using OLE (Object Linking and Embedding).

Your best solution is to save the graphic you've created in Paintbrush as either a BMP (bit-mapped) or PCX (raster graphic) file. Then, back in Ventura, create a frame with the  Frame tool, select **File•Load Graphic**, type the name of your graphic's BMP or PCX file in the Load Graphic dialog box, and click **OK**. Now, when you select the frame and right-click it, the Preset Wrap Shape options should be available.



**CREATE EYE-CATCHING TEXT WRAPS IN COREL VENTURA** by selecting **Preset Wrap Shape** and choosing a predesigned shape.

Get answers every day a spreadsheet can't give you any day

New Developer's Kit!  
Call today for details!

# Real Stats. Real Easy.

Use SPSS 6.1 for Windows when you need in-depth answers quickly and easily. Go beyond summary statistics and spreadsheet row-and-column math by using the right tool for the job. SPSS is a complete tool kit of statistics, graphs and reports that enables you to answer tough questions like:

- Why did sales drop in the last quarter?
- How satisfied are my customers?
- What are the patterns in my data?

SPSS products are used today for:

- Survey research of all types**
- Explore consumer awareness
  - Compare perceptions of products
  - Discover preferences by group
- Marketing and sales analysis**
- Analyze your customer database
  - Forecast sales by product and region
  - Improve mailing responses
  - Learn which promotions work best

- Quality improvement**
- Assess process capability
  - Reduce nonconformance
  - Spot unnatural patterns of variation
  - Track incidence of infection

- Research of all types**
- Test hypotheses
  - Determine group differences
  - Track performance over time
  - Prepare professional reports

## Answer your tough questions

You don't need a Ph.D. to learn or use SPSS 6.1 for Windows. A tutorial, task-oriented help and a glossary of statistical terms will help make you an expert. You'll be surprised at how easy it is to do in-depth data analysis.

And, if you are already an expert, you'll appreciate SPSS' rich set of statistical functionality. Whatever your experience level, you'll be able to explore your data thoroughly.

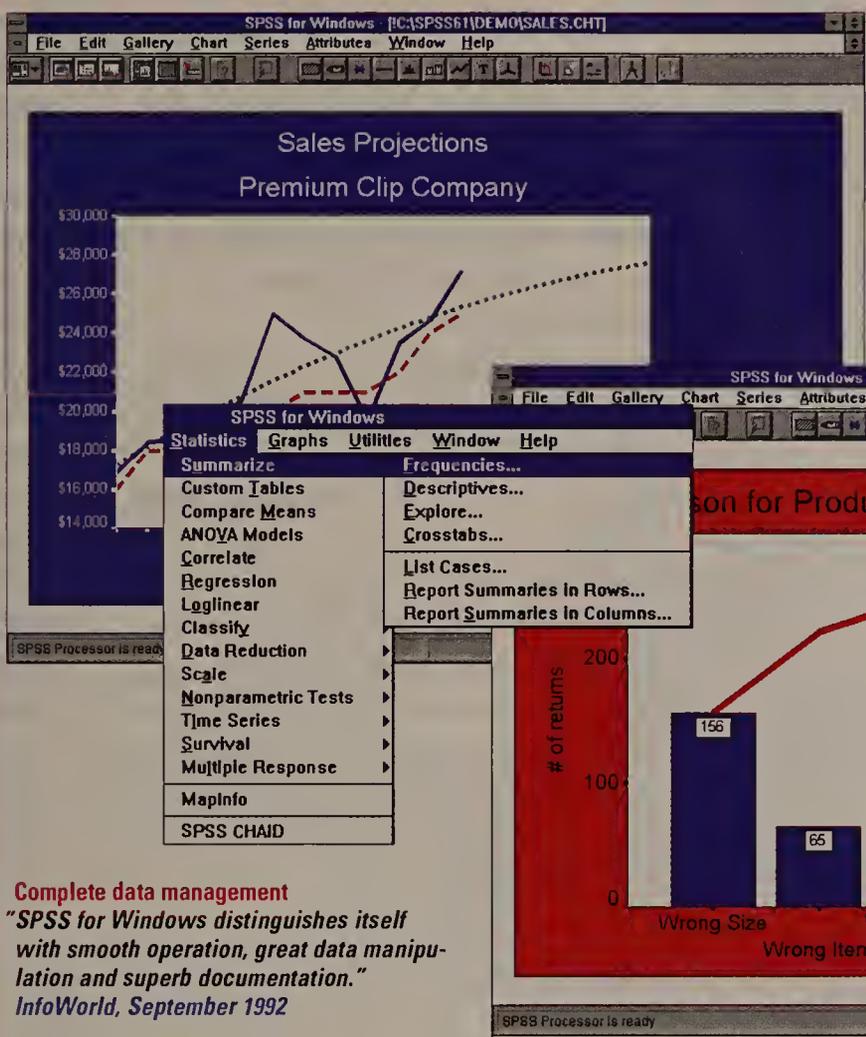
Discover hidden patterns and trends in your data with over 50 high-resolution business, analytical and SQC charts. SPSS saves you time by automatically aggregating your data and labeling your charts. Then, quickly add smoothing lines, confidence intervals and more to tell the full story in your data.

Call today to find out how to answer your tough questions every day with SPSS 6.1 for Windows!

Get a great value - order now!

1 (800) 543-5837

or Fax: 1 (800) 841-0064



**In-depth statistics**  
"For more statistical analysis tools than you'll get from a spreadsheet such as Excel, without the steep learning curve, SPSS for Windows is a great buy."  
PC/Computing, August 1992



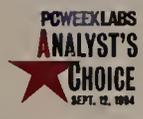
**Complete data management**  
"SPSS for Windows distinguishes itself with smooth operation, great data manipulation and superb documentation."  
InfoWorld, September 1992

**Automatic statistical graphs**  
"A complete set of graphics and charting capabilities."  
PC Week, May 1992

**Learn fast, work fast**  
"SPSS for Windows is an excellent full-featured set of statistical procedures...The Windows interface makes it easy and fast to use and I highly recommend it."  
Marketing Research, Summer 1993

## Reasons SPSS 6.1 for Windows goes beyond your spreadsheet:

- 60+ statistical procedures
- 50+ business, analytical and SQC charts with automatic labels
- New toolbar which gives you one-button access to statistics and commonly used functions
- Technical support for statistical help
- New online tutorial
- Statistical help system
- Glossary of statistical terms
- Fast 32-bit processing
- Hot buttons between graphs and tables
- Work with even your largest data sets
- Complete report writer



- View your data as words, while doing analysis with numbers
- Keep your formulas safe and separate from your data
- OOBC / OLE
- Statistics located in easy-to-understand menus and dialog boxes
- Easy, complete data editing and management in a spreadsheet-like format
- Documentation which clearly explains statistics
- Create charts with your analysis automatically
- Automatic labeling of results



- Available add-on modules:**
- Explore your data more thoroughly with techniques such as factor, cluster, discriminant analysis and much more with SPSS Professional Statistics™
  - Execute advanced multivariate techniques such as Cox regression, Kaplan-Meier estimation, logistic regression and more using SPSS Advanced Statistics™
  - Create camera-ready tabular reports with SPSS Tables™



- Predict the future using advanced time-series analysis in SPSS Trends™
- Perform perceptual mapping, conjoint analysis and optimal scaling procedures with SPSS Categories®
- Find predictors and build better models using SPSS CHAID™
- Analyze linear structural equations and simultaneous equation models using SPSS LISREL 7™



- Improve your operations with statistical process control using QI Analyst™
- Build thematic maps with MapInfo®
- Plug components for stats, graphs and reports, complete with data management and output formatting, into your applications quickly and easily using OLE 2.0 Automation in the new SPSS Developer's Kit™
- Provide both push-button statistical reports and interactive data analysis with access to all SPSS features



Get a great value - order now!

1 (800) 543-5837  
or Fax (800) 841-0064

or mail to: SPSS Inc.  
444 North Michigan Avenue  
Chicago, IL 60611

American Express, Discover, MasterCard and VISA accepted

Circle 253 on reader service card

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Organization \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_  
ZIP \_\_\_\_\_ email \_\_\_\_\_  
Phone Number ( ) \_\_\_\_\_  
FAX Number ( ) \_\_\_\_\_

Try SPSS 6.1 for Windows with our unconditional 60-day money-back guarantee



**Precision, Please**

**Q** I need a graphics package to produce precise artwork for equipment labels and instrumentation panels, in some cases with text wrapped around circles for dials and switches. Can you suggest any software that costs less than a full-blown CAD or illustration program?

*F. Kerner, Internet*

**A** Check out Adobe's IntelliDraw 2.0 for Windows. It's an affordable and delightfully versatile graphics package that you can use to produce everything from common business illustrations to precise CAD-style diagrams.

For precise artwork, IntelliDraw's dimensioning tools automatically display an object's horizontal, vertical, and diagonal proportions, adjusting dynamically as you resize it. And IntelliDraw's curved-text feature lets you wrap text around any shape, including circles. The program also has loads of clip art, including a "knobs and controls" collection of equipment drawings you may be able to adapt to your needs.

Of course, there are other affordable draw packages—such as Shapeware's Visio 3.0, which features plenty of precision tools but makes you wrap text manually—as well as various low-end CAD programs that might be suitable for your graphics needs. But IntelliDraw's combination of dimensioning tools, automatic text wrap, excellent clip art, and low price is a tough act to beat.

- **IntelliDraw 2.0.1** \$99.99; Adobe Systems Inc.; 800/833-6687; 415/961-4400

Reader service no. 635

- **Visio 3.0** \$129; Shapeware Corp.; 800/446-3335, 206/521-4500, 206/521-4501 (fax)

Reader service no. 636

**By Richard Jantz**

*Contributing Editor Richard Jantz is an electronic publishing and presentations consultant in Berkeley, California. Publishing & Presentations welcomes your questions and makeover candidates. PC World pays \$50 for published questions and \$200 for redesigned items. See page 12 for contact information. ■*

**Publishing Toolbox**

Readers frequently ask me how they can speed up their work in PageMaker 5.0. One of my favorite suggestions is to get SmartPad for PageMaker. SmartPad is a nifty utility that turns common PageMaker tasks into one-click operations. It does so by providing a bunch of new tool bars—Main Toolbar, ClickTools, Drawing, Formatting, Special Characters, Views, and Windows. The Main Toolbar, for example, provides a slew of buttons for quick access to common filing, printing, clipboard, and page-management tasks. You can float or embed SmartPad's tool bars wherever you like in PageMaker's window frame, customize them to your heart's content, and even create new ones. My only caveat: You'll need a high-resolution monitor for all these new on-screen goodies.

- **SmartPad for Pagemaker** \$79; Softblox, Inc.; 800/434-0202, 404/892-0202, 404/892-0891 (fax).

Reader service no. 637

# COMING UP

**Free and Almost-Free Software**

From mini-apps to communications add-ons, *PC World* shows you the best low-cost and no-cost software available and where to get it.

**Tape Backup Drives: Bigger, Faster, Cheaper**

With prices below \$300 and with speed and ease of use at an all-time high, there are no more reasons to postpone buying a backup system. We look at nine tape drives with capacities up to 1.4GB.

**The Hidden Cost of Tech Support**

Calling for tech support has become a complex (and sometimes expensive) exercise. The results of our in-depth investigation of the quality of tech support today surprised us.

**Also Next Month**

- ▶ Top 20 Updates on the Month's Best Budget, Power, and Notebook PCs

- ▶ We Test Conferencing Software Products Meant to Help You Move Meetings and Discussions Online

- ▶ Home Office: Crossword Puzzles, Music, and Typing Lessons on Steve Bass's PC

- ▶ Plus Tips on Copying Large Files to Multiple Disks, Preventing DOS Defrag Drag, and More

**PC WORLD**

KEEP CONFIDENTIAL MESSAGES SAFE IN PERSONAL MAILBOXES; BEST OF ALL, THE MOST RELIABLE WAY TO TRACK PHONE NUMBERS, PLACE CALLS, CONTACT ME WITH MESSAGES NEEDED...

TAKE MESSAGES; TO ROUTE MAIL DELIVERIES; TO DELIVER IMPORTANT MESSAGES AND DOCUMENTS; TO PUT MAIL AWAY WHERE IT CAN EASILY BE FOUND; TO SORT MAIL AND SEND INEXPENSIVELY.

# All the professional office services you need in one simple affordable package!

## Complete *Office* Communicator Your Complete Business Communications Partner

Transform your PC into a comprehensive business communications center featuring a sophisticated full duplex speakerphone, professional voicemail, 14,400bps send and receive fax and high-speed file transfer.

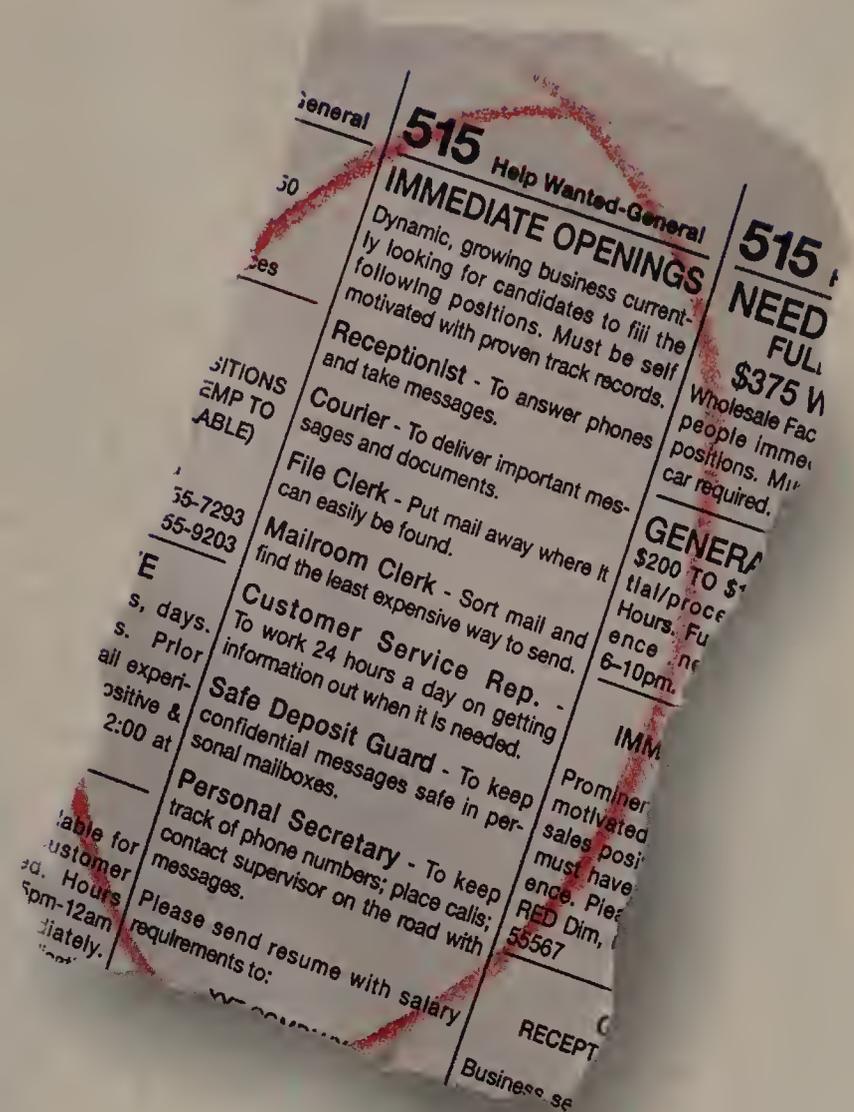
- Speakerphone** features hands-free operation with a **free electret microphone**, together with full duplex operation for conversation quality performance. The graphical user interface makes operations like speed dialing a snap.
- Voicemail** system is customizable, offering up to 1,000 private mailboxes, remote message and fax retrieval, automatic pager notification, call detection and message forwarding, plus menu-driven fax on-demand for your customers' convenience.
- Fax System** lets you fax directly from your computer while you continue working on other projects, generating a cover sheet every time. You can send faxes to multiple locations with one-touch dialing, and let the computer redial busy numbers automatically. And scheduling your faxes for low evening rates can save you a bundle.
- Data Modem** features lightning throughput up to 57,600bps with data compression, equivalent to 1 1/2 pages of text per second and built-in error control ensures the reliability of your data transfer.

The Complete *Office* Communicator...it's like having an entire staff of office professionals serving you and your customers, day and night!



(407) 997-6227 • Fax (407) 994-5848  
1377 Clint Moore Road, Boca Raton, FL 33487-2722

# Before you run this...



# ...try running this.



**Call Boca Research  
or visit your favorite  
retail store!**

## ONLINE Q & A

### Choosing an Online Service for Your Teen

**Q** Which online service would be best for my 13-year-old son—CompuServe, Prodigy, or America Online? And which would be the cheapest?

*John Peakerston, Montgomery, Alabama*

**A** I've got to be careful answering this: I'm still reeling from an E-mail assault by incensed teens over my suggestion that parents monitor their kids' online activities (see "Keeping Kids Safe on the Info Highway," *Communications*, October 1994). You'd think I'd suggested they all be grounded. That said, you need to consider several questions when choosing an online service for children or teenagers.

*Which service is most likely to hold their interest?* While a lot of kids like America Online—it offers MTV and DC Comics—CompuServe may hold their interest longer. It has forums that focus on bicycling, astronomy, dinosaurs, scuba diving, and science fiction, plus lots of gaming forums. Prodigy offers a variety of family and hobby forums, but most users I've heard from say they soon grow bored with its superficial content.

*Which service is likely to be most useful?* All the services brag about their educational features. AOL has *Smithsonian*, *National Geographic*, and *Scholastic* magazines online, plus parent-teacher forums; both AOL and CompuServe offer online encyclopedias and dictionaries. But are they better resources than your local library? In terms of reference materials, no. If you want your child to use the computer as a reference tool, dozens of reference CD-ROM titles are on the market. (Of course, you'll need a CD-ROM drive to use them.)

*Where are my kids least likely to get into trouble?* Unfortunately, both CompuServe and AOL have sexually oriented forums—as well as access to the Internet and its wellspring of porn—

and there's nothing to prevent your kids from getting at any of it. AOL does offer parents a "lock" to keep kids from accessing its sex-chat feature. Prodigy is relatively kid-safe. Parents can designate which forums and features household members can read and can even prevent kids from accessing the Internet.

*Which service is cheapest?* Price wars between the three services have been driving fees lower. Prodigy currently costs the least at \$9.95 per month for 5 hours of access plus \$2.95 for each additional hour. America Online is also \$9.95 per month for 5 hours, but it charges \$3.50 for each additional hour. CompuServe is the priciest at \$9.95 per month plus \$4.80 an hour.

### Faxing on the Internet

**Q** Is there any way to send faxes via the Internet?

*Arnon Milligan, Toronto*

**A** The answer is a qualified yes. A service currently in development lets you send faxes via Internet E-mail. It relies on a network of fax servers: You send an E-mail message to one of these servers, which then sends your message out as a fax. The trick is to configure the Internet address like this:

```
remote-  
printer.Roger_Smith/Acme@4.3.2.1.5.5.5.5.  
1.4.1.tpc.int
```

Of course, you substitute your recipient's name for Roger\_Smith, and type the appropriate company name in place of Acme (use an underline character to signify a space). After the @ sign, enter the fax number in reverse order: The number above is 1-415-555-1234. If the fax transmits successfully, you'll receive an E-mail confirmation.

So why do I qualify my yes? Because so far the service operates in only a few key areas. Currently you can reach addressees in Washington, D.C.; Manhattan; and California's Silicon Valley, as

well as some parts of Japan, Hong Kong, and the United Kingdom. And because this service is still in the experimental stage, coverage is patchy even in supposedly covered areas.

To get more information, send an E-mail message to the Internet address [tpc-faq@town.hall.org](mailto:tpc-faq@town.hall.org) with **help** as the only word in the body of the message. To obtain a list of areas you can fax to, send an E-mail message to [tpc-coverage@town.hall.org](mailto:tpc-coverage@town.hall.org), again with the word **help** as the body of the message.

### Getting WinFax to Step Aside

**Q** I like WinFax Pro except for one thing: Unless I'm willing to miss incoming faxes, I have to leave the program on all the time, which means I can't use other communications programs. Is there any way to deactivate WinFax temporarily?

*Angela Kirsch, Traverse City, Michigan*

**A** When WinFax is in auto-receive fax mode, other programs can't use your system's COM ports. But several shareware Windows utilities let you use other comm programs in the middle of a WinFax session. My favorite is WFX-AUTO. This handy little program works invisibly. You add it to the command line for each communications program you use. Thereafter, WFXAUTO turns off WinFax's auto-receive mode whenever you use one of these apps, then relaunches it when you're done.

- **WFXAUTO** \$15; Logical Business Systems; CompuServe 76507,530; PC World Online WFXAUT.ZIP  
Reader service no. 638

By Judy Heim

*Judy Heim is a contributing editor for PC World and author of The Needle-crafter's Computer Companion (No Starch Press, Daly City, California, 1995). Online welcomes your questions and pays \$50 for published items. See page 12 for contact information.*

T	H	E	?
C	O	M	P
U	T	E	R
B	O	W	L

I could never get him back.

Would never want to. I alone

He left me swimming

could reformat my hopes and

in a stream of compression

dreams. I alone must match wits

algorithms

in a challenge of intellectual

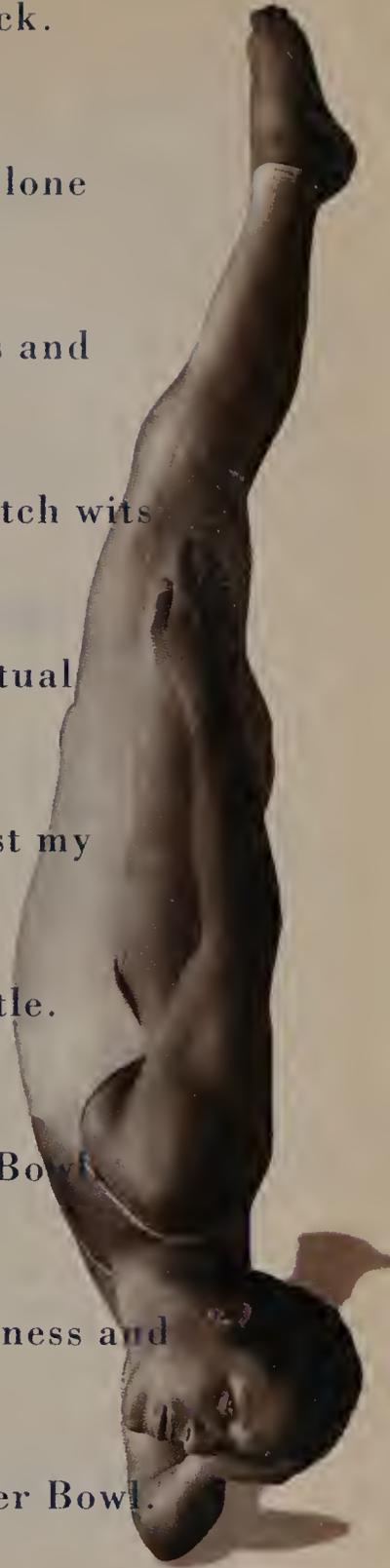
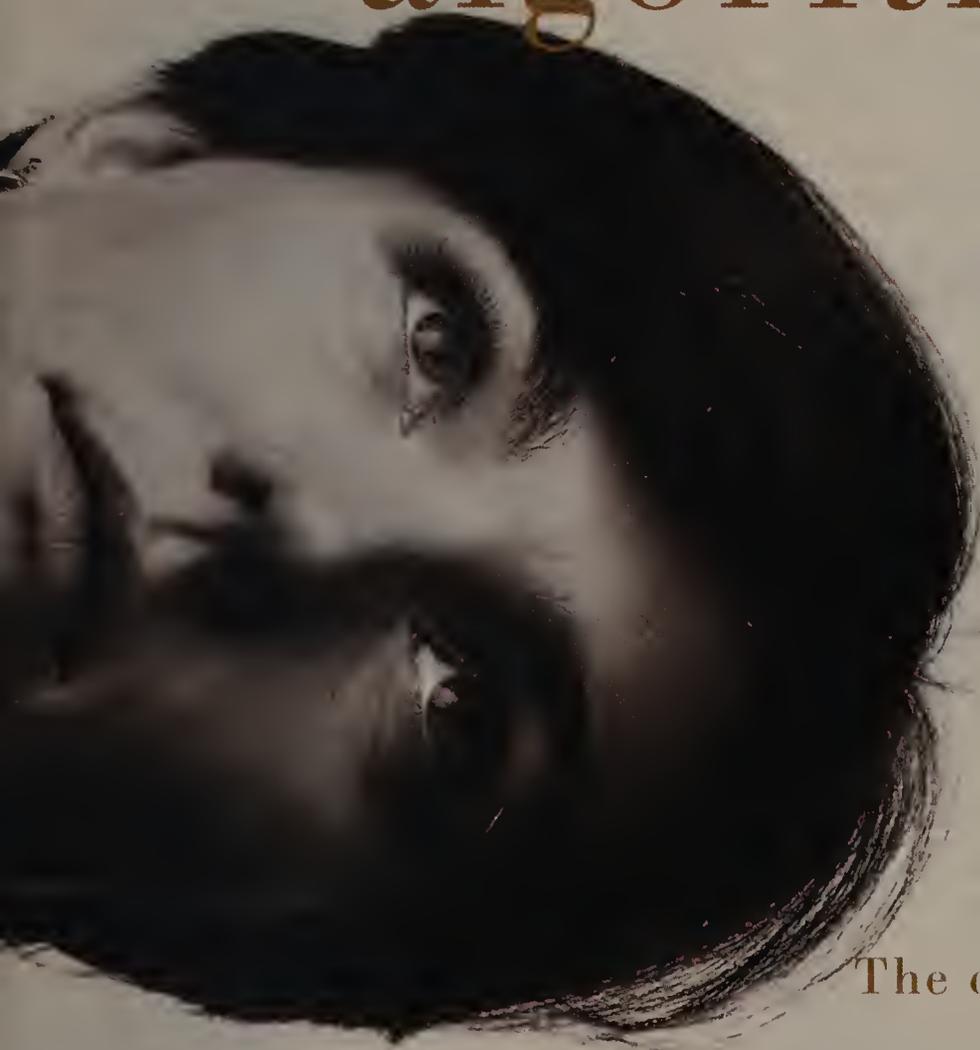
stamina and tenacity, test my

computer trivia and mettle.

Conquer The Computer Bowl

Somewhere between madness and

success lies The Computer Bowl.



The obsessive passion of technology.

Sponsor The Computer Bowl, April 20. Broadcast on "Computer Chronicles." Check your local PBS listings for day and time. Ten industry leaders in a contest of computing and trivia knowledge to benefit The Computer Museum, Boston.

Call 415-323-1909, or e-mail [welsh@tcm.org](mailto:welsh@tcm.org). Presented by Apple Computer. 

SPONSORS INCLUDE: AMERICAN AIRLINES, AMERICA ONLINE, ASSOCIATION FOR COMPUTING MACHINERY, CIRRUS LOGIC, CKS PARTNERS, COMPUTERWORLD, CUNNINGHAM COMMUNICATION, ELECTRONIC CAFE INTL., INTEL CORP., KLEINER PERKINS CAUFIELD & BYERS, POWERSOFT CORP., PRICE WATERHOUSE, PROGRESS SOFTWARE, SILICON VALLEY BANK, STRATUS COMPUTER, UB NETWORKS, AND VISIX SOFTWARE.

Film output and production: Wace USA/Walker Graphics.

# THE STARGATE SERIES PC'S ARE HERE

## Star X100 \$1899

- Intel 486 DX4/100 MHz
- 8MB RAM
- 540MB Hard Disk Drive
- Onboard IDE Interface
- 1MB Onboard Local Bus Video
- Quad Speed CD-ROM
- 15" High Definition Monitor
- Telephony/Voicemail/Phone Answering
- *Standard Features Included*



## Star 90 \$2499

- Intel Pentium™ 90 MHz
- 8MB RAM
- 850MB Hard Disk Drive
- Onboard PCI/IDE Interface
- 2MB Onboard PCI Local Bus Video
- Quad Speed CD-ROM
- 15" High Definition Monitor
- Telephony/Voicemail/Phone Answering
- *Standard Features Included*

## Star 75L \$1999

- Intel Pentium™ 75 MHz
- 8MB RAM
- 420MB Hard Disk Drive
- Onboard PCI/IDE Interface
- 1MB PCI/Local Bus Video
- Quad Speed CD-ROM
- 14" High Definition Monitor
- Telephony/Voicemail/Phone Answering
- *Standard Features Included*

## Star 60 \$2099

- Intel Pentium™ 60 MHz
- 8MB RAM
- 850MB Hard Disk Drive
- Onboard PCI/IDE Interface
- 1MB PCI/Local Bus Video
- Quad Speed CD-ROM
- 15" High Definition Monitor
- Telephony/Voicemail/Phone Answering
- *Standard Features Included*

Star 75 w/above config. \$2199

## Star E100 \$3599

- Intel Pentium™ 100 MHz
- 16MB RAM
- 1 Gigabyte SCSI Hard Disk Drive
- High Perf. EISA/PCI BUS
- SCSI Interface
- 2MB PCI/Local Bus Video
- Quad Speed CD-ROM
- 16-bit Sound MIDI HiFi w/Wave Table
- 15" High Definition Monitor
- Telephony/Voicemail/Phone Answering
- *Standard Features Included*

### Star Series Systems include these features:

- 1.44MB 3 1/2" Diskette Drive
- 14.4 Fax/14.4 Modem
- 256 Cache
- 16-bit Sound MIDI Hi-Fi Synthesizer and Speakers
- 101 Mechanical Keyboard
- Microsoft Ergonomic Mouse
- Microsoft DOS and Windows for Workgroups
- Microsoft Encarta '95
- Microsoft Money
- Microsoft Works
- Plus 10 Additional CD Titles

**3 YEAR** Warranty  
Call for details



## Introducing the STARGATE Pro Series Features



## Pro E100 \$3899

- Intel Pentium™ 100 MHz EISA
- 16MB RAM
- 1 Gigabyte Hard Disk Drive
- High Performance EISA/PCI
- 2MB PCI/Local Bus Video
- PCI/IDE Interface
- Quad Speed CD-ROM
- Telephony/Voicemail/Phone Answering
- MPEG Full Motion & Sound
- 1.44MB 3 1/2" Diskette Drive
- 14.4 Fax/14.4 Modem
- 16-bit Sound MIDI Hi-Fi w/WAVE Table Synthesizer and Speakers
- 15" High Definition Monitor
- 101 Mechanical Keyboard
- Microsoft Ergonomic Mouse
- Microsoft DOS & Windows for Workgroups
- Microsoft Office
- Microsoft Encarta '95

## Pro 75 \$2899

- Intel Pentium™ 75 MHz
  - 8MB RAM
  - 1 Gigabyte Hard Disk Drive
  - Onboard PCI/IDE Interface
  - 2MB Onboard PCI Local Bus Video
  - Quad Speed CD-ROM
  - Telephony/Voicemail/Phone Answering
  - MPEG Full Motion & Sound
  - 1.44MB 3 1/2" Diskette Drive
  - 14.4 Fax/14.4 Modem
  - 16-bit Sound MIDI Hi-Fi w/WAVE Table Synthesizer and Speakers
  - 15" High Definition Monitor
  - 101 Mechanical Keyboard
  - Microsoft Ergonomic Mouse
  - Microsoft DOS & Windows for Workgroups
  - Microsoft Office
  - Microsoft Encarta '95
- Pro90 w/above config. \$3099

To order call: 1-800-577-2486 or: 510-226-6300



Setting New Standards

# INTELESYS

By Intelligent Computers and Technologies

46231 Landing Parkway  
Fremont, California 94538  
Phone: (800) 577-2486  
Fax: (510) 252-8726  
Fax back: (510) 252-8488



**30 Day**  
**\$Back**  
Guarantee

**24**  
HOUR  
TECHNIC  
SUPPORT

We are open Mon. through Fri.: 8:30 am to 5:30 pm, Sat.: 10:00 to 4:00 PST. Fax lines are open 24 hours. Corporate government and university PO's welcome. Prices are in US Dollars, FOB Fremont, California. Prices and specifications subject to change. No refunds on shipping and handling charges, opened software. Monitors are non-refundable except with systems. Absolutely no returns without RMA return address authorization. The Intel Inside Logo, Intel and Pentium are trademarks or © of Intel Corporation. IBM is a trademark or © of International Business Machines. Microsoft is a trademark or © of Microsoft corporation. Other trademarks are of their respective owners. PCWMAR

Circle 106 on reader service card

# DacEasy Celebrates

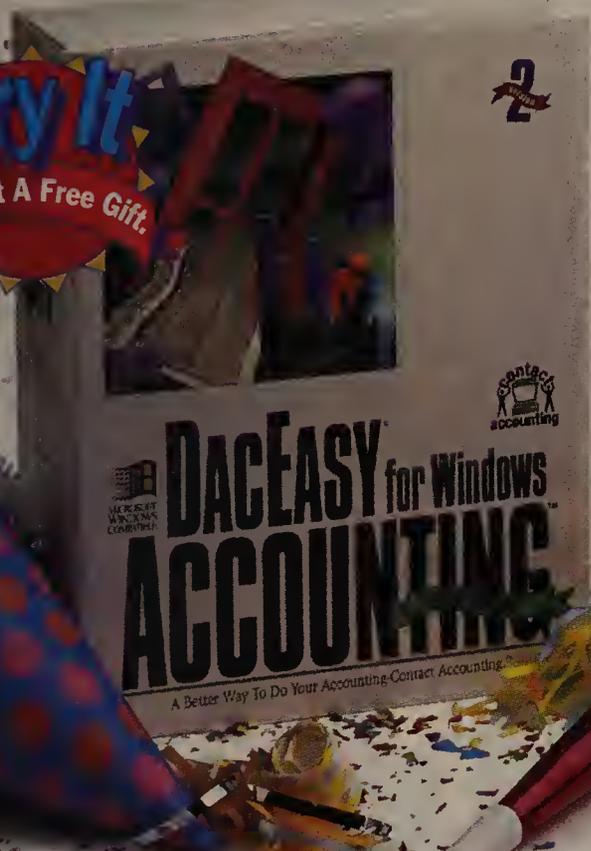
# 10 years

## by Introducing the Newest in *Windows Accounting*.

**DacEasy** is easy-to-use accounting software that revolves around people, not debits and credits. It has the powerful accounting and payroll features you need, and it helps you stay in contact with your customers, too. We call it Contact Accounting. It's new. It's better. And you can try it and get a free gift! Join in our celebration - 10 years of helping small businesses, like yours, be more successful!



**Try It**  
and Get A Free Gift.



### It's Easy to Use...

- Interactive Tutorial
- Easy-to-follow setup checklist
- Familiar paper-look-a-like screens
- Advisor offers tips and suggestions
- Graphical help system
- 30 days of FREE technical support

### ...Powerful Accounting...

- Writes checks in seconds
- Effortless invoicing
- Custom report options
- Processes payroll automatically
- Tracks inventory with backorders
- Calculates depreciation

**"Communication is where DacEasy Accounting 2.0 for Windows excels."**

PC World, February 1995

### ...That Helps You Communicate.

- Faxes invoices, statements and letters to anyone
- One-key phone dialer
- Prints custom letters for mass mailings
- Tracks phone calls and reminds of followups

**Most Features,  
Lowest Price.  
Just \$149.95!**

**Free**

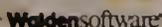


**Limited time offer.  
Get a \$50 Gift Certificate  
or a CIDCO® Caller ID System Free!(a \$60 value)**

Check out our CD-ROM version that includes over \$500 worth of Free Software!

When you buy DacEasy Accounting you'll get a \$50 gift certificate for your favorite computer store. Or get the newest rage in communication technology - a Caller ID system. Choose the gift certificate, and do a little shopping on us at the store where you bought your DacEasy software. Or choose a CIDCO Caller ID system that displays any caller's name and number before you pick up your phone. It's a \$60 value and it's a perfect complement to the communication tools found in DacEasy Accounting. Whichever gift you choose, it's free and it's our way of saying **thanks**.

Available at these and other fine retail stores.



**DacEasy®**

**Call Toll-Free Today**

**1-800-789-8011**

In Canada Call: 1-800-563-3314

The Inventors of Easy Affordable Accounting.

© Copyright 1995 DacEasy, Inc. 17950 Preston Road, Suite 800, Dallas Texas, 75252. All Rights Reserved. Anniversary Specials good thru June 30, 1995. Free gifts available only in the US through participating retailers. To redeem gift - send your original receipt to DacEasy along with the supplied insert card found inside marked packages of DacEasy Accounting for Windows V2. Indicate which gift you want to receive. Allow 2-4 weeks for delivery. Caller ID Service not available in all areas. Call your phone company for details. All product names are registered trademarks of their respective corporations.

Circle 162 on reader service card

## HARDWARE Q & A

### Pentium Chips and Bad Math

**Q** Do all Pentiums have bugs in their floating-point units (FPUs)? How bad are they? How will Intel fix them?  
*Gustavo Ariel Van Den Dooren,  
Buenos Aires, Argentina*

**A** If you bought a Pentium system last year, you *definitely* have an FPU that delivers wrong answers when dividing certain numbers by certain other numbers. Even if you bought your system this year, chances are it still has the problem, because Intel began shipping fixed chips only last January, in limited quantities, and may *still* be shipping some buggy chips as you read this. To find out whether your chip has the bug, perform the simple spreadsheet calculation shown in **FIGURE 1**.

How serious the problem is depends on what you're using your PC for. If you don't use spreadsheets, computer-aided design (CAD) programs, or financial applications, then you're probably not exercising your FPU at all, and you have nothing to worry about. For applications that employ the FPU, Intel claims a probabilistic error rate of one in 9 billion divisions. If you're a typical spreadsheet user, the company estimates that you would encounter—on average—an error once every 27,000

years. And the errors would probably be too small to do any damage.

At the other end of the spectrum, IBM has posited that a spreadsheet user of "typical" numbers who spends 15 minutes a day recalculating worksheets (for a total of 4.2 million floating-point divisions per day) could experience errors as frequently as once every 24 days. Everyone agrees, however, that this example represents only a tiny minority of spreadsheet users. And some analysts have questioned IBM's intentions, since the company sells its own line of CPUs.

Confused? Then here's a rule of thumb for spreadsheets: The more statistical and financial operations you perform, the greater the opportunity for a Pentium FPU error. If you need to leave a spreadsheet (or a high-end financial or statistical application) "cooking" for minutes or even hours, you may be performing hundreds of thousands of divisions per minute. At that rate, 9 billion calculations may happen sooner than you think—and you may never know if one of those calculations produced an error. If you have the usual mix of templates and database worksheets, however, the chances of experiencing an error are virtually nil.

CAD may be a different story. Although no one has yet attributed an error in a real-world CAD drawing to a Pentium FPU, no PC software crunches numbers harder than design and engineering software. According to Dr. Vaughn Pratt, a prominent Stanford University mathematician, "one would be out of one's mind to make a CAD drawing with a Pentium if it were critical that every single line be exactly in

place, as with an integrated circuit mask." Most CAD drawings don't require that kind of precision.

So what is Intel doing about all this? As of this writing, anyone can get a replacement chip from Intel by calling 800/628-8686 (916/356-3551 internationally) and providing a credit card number. When you return your original chip, the company will void the transaction. How long a replacement chip will take to arrive is another question, since none of the Intel reps I spoke with could provide even a ballpark estimate. If you're not comfortable replacing chips and you can afford to wait even longer, Intel is contracting with several third-party service providers who will swap chips for you. In addition, a number of major system vendors—including AST, Compaq, Dell, IBM, and Toshiba—have their own replacement programs, and most promise to send a technician in the bargain.

### Why Waste a Perfectly Good CPU?

**Q** I recently added an Intel OverDrive chip. One thing bothers me: my old processor just sits on the motherboard gathering dust. Is there any way that I could make it work alongside the OverDrive chip and increase my computer's power?

*Michael Makowski, Chicago*

**A** Nice thought, but no dice. To get two processors to work together, you need both a PC and an operating system designed to run multiple CPUs simultaneously. Even then, the two processors would have to be identical—another reason why you can't buy a system that will run an original CPU and an upgrade CPU in tandem.

### Multimedia Mayhem

**Q** I'd like to use my regular stereo speakers with my sound card, but I've heard that speakers that aren't magnetically shielded can damage

**Result With Pentium FPU Error**

	C2	↓		=(A1/A2)*A2
	A	B	C	D
1	4,195,835			
2	3,145,727		4,195,579	

**Correct Result**

	C2	↓		=(A1/A2)*A2
	A	B	C	D
1	4,195,835			
2	3,145,727		4,195,835	

**FIGURE 1: TEST YOUR PENTIUM with any spreadsheet. If you get the result shown in cell C2 of the top picture, your Pentium has a flawed FPU.**

# The Only Thing That Matters More Than What They Think —

Featuring  
PC WORLD Online!

## The Most Usable Service

**PC USABILITY**

**America Online:** A big winner on fundamentals like e-mail, America Online was also rated "exceptionally easy" when it came to finding and downloading files. \*\*\*\*



<b>SCORECARD</b>		AMERICA ONLINE CROSSES THE FINISH LINE FIRST		
Factor	America Online	CompuServe	Prodigy	
1. Exchanging E-Mail <i>Weighing Factor: 35%</i>	**** Easy to navigate, attach files, and go.	*** Step-by-Step instructions, but too cryptic.	** Road closed to other online services without add-on software.	
2. Downloading Files <i>Weighing Factor: 20%</i>	**** Straightforward and user-friendly.	***½ Lots of files; hard to find among forums.	**½ Needs better search capabilities.	
3. Accessing Data <i>Weighing Factor: 20%</i>	**** Top choice for up-to-date information.	*** Unmatched depth of information.	*** Testers rated these sections highly intuitive.	
4. Accessing the Internet <i>Weighing Factor: 15%</i>	***½ The only one with true Internet access.	*½ No Internet info, and even sending mail is tricky.	*½ Only Internet info is a glossary and a BBS.	
5. Working Offline <i>Weighing Factor: 10%</i>	**** Easy to compose mail offline.	*** Need Navigator software to work offline.	*½ No can do without new software.	
<b>Verdict</b> <b>100%</b>	**** So Easy, it's hard to believe you're online.	**** Database depth, but not always easy to use.	** Rock-solid for data, but that's it.	
	***** Excellent	**** Good	*** Acceptable	** Poor
			* Unacceptable	

PC Computing Magazine, September 1994

## Is What You Think.

To Find Out, Try  
**America Online For  
10 Hours — FREE!**

See for yourself why PC Computing Magazine named America Online the "most usable" online service. Send us the attached reply card and you'll get 10 hours online — absolutely free.

**call 1-800-847-8100**

### YES! I'D LIKE TO TRY AMERICA ONLINE — FREE.

Send me the free software and trial membership. I understand there's no risk — if I'm not completely satisfied, I may cancel without further obligation.

NAME \_\_\_\_\_

COMPANY/DEPT./APT. NO. \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_

( ) \_\_\_\_\_

HOME PHONE \_\_\_\_\_



SELECT DISK TYPE AND SIZE —

Windows\*:  3.5  5.25  High Density  Low Density

DOS:  3.5

Macintosh®:  3.5

\* To use America Online for Windows, you must have a 386 PC or higher, 4 MB of RAM, a VGA monitor (256 color support recommended), a mouse, a modem, and a working copy of Windows 3.1. Use of America Online requires a major credit card or checking account. Limit one free trial per household. America Online is registered service mark of America Online, Inc. Other names are service marks or trademarks of their respective owners.



# Try The "Most Usable," Most Exciting Online Service - Free For 10 Hours!



**PC Computing** Magazine just named America Online the "most usable" online service. But as much as we appreciate what they say, what we're really interested in is what *you* say. So, we'd like you to try America Online absolutely free—for 10 hours! Here's what PCC said about us.



**"Exchanging E-Mail** between online services and the outside world is key. America Online took top honors for ease of communications—both within the service and to external addresses." "Simplicity, power and logic were all cited by testers as among America Online's strengths when it came to mail handling. Our usability testers noted particularly how easy it was to send attachments and files with messages." — *PC Computing, September 1994*



**Downloading Files** from America Online's computer to yours. "Graphics and data files are the meat and potatoes of online access. Our testers deemed America Online the winner here, thanks to the ease with which they could find what they wanted." "Our testers cited America Online's excellent search tools and point-and-click access." — *PC Computing, September 1994*

**Staying Informed.** "Why wait until day's end for news, weather and stock reports? Online data is updated as frequently as every 15 minutes—and America Online takes the cake for delivering information sweetly and succinctly." "...you can [also] get text of everything from The New York Times and Chicago Tribune to Atlantic Monthly, New Republic and Wired." — *PC Computing, September 1994*



**Working Offline.** "A majority of our users didn't know working offline was possible, so they just logged on and started working. If you're using America Online you can write as many messages as you need to before you log on and ship them off—a big money saver." — *PC Computing, September 1994*

**Featuring PC WORLD Online.** With America Online, you get 24-hour instant access to the current issue of PC WORLD, plus features and benefits available only in PC WORLD Online. Check out PC WORLD's Hot Tips Database. Download graphics, screen shots, and tables featured in each issue, including exclusive Top 20 PC comparisons.



**Easy To Use.** Easier to try. Get your free 10-hour trial today! We'd like to know what you think. We'll send you the software and let you try it, absolutely free.

Complete and mail the card or  
**Call 1-800-847-8100**  
**Today!**



NO POSTAGE  
 NECESSARY  
 IF MAILED  
 IN THE  
 UNITED STATES



**BUSINESS REPLY MAIL**  
 FIRST CLASS MAIL PERMIT NO. 9096 VIENNA, VA

POSTAGE WILL BE PAID BY ADDRESSEE



8619 Westwood Center Drive  
 Vienna, VA 22182-9806



61% OFF

## PC WORLD

## PC WORLD

**Subscribe to PC WORLD and save 61%. Plus, receive 50 Free Utilities.**

You'll receive FREE our PowerBase\*. \* Disk complete with 50 Tips and Utilities to use with your software packages. Tips and tricks for:

- Windows
- Corel Draw
- WordPerfect
- FoxPro
- Word for Windows
- DOS
- Lotus 1-2-3
- And much, much more!

Yes, I want to stay ahead of the competition with PC WORLD's product reviews, hot news and How To tips and techniques. I'll pay only \$22.97 for 12 monthly issues-almost 61% off the annual newsstand price-plus I'll receive FREE PC WORLD's PowerBase \*\* Disk.

**MAIL THIS CARD OR CALL 800-825-7595 X501 • FAX: 415-882-0936**

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY/STATE/ZIP \_\_\_\_\_

Basic annual subscription price is \$29.90. Savings based on annual newsstand price of \$59.40. Please allow 6 to 8 weeks for delivery of your first issue. Foreign orders add \$46 postage. Canadian orders add \$20 postage plus 7% GST.

4LKDO

FREE DISK!





NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**  
FIRST CLASS MAIL PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

# PC WORLD

Subscription Department  
P.O. Box 51833  
Boulder, Colorado 80321-1833



monitors and other components. How far away from the rest of my system do my speakers have to be?

*James Zha, Marietta, Georgia*

**A** A magnetically shielded speaker is one encased to prevent its magnetic field from extending beyond the speaker housing, or one that produces a negligible magnetic field to begin with. But shielded or not, a speaker can't damage a monitor or other PC components. It can distort the image on your monitor, but when you move the speaker away—a few inches will probably do it—the image will right itself.

Note, however, that unshielded speakers *can* corrupt magnetic media. Make sure disks and backup tapes are at least 2 feet from unshielded speakers, or you risk losing data. The rear of the speakers, where the magnets are, is especially hazardous.

**Are Cache Upgrades Worth It?**

**Q** I enjoyed last November's "Upgrades: When They're Worth It, and When They're Not." One thing I missed was a discussion of secondary cache memory. Would it be worthwhile to upgrade my 486 system's 64K cache to 128K or 256K?

*Carl Donsbach, Albuquerque, New Mexico*

**A** The secondary memory cache, often called the external memory cache, is a block of fast memory on your motherboard that holds instructions and data most likely to be needed by the CPU (the *primary*, or internal, memory cache is in the chip itself). When the CPU can't find what it needs in the primary cache, it turns to the secondary cache instead of throttling down to access the slower main memory. In any system, the biggest performance difference is between *no* secondary cache and *any* secondary cache—you would lose as much as 17 percent of your current performance without that 64K you already have.

You'll probably obtain a small boost from moving up to 128K, but 256K is unlikely to get you much more. It depends on how you use your PC. If you multitask—say, run communications sessions in the background as you recalc a huge spreadsheet—you'll see some more improvement with 256K. Likewise if your PC is an applica-

tion server handling the processing needs of several users at once. But under normal circumstances (when only one app is actually *doing* something), 128K is enough.

Some secondary caches can't be upgraded, so check your system manual before you try anything. In some cases, you can get the cache memory only from the system manufacturer, which is always more

expensive than buying it at commodity prices (usually about \$8 for 64K).

**By Eric Knorr**

*Contributing Editor Eric Knorr is editor and principal author of The PC Bible (Peachpit Press, 1995). Hardware welcomes your questions and pays \$50 for published items. See page 12 for contact information.*

**HIGH  
RESOLUTION  
SCAN  
CONVERSION  
MADE EASY.**

The new Extron SUPER EMOTIA™ Scan Converter is for those of you who want great looking, recordable video directly from your computer with the least amount of effort. That's because the SUPER EMOTIA is easy to install and operate. Simply attach the supplied cable to the output

NTSC or PAL True Digital Conversion  
Freeze Frame Switch Overscan/Underscan Switch Interlaced/Non-Interlaced Switch Vertical Centering Horizontal Centering



Auto-Switchable 115 V/230 V Metal Enclosure Three Simultaneous Outputs: RGBS, Video & S-Video

of your 640 x 480 up to 1024 x 768 VGA, Super VGA, XGA-2, Mac, Quadra, Performa or PowerMac compatible computer, plug into the SUPER EMOTIA's 15 pin input and violà! SUPER EMOTIA does the rest by providing a clean, digital reproduction (NTSC or PAL, S-VHS or RGBS at 15.7 kHz) suitable for recording and/or viewing on standard or broadcast-quality video equipment. And, with a list price of only \$1,895 the easy choice in high resolution scan conversion becomes quite clear.



**Extron Electronics**

EXTRON ELECTRONICS/RGB SYSTEMS, INC., 1230 South Lewis Street, Anaheim, CA 92805, U.S.A.  
(800) 633-9876 (714) 491-1500 FAX: (714) 491-1517  
EXTRON ELECTRONICS, EUROPE, Banningstraat 6, 3769 AB Soesterberg, The Netherlands, 31-3463-50150 FAX: 31-3463-53985

**Circle 82 on reader service card**

## STAR-DOT-STAR TIPS

### WinWord Printer Power

Here's a way around one of Word for Windows' most annoying shortcomings: the inability to assign a true default printer. In case you've never noticed, the only way to change your printer in Word is to select File•Print, click the Printer button, and make a choice. But your selection remains the default until the next time you change printers. This can get really ugly if you change printers for a single print job, then forget to change back. Your confidential memo may come out at the other end of the building instead of from your desktop printer.

Alter the File•Print command so that it notes the current printer before bringing up the Print dialog box, and it returns to that printer when everything is done. That way, when you change printers, it's only temporary. You can then make the Print Dialog Box available separately for times when you really need to change the default printer.

First, choose *Tools•Macro*, enter the macro name **FilePrint**, and click *Create*. Word places the Sub MAIN and End Sub statements in the resulting macro editing window; just add the body of the macro code so it matches my FilePrint macro [shown in **FIGURE 1**]. Once saved, this macro runs whenever you select Word's File•Print command.

```
Sub MAIN
Dim Org As FilePrintSetup
GetCurValues Org
Dim dlg As FilePrint
GetCurValues dlg
If Dialog(dlg) Then
    FilePrint dlg
    FilePrintSetup .Printer = Org.Printer
End If
End Sub
```

**FIGURE 1: SELECT A DIFFERENT PRINTER temporarily in Word for Windows by substituting this macro for WinWord's File • Print command.**

Now you need a way to change your default printer. Select *Tools•Customize* and click the *Menus* tab. For Categories, select *File*, and for Commands, select *FilePrintSetup*. At the bottom of the dialog box, select where and how you want the command to appear, click *Add*, and then click *Close*.

*Harry Lincoln, San Francisco*

**Editor's note:** A few Windows apps display this same annoying trait: When you change printers (or printer setups), you never know if the changes will take effect for one print job, for all print jobs in the application, or for all Windows print jobs.

Most Windows programs (Cardfile, for example) use a generic printer setup dialog box that enables you to select an alternate printer without changing the Windows default printer—which means that other programs can continue using the default printer if you forget to switch back. However, you still have to select the default printer again to use it from within that program. These macros allow you to choose the behavior you'd like, if only in Word for Windows, without surprises. If you have a similar solution for another common Windows app, please send it in.

### Instant ASCII From WinWord

When you want to upload a Word for Windows text file to a BBS or the Internet, you must first save it as an ASCII file that anyone can read. The same is true if you want to write a DOS batch file, a QBasic program, or input for any other application that requires plain ASCII text.

Unfortunately, Word for Windows makes it a pain in the neck to save files as ASCII text. You have to select File•Save As from the main menu, select Text Only as the type, and then type the name in the File Name field. In Word 2.0 this can be especially frustrating because you must go through this entire routine each time you save the

file. [Word 2.0 defaults to saving files as Word documents, but Word 6.0 remembers the format in which the document was last saved. —Ed.]

I therefore created a macro [shown in **FIGURE 2**] to automate the process of saving Word documents as ASCII text. It prompts for a file name—including the directory path but not an extension—then adds the TXT extension and saves the file. (To keep things simple, the macro doesn't check whether a file by the same name already exists.)

Keep the macro handy by adding it to the File menu or assigning it to a button, as I have.

*Bill Warner, PC World Online*

**Editor's note:** Internet users are often puzzled when they download what they think is a text file and it looks like gibberish. Usually this is because the author uploaded the file in a word processor's proprietary format rather than as ASCII text. To be a good Internet citizen, you should convert your text files to ASCII before uploading.

There are also many programs on your own system—including almost all the utilities that come with DOS—that work only with plain text files. This macro makes it easy to save files as text in Word 2.0; it also works in Word 6.0. Create it using the steps described in the previous tip.

### Saving Stacker

If you use Stacker to compress your hard disk and you need to install a program that requires you to boot from the installation disk (such as an operating system upgrade), you'll probably run into a glitch. The program you're installing won't see your Stacker drives and therefore won't be able to install itself (or upgrade the files) on them.

This happened to me when I tried to upgrade from MS-DOS 6.0 to MS-DOS 6.22; I couldn't complete the upgrade until I finally discovered a workaround: Before installing the new soft-

# ACMA P90 - "The Fastest System we've ever tested"

-PC World Magazine



What PC World said:

## "ACMA Pentium-90 Sets a Record Pace"

There was a time back in the Sixties when a new land-speed record emerged from Utah's Bonneville Salt Flats every few months. We were reminded of that the other day when yet another PC World desktop speed record fell to a hot Pentium-90. All we had to do was unbox the Acma P90, launch our application benchmarks, and watch this system burn up the charts. When the smoke cleared, this system emerged as the new performance top gun..."

- ◆ Pentium™ 90MHz Processor
- ◆ 16MB of RAM/256K Cache
- ◆ Mid-Tower Case
- ◆ Diamond Stealth64 PCI Video Card w/ 2MB VRAM
- ◆ Conner 540MB Enhanced IDE Drive
- ◆ Dual Speed CD-ROM Drive
- ◆ 3.5" Floppy Drive
- ◆ Dual Slot PCMCIA Drive
- ◆ 15" SVGA Monitor (1280x1024)
- ◆ MS-DOS 6.22
- ◆ MS-Windows for Workgroups 3.11
- ◆ Microsoft Serial Mouse
- ◆ 101 Enhanced Keyboard
- ◆ 1 Year On-Site Service

**\$2999**

## BEST BUY POWER DESKTOP February 1995



PC WORLD  
CONNECT

MORE INFORMATION VIA INSTANT FAX  
1-800-234-0455 ext.118



### NEW P100

- ▼ Pentium™ 100MHz System
- ▼ 9 Bay Tower Case
- ▼ 8MB of RAM/256K Cache
- ▼ 850MB Hard Drive
- ▼ 3.5" Floppy Drive
- ▼ 15" Monitor (1280x1024)
- ▼ 2MB Diamond Stealth 64
- ▼ 4x IDE CD-ROM Drive
- ▼ MS-DOS/MS-Windows/Mouse

**\$3499**



### VALUE P90

- ▼ Pentium™ 90MHz System
- ▼ 6 Bay Mid Tower Case
- ▼ 8MB of RAM/256K Cache
- ▼ 420MB Hard Drive
- ▼ 3.5" Floppy Drive
- ▼ 15" Monitor (1280x1024)
- ▼ 1MB VLB Video Card
- ▼ 2x IDE CD-ROM Drive
- ▼ MS-DOS/MS-Windows/Mouse

**\$2199**



### 486DX2-66 MPC

- ▼ 8MB of RAM/256K Cache
- ▼ 420MB Hard Drive
- ▼ Built-in Speakers & 15W Amplifier
- ▼ 2X CD-ROM Drive
- ▼ 15" Monitor (1280x1024)
- ▼ 1MB VLB Video Card
- ▼ Microsoft Home Software Titles-Encarta/Money/Works/Best of Entertainment Pack

**\$1699**



### 486DX2-66 Energy Pro

- ▼ 486 DX2-66 VLB System
- ▼ Energy Star Compliant
- ▼ 4MB of RAM
- ▼ 256K Cache
- ▼ 420MB Hard Drive
- ▼ 3.5" Floppy Drive
- ▼ 14" SVGA Green Monitor
- ▼ 1MB VLB Video Card
- ▼ MS-DOS/MS-Windows/Mouse

**\$1249**



All ACMA systems come with a one year warranty and one year on-site service (within approved service areas). Other components and configurations available. Call for details.

COMPUTERS, INC.  
**Acma**



**800-786-6888**



47988 Fremont Blvd, Fremont, CA 94538

(510)623-1212 (510)623-0818 FAX **Circle 66 on reader service card**

Prices and specifications subject to change without notice. The Intel Inside logo is a registered trademark and Pentium is a trademark of Intel Corporation.

```
Sub MAIN
FileSave
Name$ = InputBox("Enter new file name", \
"Save Text File", "TEXTFILE")
If InStr(Name$, ".") = 0 Then Name$ = Name$ + ".TXT"
FileSaveAs .Name = Name$, .Format = 2
End Sub
```

**FIGURE 2: YOU CAN AUTOMATICALLY SAVE WORD FOR WINDOWS documents as ASCII text by using this simple macro.**

ware, make a copy of the first installation floppy using DISKCOPY. Then copy the file DBLSPACE.BIN (which appears both in the root directory of every Stacker drive and in the root directory of each "host" drive) to the new floppy. To do this, you'll need to remove DBLSPACE.BIN's read-only, hidden, and system attributes using the command **ATTRIB -R -H -S DBLSPACE.BIN**. Once you've copied DBLSPACE.BIN, restore the file's attributes on both the hard drive and the floppy using the command **ATTRIB +R +H +S DBLSPACE.BIN**.

This trick works because, despite the name, the file DBLSPACE.BIN on a Stacker drive contains the Stacker program, *not* DoubleSpace. (The file names are the same for compatibility reasons.) Just placing this file on a bootable floppy installs Stacker when you start up the system, making your compressed drives available to all DOS software. The trick won't work with other operating systems, though, so it won't help you install OS/2 or Windows NT to a compressed drive.

*Dirk Crush, San Jose, California*

**Editor's note:** DOS upgrades aren't the only situation where this trick comes in handy. If you're making a boot floppy for a virus detection program (which will run best from a clean, write-protected floppy containing just the operating system and antivirus program), a rescue disk to use if your machine becomes unbootable, or any other floppy you expect to boot your PC with, be sure to put DBLSPACE.BIN on it so you can access your Stacker volumes after booting.

Normally you can do this by creating the floppy using the **FORMAT /S** command, or by transferring the operating system to it using the **SYS** command. (To make sure DBLSPACE.BIN is there, use the **ATTRIB** or **DIR /A** command.) But if a bootable floppy was created by any other command or program, or

if it was formatted on a PC that didn't have Stacker or *did* have DoubleSpace, you'll probably have to transfer DBLSPACE.BIN to the floppy using the steps Crush describes.

### Two Buses Are Better Than One

SCSI, the Small Computer System Interface, is one of the best ways to hook up all kinds of peripherals, including hard disks, tape backup units, and CD-ROM drives. Unfortunately, if you have lots of SCSI devices, the total length of the SCSI bus (counting both the internal and external portions) may exceed the maximum 18 feet the standard allows. Also, a bus spanning many different connectors and segments of cable can be unreliable, and keeping track of the bus terminators (required at each end of the bus) is often not easy. Finally, because each SCSI device must have a unique ID number, and one of those is taken up by the host adapter itself, you may run out of IDs or forget which ones are in use.

One way around these difficulties is to use a SCSI board that contains two adapters—one for the internal devices and another for the external ones—for a total of 14 peripherals, twice the capacity of a single SCSI adapter. The software isn't any more complicated to install, and adding a new SCSI peripheral is much easier. Also, buying two adapters on one card costs much less than buying two separate cards.

*Bruce Guerrero, Lyubbrook, New York*

**Editor's note:** Twin SCSI adapters have been common on high-end Macs for some time but are relatively new in

PCs. Besides simplifying SCSI setups, they increase performance because they can work simultaneously if you use an advanced multitasking operating system, such as OS/2. Adaptec and Dell offer dual SCSI interface cards for EISA machines, and Hewlett-Packard and Zenith Data Systems build dual SCSI hosts into some system boards. AST makes a dual SCSI adapter for the PCI bus, and Adaptec's PCI twin SCSI adapter should be available by the time you read this.

- **Adaptec**, 800/959-7274  
Reader service no. 639
- **AST**, 800/876-4278  
Reader service no. 640
- **Dell**, 800/274-3355  
Reader service no. 641
- **Hewlett-Packard**, 800/752-0900  
Reader service no. 642
- **Zenith Data Systems**, 800/237-8721  
Reader service no. 643

By Brett Glass

*Brett Glass is a contributing editor for PC World. Star-Dot-Star welcomes your tips, macros, batch files, and short programs and pays \$50 to \$200 for published items. See page 12 for contact information.*

### USER GROUP TIP

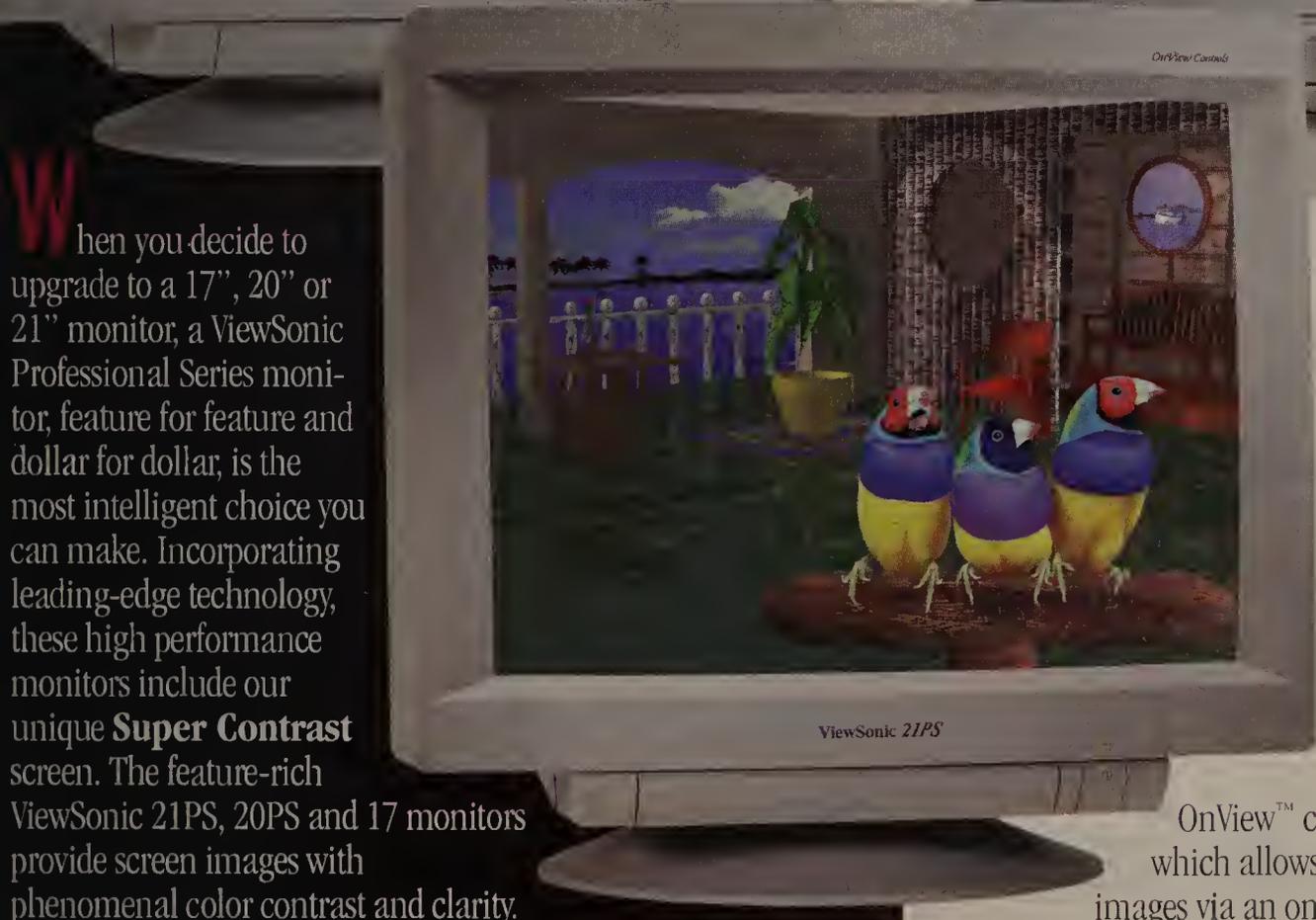
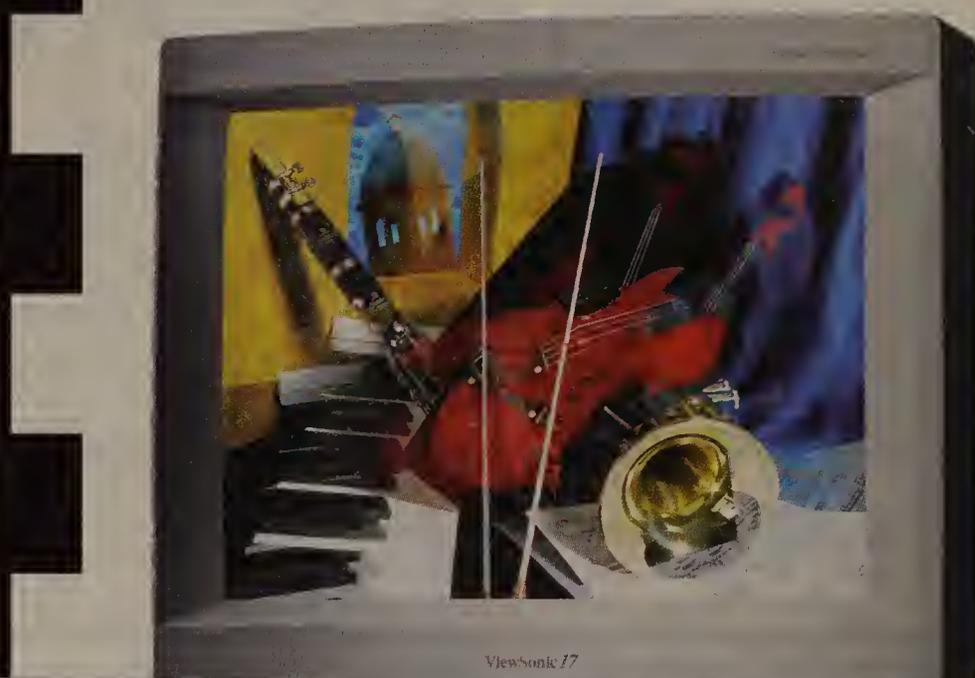
## Troubleshoot DOS With <F8>

After you start up your computer, press <F8> when DOS 6.x displays the 'Starting MS-DOS' message, and DOS prompts you to confirm each line in your CONFIG.SYS. Then it prompts you to confirm each line in your AUTOEXEC.BAT. (MS-DOS 6.0 and PC DOS 6.1 just ask you whether to run AUTOEXEC.BAT.) At any point, you can press <Esc> to have DOS process all remaining lines or press <F5> to have it ignore them.

Neil Edwards  
Tampa Bay Computer Society

# PROVIDED CONTACTS

## DESIGNED FOR PROFESSIONALS



When you decide to upgrade to a 17", 20" or 21" monitor, a ViewSonic Professional Series monitor, feature for feature and dollar for dollar, is the most intelligent choice you can make. Incorporating leading-edge technology, these high performance monitors include our unique **Super Contrast** screen. The feature-rich ViewSonic 21PS, 20PS and 17 monitors provide screen images with phenomenal color contrast and clarity.

Our **Super Contrast** screen uses advanced technology to create sharp, rich images, starting with a special glass not found in most monitors. This glass minimizes the diffusion of light between the individual picture elements on the screen, virtually eliminating color washout caused by pixel crossover, producing richer, purer colors (*see illustration*). To guarantee that the image is brilliant and crystal clear, a specially designed shadow mask ensures that more energy reaches the phosphors, and more light reaches you. Does all this advanced technology matter? It does when you see the brilliant, true-to-life images it produces.

Be assured the feature-rich ViewSonic Professional Series monitors will optimize your productivity. For example, all three monitors provide resolutions up to 1,600 x 1,280. And, with maximum refresh rates of 160Hz, you know the image and color on the screen will be stable, consistent and picture-perfect. Plus, these monitors are equipped with our



OnView™ control system which allows you to adjust images via an on-screen menu.

ViewSonic's Super Contrast screen eliminates pixel crossover (top), providing distinct pixelization (bottom).

ViewSonic . . . always on the leading edge of technology.

**ViewSonic®**  
See The Difference!™



Tel: (800) 888-8583 or (909) 869-7976; Ext. 223  
 Fax: (909) 869-7958 Call FaxSonic at (909) 869-7318 (fax-on-demand)  
 Request Doc. 162 (21PS), 156 (20PS) and 152 (17)  
 Applelink: VIEWSONIC Compuserve: 73374, 514

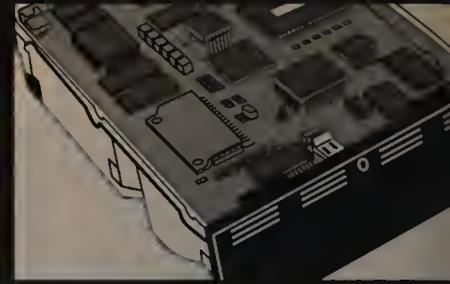
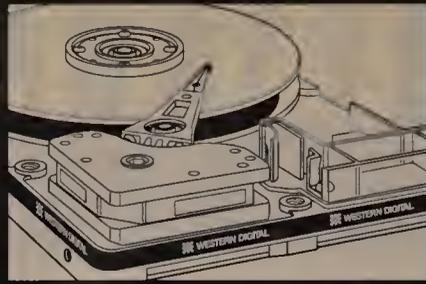
All products and trademarks are brand names of their respective companies. Specifications subject to change without notice.

Circle 218 on reader service card

# MEGAHAUS

HARD DRIVES

The Drive Authority!



### UNEQUALED REPUTATION

Nobody knows drives like MegaHaus. We have specialized in storage solutions for over 8 years. Repeat business from satisfied customers is the backbone of our business. We satisfy our customers.

### DIRECT REPLACEMENT WARRANTY

During the first year of your warranty, we replace: not repair, any defective items. All items receive lifetime technical support from our factory trained techs.

### SAME DAY SHIPPING

Our multi-million dollar inventory offers you the best diversity and availability in the market. We ship most orders the same day. Each order is checked at least four times for accuracy.

### FAST, EASY INSTALLATION

Anyone can sell you a hard drive. We sell easy to install storage solutions. We spend countless hours researching the best solutions, then create our quick precise installation guides for each kit.

## UNBEATABLE DEALS

### Quantum™

The largest manufacturer of disk drives in the world!

Capacity	Access Time	Model	IDE Price	SCSI Price
365MB	11ms	LT365	\$179	\$189
420MB	12ms	TB420	\$183	n/a
540MB	14ms	MV540	\$217	\$228
731MB	11ms	LT730	\$252	\$262

### MICROPOLIS®

Best buy large capacity SCSI drives!  
5yr advanced replacement warranty.

Capacity	Access Time	Speed	Model	Price
2050MB	8.5ms	7200rpm	MC4221	\$879
4294MB	8ms	7200rpm	MC3243	\$1579
9100MB	12ms	5400rpm	MC1991	\$2979

### OPTICAL DRIVE SALE!

Price includes 1 FREE disk! Complete internal and external kits available for all computers.

Capacity	Brand	Speed	Buffer	Wty	Price
230MB	Fujitsu	30ms	256K	1yr	\$695
1.3Gig	NEC	25ms	1MB	2yr	\$1799
1.3Gig	Maxoptix	23ms	4MB	1yr	\$2149

### JAPANESE QUALITY!

### FUJITSU

Capacity	Access Time	Model	IDE Price	SCSI Price
530MB	3.5"	13.8ms	2yr wty. \$209	
530MB	3.5"	13.8ms	2yr wty. \$225	
1080MB	3.5"	9.5ms	5yr wty. \$495	

### INCREIBLE PRICE!

### NEW TAPE DRIVES!

Run on floppy controller. 1 FREE tape. Save \$10 w/ drive sale.

Capacity	Brand	Warranty	Internal Price	External Price
250MB	IOMEGA	5yr	\$155	\$279
420MB	CONNEX	2yr	\$187	\$339
850MB	CONNEX	2yr	\$282	\$429

### PIONEER

External CD ROM changers. No more disc swapping!

Discs	Speed	Model	Price
6 Disc	Double Speed	DRM602X	\$399
6 Disc	Quad Speed	DRM604X	\$819
18 Disc	Quad Speed	DRM1804X	\$1899

### HARD DRIVES

#### CONNEX

IDE	Capacity	Access Time	Model	Price
420MB	14ms		CFS420A	\$194
540MB	13ms		CFS540A	\$225
850MB	10ms		CNR850A	\$309
1275MB	9ms		CNR1275A	\$475

#### IBM

WIDE SCSI	Capacity	Access Time	Model	Price
1052MB	8.6ms		0662S12W	\$699

#### Maxtor

IDE	Capacity	Access Time	Model	Price
420MB	12ms		M7420AV	\$189
540MB	12ms		M7540AV	\$220
853MB	12ms		M7850AV	\$275
1260MB	12ms		M71260AV	\$485

#### MICROPOLIS

SCSI	Capacity	Access Time	Model	Price
2050MB	8.5ms		MC4221	\$879
4294MB	8ms		MC3243	\$1579
9100MB	12ms		MC1991	\$2979

WIDE SCSI	Capacity	Access Time	Model	Price
2050MB	8.5ms		MC4221W	\$999
4294MB	8ms		MC3243W	\$1699
9100MB	12ms		MC1991W	\$3099

SCSI-AV Audio / Visual tuned drives	Capacity	Access Time	Model	Price
2000MB	8.5ms		MC4221AV	\$979
4294MB	8ms		MC3243AV	\$1699
9100MB	12ms		MC1991AV	\$3129

#### Seagate

IDE	Capacity	Access Time	Model	Price
420MB	14ms		ST3491A	\$189
545MB	14ms		ST3660A	\$215
722MB	12ms		ST3780A	\$289
850MB	12ms		ST5850A	\$329
1083MB	12ms		ST31200N	\$419

SCSI (WIDE SCSI also available)  
1052MB 9ms ST31200N \$519  
2147MB 8ms ST32550N \$1119  
2148MB 9ms ST12400N \$950  
4290MB 9ms ST15230N \$1599  
4290MB 8ms ST15150N \$2149  
9080MB 11ms ST410800N \$3049

**WE SELL HIGH QUALITY DISK ARRAYS AT AFFORDABLE PRICES!**

### HARD DRIVES

#### WESTERN DIGITAL

IDE	Capacity	Access Time	Model	Price
420MB	12ms		AC2420	\$185
540MB	12ms		AC2540	\$216
853MB	10ms		AC2850	\$285
1083MB	10ms		AC31000	\$409
1280MB	10ms		AC31200	\$455

#### Quantum™

IDE	Capacity	Access Time	Model	Price
541MB	11ms		LT540A	\$232

SCSI	Capacity	Access Time	Model	Price
540MB	11ms		LT540S	\$242
1080MB	9ms		IMP1080S	\$539
2160MB	9.5ms		IMP2160S	\$889

#### SYQUEST

The #1 name in removable media drives!

SCSI	Capacity	Price	PC Kit	Mac Kit
44/88MB	SQ5110C	\$249	\$369	\$399
105MB	SQ3105S	\$229	\$349	\$339
200MB	SQ5200C	\$369	\$499	\$519
270MB	SQ3270S	\$369	\$519	\$489

IDE Drive PC Kit Portable  
105MB SQ3105A \$179 \$269 \$339  
270MB SQ3270A \$339 \$439 \$529  
Genuine Syquest Cartridges  
Qty 2-4 / 5-9 / 10+ or with drive  
44MB \$53/51/50 88MB \$55/51/49  
105MB \$56/54/53 200MB \$80/75/72  
270MB \$65/62/59

#### NOTEBOOK UPGRADES

2.5" Drives	Capacity	Access Time	Model	Price
240MB	14ms		Fujitsu	\$279
256MB	17ms		Quantum	\$269
514MB	17ms		Quantum	\$429

Adaptec PCMCIA to SCSI / Parallel to SCSI \$219 / \$135  
PCMCIA internal docking bay for desktop \$119

#### MISCELLANEOUS

Drive Media! WIDE SCSI, Optical, Macintosh & Power PC Drives, Hard Disk Cards, PCMCIA, 2 1/2" Drives, Floppy Drives, IBM PS/1, PS/2, and Tandy Drives.

### CD ROM DRIVES

SCSI	Capacity	Access Time	Model	Price
Toshiba	XM3501	4X	155ms	\$299
NEC	CDR4X	4X	220ms	\$279
Plexstor	PX43CS	4X	170ms	\$339
Sanyo	SH93R	2X	280ms	\$149

IDE (ATAPI)  
Mitsumi CRMCFX400 4X 230ms \$209

#### MULTIMEDIA KITS

SCSI Drive, sound card (in retail pkg)	Model	Price
PREM=Media Vision Premium 3D. PRO=Media Vision Pro 3D		
SB= Sound Blaster 16 SCSI. SA= Sound Blaster SCSI ASP.		
	PREM PRO SB SA	
SH93R	\$279 \$409 \$309 \$339	
CDR4X	\$439 \$579 \$469 \$509	
XM3501	\$469 \$609 \$499 \$529	
PX43CS	\$499 \$629 \$529 \$559	

### CD ROM TOWERS

Multiple drives in a single enclosure.	2 Drive	4 Drive	7 Drive
Sanyo 93R	\$379	\$799	\$1299
NEC 4X	\$689	\$1439	\$2439
Toshiba 3501	\$755	\$1579	\$2679
Plexstor 4X CS	\$819	\$1689	\$2879

### SCSI TAPE DRIVES

Kit includes 16bit card, DOS or Windows software & 1 tape.	Bare	Kit
250MB Conner	2150	\$339 \$489
525MB Conner	2525	\$479 \$629
1Gig WangTek	51000	\$529 \$679
2Gig WangDat	3100	\$679 \$799
2Gig HP	35470	\$759 \$879
2Gig Conner	4320	\$779 \$899
4Gig Conner	TSM4000	\$539 \$609
4-8Gig WangDat	3200	\$819 \$939
4-8Gig Conner	4324	\$849 \$969
4-8Gig HP	35480	\$869 \$989
4-10Gig WangDat	3400	\$919 \$1039
4-10Gig Conner	4326	\$959 \$1079
4-10Gig HP	C1533A	\$1049 \$1169

Backup Software  
Novell NLM 50 user / unlimited / OS/2 \$199 / \$339  
NovaStor OS/2 / Macintosh \$89 / \$99  
TAPEDISK use our SCSI tapes as a regular drive \$249

### CONTROLLER CARDS

ADAPTEC	Model	Price	Alone	w/Drive
A1522COREL	16Bit SCSI	\$129	\$109	
A1542COREL	16Bit SCSI	\$235	\$225	
A2742 EISA	SCSI	\$379	\$369	
A2842 VESA	SCSI	\$259	\$249	
A2940Kit	PCI SCSI	\$299	\$289	
Future Domain	1680 16Bit SCSI	\$134	\$119	
QLOGIC	PCI SCSI & WIDE	\$325	\$315	

TEKRAM CACHING CARDS  
DC600CF 16Bit IDE \$89 \$79  
DC680C 32Bit Local Bus IDE \$109 \$99  
DC690C 32Bit PCI IDE \$149 \$139

SCSI Controllers include COREL SCSI  
DC800B 16Bit SCSI \$199 \$189  
DC880B 32Bit Local Bus SCSI \$299 \$289  
TEKRAM NON-CACHING  
DC300B 16Bit SCSI w/ Corel \$159 \$149  
DC380B VESA SCSI w/ Corel \$179 \$160  
DC290N PCI Enhanced IDE \$45 \$39  
DC200S 16Bit IDE w/ High Speed IO \$55 \$45  
GSI 16Bit IDE accelerators (enhanced IDE)  
Boost Performance 30 to 80%! VESA coming soon.  
1533-21 2IDE, 4 Floppy \$59 \$49  
1533-32 2IDE, 4 Floppy, IO \$125 \$115  
4C 16Bit supports 8 IDE \$139 \$129  
Many other types of controllers in stock.

### DRIVE HARDWARE



NEW! High Quality pull out brackets for 3.5" hard drives. Mounts in 5 1/4" bay. Entire frame is metal, gold connectors rated at 50K insertions, built in cooling fan. SCSI unit has ID select on cartridge. Great for security, RAID, or Backup. Hot swappable!  
SCSI 1 \$85 2-9 \$82 10+ or w/ drive \$75  
IDE 1 \$79 2-9 \$76 10+ or w/ drive \$73  
SCSI Drive cases 3.5" \$90 half height \$80  
1 full or 2 half \$105 2 full or 4 half \$250  
4 full or 8 half height \$450 (installation extra)

# 1-800-786-1154

Ad. Code # PW04 Sales Hours (Central Standard Time)  
8am - 8pm Monday thru Friday 9am - 3pm Saturday

FAX (713) 333-3024 Local (713) 333-1910

T.T.Y. 800-473-0972 Corporate / Government 800-786-1146

We sell within the United States, its territories, and Canada (sorry no international orders)

Circle 147 on reader service card



NO SURCHARGE

We accept Fortune 500 & Government bids & P...  
We check for COD and Credit Card fraud!

Prices & specifications subject to change without notice. Shipping charges are...  
Returns must be in new condition and in original packaging. Defective items may not...  
refundable. No refunds on software or special orders (items not listed in ad.) All...  
subject to 15% restocking fee. Some exceptions may apply to unbeatable deals. All...  
are registered trademarks of their respective companies. Personal checks held for...  
clearance. We reserve the right to refuse any sale for any reason. ©1995 MegaHaus

MEGAHAUS  
HARD DRIVES  
2201 Highway 517  
Dickinson, Texas 77539



# FUTURE Micro

## World Leader in PC Upgrades™

### System Board Upgrades

Pentium MotherBoards	486 Mother Boards
<b>Intel Premiere II</b> PCI, 5 ISA Enhanced IDE, FDO, 2 Ser, 1 Por, Built In 6k Cache, Uses 72 Pin SIMMs AMI Flosh BIOS, Intel Neptune Chipset 100Mhz ..... \$399/450	<b>GA-486VF/VS</b> Uses [8] 30 Pin SIMMs (VF) or [4] 72 Pin (VS) 3 VL Slots, 7 total, 256k Coche, Exp. to 512k Award BIOS, SIS Chipset, 3.3/5 Volt Switchable Deep Green/Energy Stor Accepts 486SX,DX,DX2,DX4 & P24T \$125 w/512k \$205
<b>Super P54VL-PCI</b> PCI, 2 VL, 3 ISA Slots 6k Coche Exp. to 512k es 72 Pin SIMMs AMI Flosh BIOS, Opti Chipset 100/120Mhz ..... \$319 /Adoptec 7850 SCSI II ..... \$399 /66Mhz ..... \$299	<b>486 PCI/VL</b> 3 PCI Slots, 2VL, 8 total Uses 72 Pin SIMMs, 256k Coche, Exp. to 512k AMI BIOS, SIS Chipset, Deep Green 3.3/5 Volt Switchable Accepts 486SX,DX,DX2,DX4 & P24T \$195 w/512k \$265
<b>54 PCI</b> PCI, 4ISA 6k Coche Exp. to 512k AMI BIOS, SIS Chipset es 72 Pin SIMMs /100Mhz ..... \$275	<b>486 PCI</b> 3 PCI Slots, 5 ISA Uses 72 Pin SIMMS, 256k Coche, Exp. to 512k AMI BIOS, Intel Soturn Chipset Accepts 486SX,DX,DX2 & P24T \$235 w/ NCR 53C810 PCI SCSI II \$299
<b>A-586ID PCI/EISA DUAL PROCESSOR</b> PCI, 5 EISA, 1 or 2 Pentium CPU's es 72 Pin SIMMs to 196M8 6k Coche Exp. to 512k word Flosh BIOS, Intel Chipset /100Mhz ..... \$550	<b>486 EISA/VL</b> 2 VL Slots, 6 EISA, 256k Coche, Exp. to 1M8 30 & 72 Pin SIMM Versions AMI BIOS, SIS Chipset, Deep Green Accepts 486SX,DX,DX2 & P24T \$289

### CPU CHIPS

Intel Pentium 90/100 ..... \$549/850
Intel Pentium 60/60 ..... \$375/425
4T(Pentium Overdrive) 63/83Mhz ..... \$399/CALL
60X4-75/100 ..... \$299/325
6DX2-66 ..... \$175
6DX2-50 ..... \$150
6DX-50 ..... \$199
60X-33 ..... \$125
6SX2-50/66 ..... \$135/155
6SX-25/33 ..... \$50/75
erDrive ODP/ODPR ..... CALL
<b>MD/Cyrix</b>
6DX4-100 ..... \$250
6DX2-80 ..... \$195
6DX2-66 ..... \$169
6DX2-50 ..... \$149
6DX-40 ..... \$127
<b>Cyrix 386 to 486 Upgrades</b>
6DRX2-25/50 ..... \$199
6DRX2-33/66 ..... \$250
6SRX2-25/50 ..... \$199

### MEMORY

<b>72 Pin SIMMs</b>
1 X 36 60/70/80ns (4mb) ..... \$175/165/159
1 X 32 60/70/80ns (4mb) ..... \$157/149/145
2 X 36 60/70/80ns (8mb) ..... \$345/335/319
2 X 32 60/70/80ns (8mb) ..... \$325/305/299
4 X 36 60/70ns (16mb) ..... \$595/579
4 X 32 60/70ns (16mb) ..... \$585/557
8 X 36 60/70ns (32mb) ..... \$1100/1000
8 X 32 60/70ns (32mb) ..... \$1050/950
<b>30 Pin SIMMs</b>
1 X 3 60/70/80ns (1mb) ..... \$45/40/39
1 X 9 60/70/80ns (1mb) ..... \$49/45/40
4 X 3 60/70ns (4mb) ..... \$135/130
4 X 9 60/70/80ns (4mb) ..... \$149/142/138
16 X 9 60/70ns (16mb) ..... CALL
<b>DRAM &amp; VRAM</b>
256k X 4 70/80ns, 1 X 1 70/80ns ..... \$6
256k X 4 70/80ns 28 Pin ZIP ..... \$11
256k X 16 70ns ZIP/SOJ ..... CALL
<b>Cache</b>
32k X 8 15/20/25ns ..... \$8/7/6
128k X 8 15/20/25ns Slim/Wide ..... \$36/34/30

Our sales staff is ready to provide advice on the most cost-effective 486 or Pentium upgrades for your computer.

We will buy CPU's and used or defective memory chips. Cash, Trade or Credit toward future purchase.

Future Micro, Inc. 2691 Richter Ave. #118, Irvine CA, 92714  
(714) 832-1269 FAX (714) 832-0306

30 Day Money Back Guarantee

Terms and Conditions: 20% Restock fee on non-defective returns. No refunds after 30 days. Shipping charges are non-refundable. Not responsible for geographical errors. Prices subject to change without notice. Two year warranty on non-memory products, lifetime warranty on memory. RMA required for all

# PC Upgrading Made Easy and Affordable

## MONTHLY SPECIALS

<b>Pentium 90Mhz Motherboard</b> 3 PCI, 5 ISA, 512k Cache AMI/SIS, H/S & Fan ..... \$850
<b>Pentium Overdrive (P24T)</b> 63Mhz for 486 25/50 ..... \$399 83Mhz for 486 33/66 ..... CALL
<b>486DX4-100 Motherboard</b> 3 VLB, 4 ISA, 256k Cache 30 or 72 pin SIMMs HS & Fan ..... \$395
<b>Pentium 100s In Stock Priced to Move</b>

## VIDEO

Trident PCI/VL8/ISA 1M8 ..... \$79
Cirrus Logic 5428 PCI/VL8 1/2M8 ..... \$79/\$126
S3 32 8bit PCI/VL8 1/2M8 ..... \$77/\$120
<b>Diamond</b>
Stealth 64 PCI/VL8 VRAM 2/4M8 ..... \$325/\$525
Stealth 64 PCI/VL8 DRAM 1/2M8 ..... \$179/\$210
Speedstor 64 PCI/VL8/ISA 1/2M8 ..... \$155/\$205
Viper Pro PCI/VL8 4M8 ..... \$599
<b>ATI</b>
Moch 64 VRAM PCI/VL8 2/4M8 ..... \$319/535
Moch 64 DRAM PCI/VL8 2M8 ..... \$255/315
<b>Hercules</b>
Dynomite Pro VL8/ISA 1/2M8 ..... \$179/\$234
Grophite Terminotor PCI/VL8 2/4M8 ..... \$399/\$540
<b>Orchid</b>
Fahrenheit Pro 64 PCI/VL8 2/4M8 ..... \$315/\$530
Kelvin 64 PCI/VL8 1/2M8 ..... \$145/199

## MULTIMEDIA

<b>Sound Boards</b>
<b>Creative Labs</b>
Sound Bloster 16 MCD ..... \$99
Sound Bloster 16 SCSI-2 ..... \$135
Sound Bloster 16 ASP MCD ..... \$209
Sound Bloster 16 ASP SCSI-2 ..... \$239
Sound Bloster AWE 32 ..... \$295
Sound Bloster AWE 32 VE ..... \$250
<b>CD-ROM Drives</b>
<b>Toshiba</b>
3501 SCSI 4X Int ..... \$309
3501 SCSI 4X Ext ..... \$409
<b>Mitsumi</b>
2X Internal w/Controller ..... \$129
4X Internal IDE ..... \$235
<b>Teac</b>
CD-55A 4X w/Controller ..... \$255

## HARD DISK CONTROLLERS

<b>IDE</b>
ISA IDE/IO ..... \$15
ISA IDE/IO Enh Por & 16550's ..... \$40
VL8 IDE/IO ..... \$26
VL8 IDE/IO Enh Por & 16550's ..... \$40
VL8 Enh. IDE/IO (ATA) ..... \$40
VL8 IDE Coche Ok/1M8 ..... \$119/\$165
PCI IDE ..... \$35
PCI IDE/IO Combo ..... \$55
PCI IDE Coche ..... \$215
<b>SCSI</b>
<b>Adaptec</b>
AHA-2940 PCI ..... \$259
AHA-2842 VL8 ..... \$255
AHA-2742 EISA ..... \$295
AIC-6360 VL8 ..... \$125
AHA-1542 ISA ..... \$199
<b>Future Domain</b>
TMC-3260 PCI ..... \$195
TMC-1680 ISA ..... \$140

## HARD DRIVES

<b>Maxtor 2yr Warranty</b>
7240A 420M8 12ms IDE ..... \$210
7540A 540M8 8.5ms IDE ..... \$265
7540S 540M8 8.5ms SCSI ..... \$289
<b>Western Digital 3yr Warranty</b>
2420 420MB 12ms IDE ..... \$210
2540 540M8 11ms IDE ..... \$255
2700 730M8 10ms IDE ..... \$325
31000 1080M8 10ms IDE ..... \$429
<b>Conner 2yr Warranty</b>
420A 420M8 13ms IDE ..... \$209
540A 540M8 12ms IDE ..... \$249
850A 850M8 10ms IDE ..... \$385
1275A 1.3Gig 10ms IDE ..... \$550
2105S 2.1Gig 9ms SCSI ..... \$1200
<b>We also carry</b>
<b>Seagate, Quantum &amp; Micropolis</b>

## LASER PRINTER MEMORY

<b>HP II, IID &amp; HP IIP, IIP+, III, IIID, IIIP</b>
1M8 \$69, 2M8 \$95, 4M8 \$169
<b>HP4L 1M8 \$50</b>
<b>HP4 Series 2M8 \$85, 4M8 \$165, 8M8 \$335</b>
<b>Panasonic 4410, 4430</b>
2M8 \$115, 4M8 \$185
<b>Panasonic 4420, 4450i</b>
2M8 \$115, 4M8 \$185
<b>Epson, Canon, IBM &amp; More CALL</b>

## THE FUTURE MICRO DIFFERENCE

- ◆ Easy Installation Instructions
- ◆ Free Technical Assistance
- ◆ 30 Day Money Back Guarantee
- ◆ Overnight Delivery Available
- ◆ Strongly Support Corporate, Government and Educational Business
- ◆ Government, Educational Pricing and Quantity Discounts



Credit Cards Accepted.  
No surcharge on these Credit Cards

FAX 714-832-0306

# Call Our Highly Trained Sales Staff at 800-700-6507

## For Expert Advice On Your PC Upgrade

# YOUR ONE STOP PC UPGRADE SOURCE

ACCELERATE YOUR WINDOWS FOR '95

## 486DX MOTHERBOARDS

**486 VESA LOCAL BUS**  
3 VL / 4 ISA Slots  
Up to 128MB 30 or 72 Pin Simms  
256K Cache Exp to 512 K  
Green Support AMI Bios/SIS Chips  
Uses 486SX/DX2-4/P24T \$127

**486 BLUE LIGHTNING**  
2 VLB / 7 ISA Slots  
Up to 64MB using 72 pin  
256K Cache Exp. to 512K  
IDE / 10 Controller \$259

**486 EISA/VLB**  
6 EISA/2 VL Slots  
Up to 128 MB Using 30 or 72 Pin Simms  
256K Cache Exp to 1MB  
AMI Bios/sis Chipset, Green Supp.  
Uses 486SX DX/DX2-4 P24T \$288

**486 PCI**  
3 PCI/5 ISA Slots  
Up to 128 MB Using 72 Pin Simms  
256K Cache Exp to 512 K  
AMI Intel Chipset  
486SX/DX2-4 P24T \$199  
with NCR SCSI II \$299  
with 2 VLB Slots \$199

## PENTIUM MOTHERBOARDS

**INTEL PCI PREMIER**  
3 PCI/5 ISA  
IDE, FDD, Hi Speed I/O  
Up to 128MB Using 72 Pin Simms  
256K Cache  
Intel Chipset/AMI Flash Bios \$399  
**MADE IN USA**

**SUPER PCI/VL/ISA**  
4 PCI / 1 VESA / 5 ISA  
Boot Block PNP(Plug & Play) Suppt.  
256K Cache Exp. to 1024K  
AMI Bios/Green Support  
66/60 w/256K \$310  
120/100/90 w/256K \$355  
120/100/90 w/ADAPTEC 7850  
**MADE IN USA** FAST PCI SCSI II \$395

**PENTIUM PCI/ISA**  
4 PCI/5 ISA  
Up to 128MB Using 72 Pin Simms  
256K Cache Exp. to 512 K  
SIS Chipset/AMI Bios  
90/100MHz \$275

**PCI/EISA**  
4 PCI/5EISA  
Up to 192MB Using 72 Pin Simms  
256K Cache Exp to 512 K  
AMI Bios/Intel Chipset \$550

## HOT DEALS!!!

### SIMMS

1x9-70 (3 chip) \$40  
1x36-70 \$149  
2x36-70 \$299  
4x36-70 \$579  
Name Brand Communications  
14.4 Fax/Modem \$65  
28.8 Fax/Modem \$159

### 486DX VLB MOTHERBOARD

(3 VL Slots - 256K Cache)

w/DX4 - 100 + Fan \$492  
w/DX2 - 80 + Fan \$329  
w/DX2 - 66 + Fan \$309  
w/DX - 33 \$225  
w/SX - 33 \$179

### DX4 - 75/100 OVERDRIVE CPU

PENTIUM OVERDRIVE CPU  
**IN STOCK - CALL**

PENTIUM 60 PCI/VLB  
256K W/30 & 72 PIN  
(MOTHERBOARD/CPU) \$675

### 540MB IDE Hard Drive \$229

1Gig IDE \$449

Quad Speed CD-ROM DRIVE \$259  
2X Speed CD-ROM DRIVE \$109

S3 - 805 1mb Windows Accelerator (VLB) \$77

### CPU UPGRADES

**INTEL**  
Pentium 100 CALL  
Pentium 90 \$639  
Pentium 66 \$489  
Pentium 60 \$399  
486 DX4-100 CALL  
486 DX2-66 \$199  
486 DX2-50 \$199  
486 DX-33 \$150  
486 SX-25/33 \$50/85  
**AMD/CYRIX**  
486 DX2-80 \$229  
486 DX2-66 \$199  
486 DX 40 \$159  
486 DLC 33/40 \$75/85  
**MATH-CO's**  
487DLC/387DX \$35  
487SLC/387SX \$35

### VIDEO BOARDS

Cirrus VLB 1mb/2mb \$79/\$129  
Cirrus 5434 PCI 1mb \$105  
Trident SVGA 256K/1mb \$39/\$69  
Trident 9420 PCI 2mb \$132

**ATI**  
Graphics Wonder Mach 32 1mb ISA/VLB \$125  
Graphics Xpression 2mb ISA/VLB/PCI \$255  
MACH 64 2mb ISA/VLB/PCI \$329  
MACH 64 4mb ISA/VLB/PCI \$529

**DIAMOND**  
Speedstar 64 1mb ISA/PCI \$149  
Viper SE 2mb PCI \$250  
Stealth 64 (DRAM) 2mb VLB/PCI \$219  
Stealth 64 (VRAM) 2mb VLB/PCI w/COREL \$319  
Stealth 64 (VRAM) 4mb VLB/PCI \$535

**HERCULES**  
Dynamite 1/2mb CALL  
Graphite 1/2mb CALL

**ORCHID**  
Kelvin 64 1mb/2mb VLB or PCI \$155/199

### MEMORY

**30 PIN SIMMS**  
1x9-60/70/80 3chip \$45/40/38  
1x9-60/70/80 9chip \$55/47/42  
4x9-60/70/80 (4mb) \$155/145/138  
16x9-60/70 (16mb) \$620/595  
**72 PIN SIMMS**  
1x36-60/70/80(4mb) \$158/149/145  
2x36-60/70/80(8mb) \$325/309/299  
4x36-60/70 (16mb) \$625/599  
8x36-70/80 (32mb) \$1195/1139

**DRAM**  
256x1-70/80/100 \$2.50/2  
256x4-70/80 \$6.50  
1x1-70/80 \$6

**VRAM**  
256x4-70(28Pin)Zip \$12  
256x16-70Zip/Soj \$35

**CACHE**  
32X8-15/20/25 \$8/7/6  
128x8-15/20/25 \$36/34/32

### HARD DRIVES

**WESTERN DIGITAL**  
Cav2420 420mb \$199  
Cav2540 540mb \$239  
Cav2700 700mb \$329  
Cav31000 1080mb \$449

**MAXTOR**  
7546SL 546mb SCSI/1.0R \$265

**CONNER**  
CFS420A 420mb \$205  
CFA540A 541mb \$239  
CFA810A 811mb \$419  
CFP1080A 1080mb \$499

**MICROPOLIS**  
4110 1052mb SCSI \$565  
2217 1740mb SCSI \$879  
**CALL FOR ANY DRIVE NOT LISTED**

**LOWEST PRICES ON CD-ROM DRIVES, SOUND CARDS & KITS**

### CONTROLLERS

ISA IDE-IO \$13  
VLB IDE-IO \$26  
VLB IDE CACHE w/1mb \$159  
VLB SCSI \$125  
HI-SPEED IDE-IO \$45  
PCI-IDE \$45  
PCI-IDE CACHE \$235  
PCI-SCSI (NCR) \$135  
Adaptec SCSI 2842/2940 \$265  
Future Domain 3260 \$189

### LASER PRINTER MEMORY

HP 2 & 3 Series (All) 2mb/4mb \$99/169  
HP 4, 4m, 4si, 4simx 4mb/8mb \$171/345  
Panasonic 4410, 4420, 4430, 4450 2mb/4mb \$109/185

Epson, IBM, Canon, NEC, OKI  
**CALL FOR BEST PRICES**

WE ALSO CARRY A FULL LINE OF CASES/FLOPPIES/KEYBOARDS/MONITORS/LANCARDS/FAX/MODEMS  
★ CALL FOR BEST PRICE ★

**WE WILL BUY YOUR OLD MEMORY OR CPUs. CASH PAID OR CREDIT TOWARD FUTURE PURCHASE.**

Save hundreds by upgrading your 386, 486 or even 286 with a new motherboard or CPU. Our knowledgeable staff will be glad to discuss the money-saving options available.

TERMS AND CONDITIONS:  
Return Merchandise Authorization (RMA) required for all returns. 20% restock on non defective returns. Price and availability subject to change without notice. Source Technologies not responsible for typographical errors.



- ◆ 30 Day Money Back Guarantee
- ◆ %100 Compatibility Guarantee
- ◆ Thousands of Products Not Listed
- ◆ Free Technical Support
- ◆ No Surcharge on Visa/MC/AmEx/Disc
- ◆ Faxback Technical Specs
- ◆ Govt & Educational Pricing
- ◆ Corporate & Govt PO's
- ◆ 2 Year Warranty on All Products
- ◆ Overnight Delivery to Most Areas
- ◆ Same Day Shipping
- ◆ Knowledgeable Sales Staff

CALL THE UPGRADE SPECIALISTS TODAY!

**800-247-9182**

CUSTOMER SERVICE/TECH SUPPORT: (714)631-7996

INTERNATIONAL SALES: (714)631-5087

FAX: (714)631-9087

**BEST PRICES ON MEMORY FOR: IBM, COMPAQ, TOSHIBA & MORE**



MEMORY & CHIP PRICES CHANGE DAILY. CALL FOR BEST PRICES.

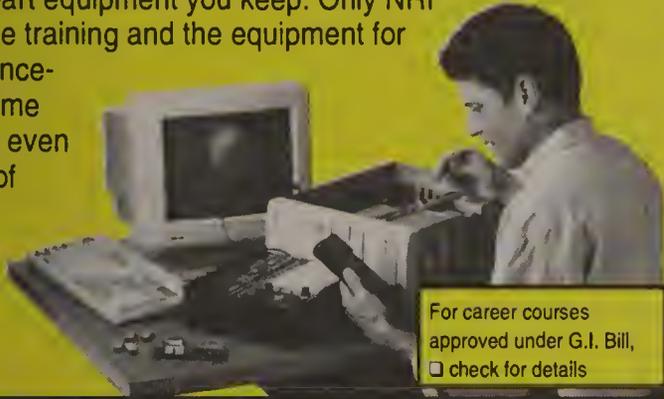


1908B POMONA AVENUE, COSTA MESA, CA 92627

Circle 3 on reader service card

# RUSH POSTAGE-PAID CARD FOR YOUR FREE CATALOG!

Every NRI course features practical, hands-on training with state-of-the-art equipment you keep. Only NRI gives you the training and the equipment for career advancement, part-time earnings, or even a business of your own.



For career courses approved under G.I. Bill,  check for details

## CHECK ONE ONLY

Please send my free catalog on NRI training in:

- Microcomputer Servicing
- Computer Programming
- TV/Video/Audio Servicing
- Industrial Electronics & Robotics
- LAN Specialist
- Basic Electronics
- PC Applications Specialist
- Multimedia Programming
- Bookkeeping and Accounting
- Paralegal
- Programming in C++ with Windows
- Small Engine
- Building Construction
- Air Conditioning, Heating & Refrigeration
- Electronic Music Technology
- Locksmithing
- Home Inspection
- Gunsmithing
- Home Remodeling
- Automotive Servicing
- Private Security Specialist

Name <small>(Please Print)</small>			Age
Street <small>(No P.O. Box numbers please)</small>			
City	State	Zip	

Accredited Member National Home Study Council

141-0495

Card E

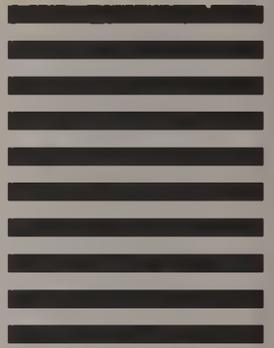


NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**  
FIRST CLASS MAIL PERMIT NO. 10008 WASHINGTON, D.C.

POSTAGE WILL BE PAID BY ADDRESSEE

***NRI*** Schools  
McGraw-Hill Continuing Education Center  
4401 Connecticut Avenue, NW  
Washington, DC 20078-3543



# Be a high-paid computer service technician

Train With NRI — America's #1 Choice in Computer Training

Only NRI gets you inside a powerful 486DX2/66 MHz Intel-based computer system you keep—giving you the hands-on experience you need to work with, troubleshoot, and repair today's most widely used computer systems. There's no more affordable way to start a money-making career, even a business of your own, as a computer service technician.

**NEW!**  
486DX2/66 MHz  
Multimedia PC and  
Windows 95

## Rely on the original -- NRI

Over a decade ago, NRI pioneered at-home training in computer servicing. Today, NRI offers the *only* computer servicing course with real-world experiments using state-of-the-art computer equipment and professional diagnostic tools.

There's no doubt about it: Working "hands-on" with all the most sought-after technology gives you practical skills and lasting confidence. Performing key tests and demonstrations, you're able to see for yourself how things work, what can go wrong, and how you can fix it.

## Train with and keep the most advanced computer in home study today

NRI's unique training has you explore a top-notch computer system and its peripherals, beginning with the 486DX2 Intel CPU and Pentium Overdrive-ready motherboard.

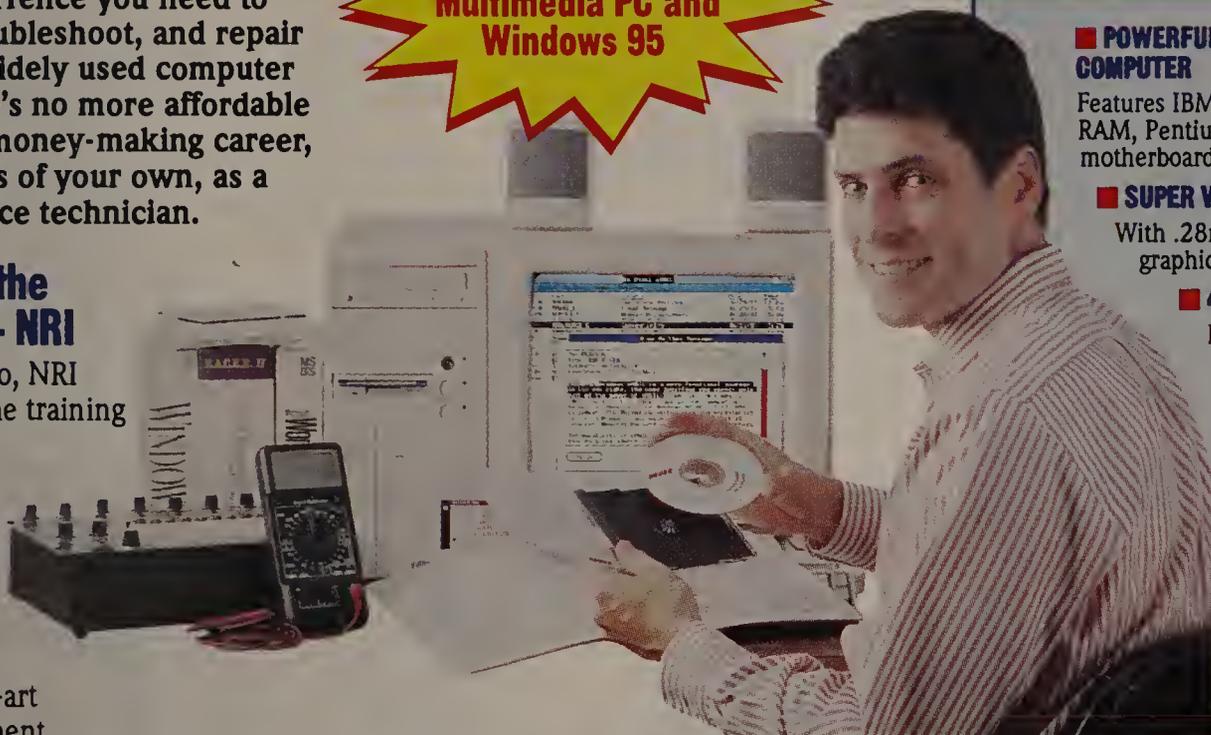
Your computer features 8 meg RAM, 420 meg hard drive, and fax/modem to store, receive, and send huge amounts of data.

You'll also appreciate the brilliant display of your Super VGA color monitor, the drama of your CD-ROM drive and 16-bit sound card, as well as the cutting-edge technology of Windows 95.

Plus learn to use Ultra-X professional diagnostic hardware and software to pinpoint problems on any IBM-compatible machine.

## No experience needed, NRI builds it in

Studies show that jobs for computer service technicians will be up by 38% in the next 10 years. Even if you've never worked with



### YOU GET EVERYTHING YOU NEED FOR SUCCESS

#### POWERFUL 486DX2/66 MHz INTEL-BASED COMPUTER

Features IBM compatibility, 8 meg RAM, Pentium Overdrive-ready motherboard, and math coprocessor

#### SUPER VGA COLOR MONITOR

With .28mm dot pitch for high-resolution graphics and tilt-swivel base

#### 420 MEG HARD DRIVE

For greater data storage capacity and data access speed

#### EXCITING MULTIMEDIA PERIPHERALS

Double-speed CD-ROM drive, 16-bit sound card with speakers, and reference CD

#### FAX/MODEM

Gives you access to a world of on-line information

#### ULTRA-X DIAGNOSTIC PACKAGE

R.A.C.E.R. plug-in card and

QuickTech-PRO software help you detect problems on virtually all IBM-compatible machines, even if computer is 5% operational.

#### NRI DISCOVERY LAB

Complete breadboarding system lets you design and modify circuits, diagnose and repair faults

#### DIGITAL MULTIMETER

Professional, hand-held test instrument for quick and easy measurements

#### WINDOWS 95

The time-saving operating system that everyone will be using tomorrow

computers before, NRI's interactive training builds such a solid foundation of know-how and practical experience that tomorrow's jobs can be yours.

Right from the start, hands-on experiments reinforce concepts presented in NRI's bite-sized lessons. And because your work is reviewed by your personal instructor, you know for certain that you can apply theory to real-world demands.

## FREE NRI catalog tells more

Send today for your free, full-color catalog describing every aspect of NRI's innovative computer training in the up-and-coming field of your choice.

If the coupon is missing, write to: NRI Schools, McGraw-Hill Continuing Education Center, 4401 Connecticut Avenue, NW, Washington, DC 20008.

IBM is a registered trademark of the IBM Corporation. R.A.C.E.R. and QuickTech-PRO are registered trademarks of Ultra-X, Inc.

## SEND TODAY FOR FREE NRI CATALOG!



McGraw-Hill Continuing Education Center  
4401 Connecticut Avenue, NW, Washington, DC 20008



Check one FREE catalog only

MICROCOMPUTER SERVICING

Computer Programming

TV/Video/Audio Servicing

Desktop Publishing & Design

LAN Specialist

Bookkeeping and Accounting

Programming in C++ with Windows

Check for details on career courses approved under GI Bill

Name (please print)

Age

Address

City

State

Zip

Accredited Member, National Home Study Council

141-0495

**IBM ThinkPad 360C**

Intel 486SX-33  
8.4" Active Matrix Color Display  
340MB Hard Drive  
4 MB RAM (Max. 20MB)  
2 Type I & 1 Type II or 1 Type III PCMCIA Slots  
TrackPoint II Pointing Device

**Only \$2399**

Authorized Advanced Products Dealer

**CREATIVE Digital Schoolhouse**

Includes Sound Blaster 16-bit sound card  
• Double-speed internal CD-ROM drive  
• 300KB/second transfer rate. Data access rate of 320 ms  
• 64KB RAM buffer • CD quality stereo sound  
• Multi-session Photo CD comp., XA ready  
• CD quality stereo sound  
• Passive stereo speakers  
• 14 SAV applications including "Speed", "Kid Works", "3-D Dinosaur Adventure", and the New Groliers Multimedia Encyclopedia

**Special Price CALL!**

**Only \$299**

**HEWLETT-PACKARD HP DeskJet 560C Printer**

Sharp 600x300 dpi, Up to 3 ppm, Up to 16.7M Colors, Dual Ink Cartridge System

**Only \$469**

In Stock and Ready to Deliver!

## Laptops/Portables

**NEC**

VERSA S/33D 210MB Dual Scan	\$1384
VERSA S/33C 210MB Active	\$2124
VERSA V/50C 260MB Active	\$2297
VERSA V/50D 250MB Dual Scan	\$2454
VERSA V/50C 340MB Active	\$3324
VERSA V/75C 340MB Active	\$3787
VERSA M/75D 340MB Active	\$3497
VERSA M/75C 540MB Active	\$4664
VERSA M/100C 810MB Active	\$5497
VERSA M/100HC 810MB Active	\$5874
VERSA P/75C 540MB Active	\$5324
VERSA P/75C 810MB Active	\$6194

**TEXAS INSTRUMENTS**

TM4000 M DX2/50 Dual Scan 340MB	\$2994
TM4000 M DX2/50 Active color 455MB	\$3574
TM4000 M DX4/75 Dual Scan 340MB	\$3897
TM4000 M DX4/75 Active Color 340MB	\$4897
TM4000 M DX4/75 Active Color 455MB	\$5154
TM4000 M DX4/100 Dual Scan 524MB	\$5397

**IBM ThinkPad**

510Cs Pas.Color 200MB	\$1799
360 Mono 170/340MB	\$1899/\$2299
360CS Color Dual Scan 170MB	\$2349
360CS Color Dual Scan 340MB	\$2749
360C Color Active 170MB	\$1999
360C Color Active 340MB	\$2399
755CS Color Dual Scan 170MB	\$3899
340/540MB	\$4399/\$4799
755C Color Active 170MB	\$4549
340/540MB	\$5049/\$5449
755CE Color Active 340MB	\$6249
540/810MB	\$6649/\$7199
755CSE Color Active 340MB	\$4899
540/810MB	\$5299/\$5849
755CD Color Active/CD ROM	
540/810MB	\$7599/\$8149

**HAYES**

PCMCIA OPTIMA 14.4+FAX14.4	\$199
ACCURA 144+FAX144 int/ext	\$92/\$112
ACCURA 288V.FC+FAX int/ext	\$189/\$229
OPTIMA 144+FAX144 int/ext	\$369/\$369
OPTIMA 288 V.FC+FAX int/ext	\$379/\$439

**US ROBOTICS**

Sportster 14.4 Fax int/ext	\$99/\$115
Sportster 14.4 PCMCIA	\$179
Sportster V.34 int/ext	\$219/\$239
Sportster V.34 PCMCIA	\$349
Courier Dual Standard 14.4 PCMCIA	\$349
Courier V.34 int/ext	\$379/\$419
Courier Dual Std 28.8 PCMCIA	\$399

**MEGANERTZ**

PCMCIA X-JACK 14.4/14.4	\$179
PCMCIA 14.4/14.4	\$179
PCMCIA Gold Series X-JACK 14.4/14.4	\$199
PCMCIA Gold Series 14.4/14.4	\$199
PCMCIA 28.8/14.4	\$419
Ethernet/Modem Combo 10Base-T/14.4	\$419

**BOCA**

14.4 w/FAX internal/external	\$89/\$115
14.4/14.4 Multimedia	\$119
Sound Expression 14.4/16bit Sound	\$159
14.4 Pocket w/FAX	\$169
V.34 28,800 bps Modem int/ext	\$185/\$225

**ZENITH**

Z-STAR EX DX2/50 Mono 200MB	\$1687
Z-STAR EX DX2/50 Dual Scan 200MB	\$2124
Z-STAR EX DX2/50 Active 340MB	\$3057

**CANON**

NoteJet 486C 4BubbleJet™ printer	
120MB /200MB	\$2349/\$2549
NoteJet II 486C BubbleJet™ printer	
260MB	\$2613

**COMPAQ**

AERO 4/25 Mono 170MB	\$1099
AERO 4/33C Color Passive 170MB	\$1679
AERO 4/33C Color Passive 250MB	\$1889

**TOSHIBA**

T1910 Mono. 200MB	\$1267
T1910CS 200 MB	\$1724
T1960CS 200/320MB	\$2087/\$2254
T1960CT 200/320MB	\$2577/\$2767
T2400CS 250/320MB	\$2424/\$2597
T2400CT 250/320MB	\$2897/\$3177
T2450CT 320/500 MB	\$4184/\$4477
T3400CT 120/250MB	\$1964/\$2137
T3600CT 250MB	\$3357
T4700CT 200/320MB	\$3297/\$3484
T4800CT 500MB	\$4667
T4850CT 500/810MB	\$4994/\$5324
T4900CT Pentium 810MB	\$6144
T6600C CD-ROM ready	\$5324
T6600C/CD	\$5814

**EPSON**

ActionNote 650 Mono 260MB	\$1377
ActionNote 650C Dual Color 260MB	\$1837
ActionNote 866C Dual Color 340MB	\$2357
ActionNote 880CX Act. Color 340MB	\$3967

**AT&T Globalyst 200**

486 SX/33 Dual Scan 170MB	\$2224
486 SX/33 Active Matrix 250MB	\$3294
486 DX2/50 Dual Scan 170MB	\$2457
486 DX2/50 Active Matrix 250MB	\$3634

**MOTOROLA**

LIFESTYLE SERIES	
28.8/14.4 Fax external	\$225
PCMCIA 14.4/14.4	\$175
POWER SERIES	
28.8/14.4 Fax external	\$259
PCMCIA Cellular 14.4/14.4	\$229
Internal BPS Data .96/48	\$25
14.4 Data/Fax internal/external	\$59/\$75
V.34 28,800 Data Fax Modem int/ext	\$169/\$189

**NEW MEDIA**

Ethernet LAN 10Base-T Combo	\$159
New Media 14.4 Data/Fax Modem	\$145
Wave Jammer 16-bit Stereo Sound	\$234
Bus Toaster SCSI-2 Adapter Card	\$209
PCMCIA 16-bit Stereo & SCSI II	\$419

**PRACTICAL PERIPHERALS**

V.34 28.8/14.4 Data/Fax int/ext	\$199/\$219
14.4 14.4/14.4 Data/Fax int/ext	\$89/\$109
PCMCIA 14.4/14.4 w/std DAA	\$169
PCMCIA 14.4/14.4 w/EZ Port	\$179
PCMCIA 28.8/14.4 Data/Fax	\$339
PCMCIA 28.8/14.4 w/EZ Port	\$349

## Monitors/Video Cards

**NEC**

14" SVGA	\$309
14" 2V	\$299*
15" MultiSync XV15	\$427*
15" MultiSync XE15	\$527
17" MultiSync XE17	\$969
21" MultiSync XE21	\$1917
15" MultiSync XP15	\$627
17" MultiSync XP17	\$1197
21" MultiSync XP21	\$2357

**MAGNAVOX**

14" M479(mono)	\$104
14" CM2089	\$228
14" CM2099	\$248
15" CM2015	\$288
15" CM4015	\$348
17" CM4018	\$679
20" 20CM64	\$998

**DIAMOND**

SpeedStar Pro 1MB ISA	\$95
SpeedStar Pro 1MB VLB	\$109
SpeedStar 64 1MB ISA*	\$149
SpeedStar 64 1MB PCI*	\$149
SpeedStar 64 2MB ISA*	\$195
SpeedStar 64 2MB PCI*	\$195
Stealth 64 2MB VLB	\$319
Stealth 64 2MB PCI	\$319
Stealth 64 4MB VLB	\$459
Stealth 64 4MB PCI	\$459
Viper SE 2MB VLB/PCI*	\$319
Viper SE 4MB VLB/PCI*	\$469

\*Includes Corel Draw 3.0

**FLEX**

FLEX CD Drive Upgrade Kit	\$119
FLEX CD-PRO Value	\$199
FLEX CD-PRO Classic	\$249
FLEX CD-Pro External	\$219

**NEC**

MultiSpin 2Vi	\$169
MultiSpin 2V Deluxe	\$284
MultiSpin 3Xp	\$379
MultiSpin 3Xi Plus Kit	\$449
MultiSpin 4Xi	\$368
MultiSpin 4Xe	\$458
MultiSpin 4Xi kit	\$449
MultiSpin 4Xe kit	\$549

**ORCHID**

Videola	\$359
Videola Premium ProD	\$544
SoundWave 32	\$179
GameWave 32	\$129

**MEDIAVISION**

Premium 3-D (SCSI/MCD)	\$145
Wavetable Upgrade Card	\$145
Pro 3-D	\$265
Super Deluxe Kit (MV 3000)	\$369
Premium Deluxe Portable Kit (MV 4000)	\$499

**CTX**

14" 6439ES	\$199
14"1451ES	\$245
14"1451GM	\$255
14"1462ES	\$279
14" 1462GM	\$289
15" 1562GM	\$319
15" 1565GM	\$339
17" 1765GM	\$639
17" 1785GM	\$699

**NOKIA**

14" 44BS	\$399
15" 449E	\$438
15" 447L	\$687
17" 447X	\$994
17" 447X/TCO	\$1094
21" 445X	\$2184

**HERCULES**

Dynamite Pro 2MB ISA/VLB	\$194
Dynamite Power 2MB VLB	\$209
Dynamite Power 2MB PCI	\$209
Stingray VL 1MB VLB	\$109
Stingray PCI 1MB PCI	\$109
Graphite 64 1MB VLB/PCI	\$135
Graphite 64 2MB VLB/PCI	\$175
Graphite Terminator 64 2MB VLB/PCI	\$325
Graphite Terminator 64 4MB VLB/PCI	\$465
Terminator Pro 4MB VLB/PCI	\$525

**CHINON**

CDS-535	\$209
CDS-535PC int/ext	\$289/\$349

**TOSHIBA**

XM3501 Int Quad Speed	\$298
XM3501 Ext Quad Speed	\$458

**MICROSOLUTIONS**

Back Pack Portable 2X	\$324
Back Pack Portable 4X	\$354

**ADS**

TV Elite ext w/remote mouse	\$199
TV Elite int w/COMPEL	\$135
TV Elite AV	\$169
Audio Rock-it	\$599
PC Primitime	\$319
Video Clipper	\$309

**TURTLE BEACH**

Monte Carlo Game Card Synthesizer	\$85
Tropez	\$195
MultiSound Monterey	\$309

**EPSON**

15" SVGA .28	\$345
17" SVGA .28	\$615

**MAC Innovation**

14" LX1450LG	\$238
15" DX15F-1	\$328
15" MX15F-L	\$458
17" DX17F	\$618
17" MXP17F	\$898
21" MX21F	\$1684

**ATI Technology**

Graphics Xpression 2MB ISA/VLB	\$214
Graphics Xpression 2MB PCI	\$214
Graphics Ultra Pro 2MB ISA/VLB	\$279
Graphics Pro Turbo 2MB ISA/VLB/PCI	\$354
Graphics Pro Turbo 4MB ISA/VLB/PCI	\$567

**SONY**

CDU-55E Drive	\$129
i/F Kit	\$29

**TEAC**

CD-55A (Quad Speed)	\$298
---------------------	-------

**AI TECH**

MultiPro CTV	\$235
ProC/TV Plus	\$145
Wavewatcher TV	\$309
Wireless Bandit Game Control	\$49

## Printers...Laser/Ink Jet/Dot Matrix

**EPSON**

ACTION Laser 1100/1400	\$394/\$657
ACTION Laser 1500/1600	\$454/\$754
LX300	\$164
LO-570+/1070+	\$234/\$354
FX-870/1170	\$279/\$347
LO-300/870/1170	\$196/\$427/\$597
LO-2550 Clr.	\$899
DFX-5000+/8000	\$1317/\$2217
Stylus 800+/1000	\$207/\$427
Stylus Color	\$499

**DIGITAL**

DECWRITER 65/100i	\$159/\$199*
DECWRITER 90i/120i	\$289/\$279
DECColorwriter 520iC	\$329
DECClasser 5100	\$1149

\*\* Includes \$50 Mail-in Rebate

**LEXMARK**

4029 LaserPrinter 6	\$949
4039 LaserPrinter 10 plus	\$1219
Optra R/Fx	\$1427/\$1999
Optra L/Lx/Lxi	\$1899/\$2469/\$2999
Model 100/200	\$285/\$455
Model 400/600	\$757/\$997
ValueWriter 300/600	\$645/\$814
ExecJet IIC	\$325
2380/2381 Plus Dot Matrix	\$309/\$439
2390/2391 Plus Dot Matrix	\$329/\$439
4226 Dot Matrix	\$1299
IBM Color Jet Printer PS 4079	\$2499

**HP PRINTERS**

HP DeskJet 320/540	\$298/\$284
HP DeskJet 540 Opt. Color kit	\$39.95
HP DeskJet 560C	\$469
HP DeskJet 1200C/C PS	\$997/\$1587
HP Support Pack	CALL
HP LaserJet 4L/4P	\$499/\$949
HP OfficeJet Printer/Fax/Copier	\$769

**CREATIVE LABS**

OmniCD	\$179
OmniCD 3X SCSI	\$345
OmniCD 4X SCSI	\$395
Discovery CD 16	\$249
Edutainment CD 16 int/ext	\$449/\$549
GameBlaster CD 16	\$379
Digital Schoolhouse	Special Price CALL \$299
Sound Blaster 16 Value Edition	\$99
Sound Blaster Value Edition	\$49
Sound Blaster Pro Value Edition	\$69
Sound Blaster 16 SCSI-2	\$179
Sound Blaster 16 SCSI-2 w/ASP	\$199
Sound Blaster 16 MultiCD	\$149
Sound Blaster 16 MultiCD w/ASP	\$179
Sound Blaster AWE32	\$299
Sound Blaster AWE32 Value Edition	\$229

**ALTEC LANSING**

ACS50	\$75
JENSEN/POWER PARTNERS	
JPS35	\$65
JPS45	\$119
AR22	\$99
AR42	\$155
AR50	\$279
AV670	\$389

**PANASONIC**

EAB401P	\$49
EAB710P	\$139

**SONY**

SRS-50PC	\$89
CSS-B100	\$99
SRS-D2KPC	\$165

**PANASONIC PRINTERS**

KX-P4400/P5400	\$399*/\$499
KX-P4410/P4430	\$469/\$659
KX-P4440	\$989
KX-SP100 Printer/Fax/Copier	\$799
KX-P1150/P2023	\$129/\$175
KX-P3123/P3124	\$249/\$319
KX-P2130/P2135	\$169*/\$195*
KX-P1624/P3624	\$369/\$399

\*Price includes Manufacturer Rebate

**OKIDATA PRINTERS**

OL400E/OL410E	\$399/\$544
ML320-I/ML321-I	\$299/\$429
ML590-I/ML591-I	\$424/\$584

**CANON**

BJ-100/BJ-10SX	\$197/\$237
BJ-200e/200ex/230	\$224/\$237/\$384
BJC-4000/BJC-600e	\$354/\$458
LBP-430/LBP-1260	\$577/\$1267

**TEXAS INSTRUMENTS**

microLaser 600	\$827
microLaser Pro 600 PS23	\$1167
microLaser Pro E/Power Pro	\$1347/\$1597
microWriter Printer	\$464
microWriter PS23/PS65	\$539/\$799

**RELISYS**

Reli 2412	New Lower Price - CALL!
Reli 4816	\$999
Reli 9612	\$1499
Reli HandScan 8	\$84
Reli Handheld Morphing Scan	\$178
Reli HandScan 24 w/CorelDraw 4	\$238
AVEC Colour 2400	\$499
AVEC HomeScan Scanner/Fax	\$328

**HEWLETT-PACKARD**

ScanJet II CX Color	\$779*
ScanJet 3P Mono	\$469

\*Price includes \$150 Mail-in Rebate

**UMAX**

Vista-S6	\$779
UC630/UC1260	\$599/\$1339
MimiLook Color Handheld	\$249

**EPSON**

ES1200C	\$1259
ES800C	\$899
ES600C	\$499

**MOUSE SYSTEMS**

PageBrush/256 Mono Handheld	\$99
PageBrush/256 Color Handheld	\$189

**MUSTEK**

Handheld 256 Mono	\$99
Handheld Color 24	\$199
TwainScan Duo 600	\$499
Paragon 1200/2400	\$899

Mail Order Made Easy! By...

# On All Your Computing Needs!

## The Ultimate Multimedia Choice!

### Flex PT75 Multimedia System with Pentium™ Processor

- Intel Pentium 75MHz 64bit Processor
- 256K Ultra-fast "Writeback" Cache
- 8MB RAM, Maximum 128MB
- 720MB EIDE Hard Drive w/128K Cache
- 3.5" (1.44MB) Floppy Drive
- Sony Double-Spin Internal CD-ROM Drive
- Creative Labs Sound Blaster Sound Card, 16bit CD quality
- Altec Lansing Stereo Speakers w/Bass Sub-woofer
- Stereo Headphones, Joystick
- 21 CD Titles (10 CD Discs)
- 15" MultiScan Color Monitor .28 dp, 1280x1024i (62KHz h-Scan)
- 14.4/14.4 Data/Fax Modem
- Corel Power Pak Software
- Accessory Kit
- 57 Professional Quality Fonts From Monotype

All For Only

# \$2995



**hp** HEWLETT®  
PACKARD  
Authorized Dealer

- Hewlett-Packard DeskJet 540 Printer with Color Kit Printer and Cable

Microsoft Software Package including:

- MS DOS 6.22 • MS Windows for Workgroups 3.11
- MS Works for Windows • MS Money
- MS Best of Entertainment Pack
- MS Sound Bits

All Flex Systems come with

# 3

Year Warranty  
with FLEX Express parts replacement



## The Flex Family Classic Edition

All For Only

# \$1995

- Intel 486DX4-100 Processor
- 256K L2 "Writeback" Cache
- 8MB RAM, Maximum 64MB
- 720MB EIDE Hard Drive w/128K Cache
- 3.5" (1.44MB) Floppy Drive
- Sony Double-Spin Internal CD-ROM Drive
- Creative Labs Sound Blaster Sound Card, 16bit CD quality
- Amplified Stereo Speakers
- Stereo Headphones, Joystick
- 19 CD Titles (5 CD Discs)
- 15" MultiScan Color Monitor, .28 dp, 1280x1024i
- 14.4/14.4 Data/Fax Modem
- DOS 6.22, MS Windows for Workgroups 3.11, Microsoft Software Package
- Desktop Case w/7 Drive Bays
- 25 Professional Quality Monotype Fonts

**Trial Subscriptions to:  
America On-Line  
Prodigy and  
Compuserve  
with the purchase  
of any Flex System  
on this page.**

**Now  
Includes!**

## The Flex 486 Multimedia Starter

All For Only

# \$1499

- Intel 486DX2-66 Processor
- 128K L2 "Writeback" Cache
- 4MB RAM, Maximum 128MB
- 540MB IDE Hard Drive w/128K Cache
- 3.5" (1.44MB) Floppy Drive
- Double-Spin Internal CD-ROM Drive
- VLB Video Accelerator w/1MB RAM, 16.7M Colors
- Sound Blaster compatible Sound Card, 16bit CD quality
- Amplified Stereo Speakers
- 10 CD Titles (2 CD Discs)
- 15" MultiScan Color Monitor, .28 dp, 1280x1024i
- DOS 6.22, MS Windows for Workgroups 3.11
- PFS WindowWorks
- MiniTower Case w/5 Drive Bays



Intel, the Intel Inside logo and Pentium are trademarks or registered trademarks of Intel Corporation. Hewlett-Packard and the Hewlett Packard logo are registered trademarks of Hewlett-Packard Inc.

ORDER INFORMATION: No surcharge on credit cards. Minimum shipping and handling per order \$6.95. MasterCard, Visa, Discover and American Express accepted for USA, Canada, APO, FPO and Puerto Rico. Flex Tech Card accepted for contiguous USA only. A \$10 surcharge on credit orders for APO, FPO and Puerto Rico. C.O.D. orders under \$500, add \$5.00 (over \$500, add \$10.00) check warranty charge. For certified check C.O.D. orders over \$1,000, please fax a copy of certified check to (708)351-7204 for bank verification. APO/FPO add 5% to cover additional handling and insurance. CORPORATE/GOVERNMENT ORDERS: Corporations rated 1A1 or better and government agencies accepted on Net 30 terms with a valid purchase order. Leasing Plans available for qualified businesses only. RETURN PRODUCT INFORMATION: All returns must have prior authorization from our Customer Service Department (1-800-955-1488 or 1-708-351-7172 Mon. - Fri. 7:30a.m. to 6p.m. & Sat. 9a.m. to 4p.m. CT.) All returns must be in as-shipped condition with original packaging, including all warranty cards and manuals. Product returns may be subject to a restocking charge. We will only accept unopened or pre-installed software for return. Software compatibility guaranteed only on pre-installed software included with your new Flex system. Thirty (30) day money back guarantee applies to Flex system only (does not include printers or other non-installed peripherals). We will not accept returns on laser printers if toner cartridge has been installed. All prices and specifications subject to change without notice. Not responsible for typographical or printing errors. All trademarks and registered trademarks are the property of their respective holders. Copyright 1995 USA Flex, Inc.

(708) 582-6206 • FAX (708) 351-7204  
Government 1-800-723-2260  
Education 1-800-944-5588  
Government/Education FAX  
(708) 351-9871  
Habla Espanol 1-800-723-5500 •  
(708) 582-6142

**USA FLEX**  
OPEN 24 HOURS  
MONDAY - FRIDAY  
9 A.M. - 4 P.M.  
SATURDAY & SUNDAY

Code # WD0405

Circle 148 on reader service card



# Video Training for Windows Applications

WATCH & LEARN  
IN MINUTES

## KeyStone, Your Windows Training Specialists



**Dawn Bjork**  
Corporate Trainer  
& MS Word Instructor



**Dave Bellamy**  
MS Excel Specialist  
& MS Project Instructor



**Alison Balter**  
MS Certified Trainer  
& Access 2.0 Instructor

**KEYNOTES Word 6.0**

Beginning	\$49.95
Intermediate	\$49.95
Advanced	\$49.95
Desktop Publishing	\$49.95
Mail Merge/Forms	\$49.95
Special-Any Three	\$129.95
Special-All Five	\$199.95

**KEYNOTES Excel 5.0**

Beginning	\$49.95
Intermediate	\$49.95
Advanced	\$49.95
Special-All Three	\$129.95

**KEYNOTES Access 2.0**

Beginning	\$49.95
Intermediate	\$49.95
Advanced	\$49.95
Special-All Three	\$129.95
App. Dev. Level 1	\$79.95
App. Dev. Level 2	\$79.95
App. Dev. Level 3	\$79.95
Special-All Three	\$199.95
Special-All Six	\$329.95

**KEYNOTES PowerPoint 4.0**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95

**KEYNOTES Windows 3.1**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95
DOS & Win Basics	\$49.95

**KEYNOTES Project 4.0**

Level I/II/III/IV (ea)	\$79.95
Special-All Four	\$299.95

**KEYNOTES Visual Basic 3.0**

Unit 1/2/3 (ea)	\$89.95
Unit 4/5/6 (ea)	\$89.95
Special-Any Three	\$249.95
Special-All Six	\$449.95

**Visual C++ 2.0**

Level 1	\$89.95
Level 2	\$89.95
Level 3	\$89.95
Special-All Three	\$249.95

**Windows for Workgroups**

Windows for WG	\$59.95
MS Mail	\$49.95
Schedule+	\$49.95
Special-All Three	\$144.95

**WordPerfect 6.1**

Beg/Int/Adv (ea)	\$49.95
Desktop Publishing	\$49.95
Special-Any Three	\$129.95
Special-All Four	\$159.95

**Windows NT 3.5**

Installation	\$89.95
NT Server Level 1	\$89.95
NT Server Level 2	\$89.95
NT Workstation	\$49.95
Special-All Four	\$299.95

**Paradox 5.0**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95

**Quattro Pro 6.0**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95

**CorelDRAW 5**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95

**Quicken 4.0**

Basics	\$49.95
Power Features	\$49.95
Special-Both Videos	\$89.95

**Lotus 1-2-3 Rel. 5**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95

**Lotus Ami Pro 3.0**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95

**Freelance Graphics 2**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95

**Approach 3.0**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95

**PageMaker 5.0**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95

**Harvard Graphics 3.0**

Beg/Int/Adv (ea)	\$49.95
Special-All Three	\$129.95

**KEYNOTES**  
\$14.95 ea  
KeyStone's New Training Workbooks

**RISK FREE 30 DAY Money Back Guarantee**

**Microsoft Office**

### Special Microsoft Office Video Combinations

#### Microsoft Office 4.x Standard \$299.95

- 2 Word 6.0, 2 Excel 5.0 videos (Beg/Int)
- 2 PowerPoint 4.0 videos, 1 MS Mail training video
- 7 videos with over 13 hours of training

#### Microsoft Office 4.x Pro.....\$495.95

- 3 Word 6.0, 3 Excel 5.0 videos (Beg/Int/Adv)
- 3 Access 2.0, 3 PowerPoint 4.0 videos (Beg/Int/Adv)
- 1 MS Mail training video
- 13 videos with over 24 hours of training

#### Microsoft Office 4.x Plus ...\$579.95

- 3 Word 6.0, 3 Excel 5.0 videos (Beg/Int/Adv)
- 3 Access 2.0, 3 PowerPoint 4.0 videos (Beg/Int/Adv)
- 3 Windows 3.1 videos (Beg/Int/Adv), 1 MS Mail video
- 16 videos with over 29 hours of training

#### MS Office Integration Video

**\$19.95** when purchased with any MS Office Combination (Reg. \$49.95)

**Lotus SmartSuite**

### Special Lotus SmartSuite 3 Video Combinations

#### Lotus SmartSuite 3 Standard ...\$299.95

- 7 videos with over 13 hours of training

#### Lotus SmartSuite 3 Pro.....\$495.95

- 13 videos with over 24 hours of training

#### Lotus SmartSuite 3 Plus .....\$579.95

- 16 videos with over 29 hours of training

#### Other KeyStone Videos

SQL Server	Call	Lotus Notes	Call
Word 2.0 - B/I/A	(ea) \$49.95	CorelDRAW 4 - B/I/A	(ea) \$49.95
Excel 4.0 - B/I/A	(ea) \$49.95	PowerPoint 3.0 - B/A	(ea) \$49.95
Quattro Pro 5.0 - B/I/A	(ea) \$49.95	Access 1.1 - B/I/A	(ea) \$49.95
Paradox 4.5 - B/I/A	(ea) \$49.95	Project 3.0 - B/I/A	(ea) \$79.95
Lotus 1•2•3 - 4 - B/I/A	(ea) \$49.95	Many other titles available	Call

### 3 Easy Ways to Order:

**CALL** ▶ 1-800-748-4838  
8 0 1 - 3 7 5 - 8 6 8 0

**FAX** ▶ 1-801-373-6872

**MAIL** ▶ KeyStone Learning Systems Corp.  
2181 Larsen Parkway  
Provo, UT 84606



We accept C.O.D., Company P.O. or check

**Microsoft SOLUTION PROVIDER**

AD# PW45



Your Windows Training Specialists

Circle 121 on reader service card

All Videos Now Available in PAL (European Format)

Domestic Shipping: \$5.00 for the first two video tapes; plus \$1.50 for each additional video tape. International Orders: Shipping cost will vary, call for details.

Circle 121 on reader service card

# MORE PROFIT! MORE SALES! MORE CUSTOMERS!



SYSTEMS  
START AT  
**\$149.95**

## Save Time, Reduce Theft, Speed Checkout with The General Store Retail Management System

Since 1983, **The General Store** has been the system of choice by thousands of retail and chain stores nationwide. Known for its ease of use, flexibility, and lightning speed, **The General Store** is ideal for most retail environments. At \$149.95, **The General Store** starter kit offers over 250 of the most desired point of sale features. A clerk can learn to use it in minutes. Your customers are processed in seconds.



**PC AMERICA**  
HARDWARE SOLUTIONS



ible Enough  
Any Business

rel/clothing/shoe  
ance  
allery  
motive/tire  
ty salon/supply  
le/motorcycle  
l and tuxedo  
shop/gift shop  
puter  
venience/fast food  
cleaner  
lass  
t  
ture  
tation  
ing goods/golf/gun  
ery/bakery  
ware/locksmith  
h/fitness center  
porial supply  
and garden  
ry  
r  
order  
ne supply  
c/record and tape  
salon  
e supply/stationery  
macy  
ography  
bing & heating  
ialty stores  
/hobby  
ts cards/uniform  
d YOUR STORE!

### Increase your profits by more than 25%

Computerization pays for itself, saving you thousands of dollars, giving you peace of mind, and making the best use of your time. The General Store, with over 250 of the most desired point of sale features, will help you leapfrog past your competition by controlling costs, reducing errors and increasing efficiency.

- ✓ **Quicker Checkout**-barcode scanning (50% faster than a cash register), instantaneous no wait receipt printing system, automatic credit card verification, split tender, product lookup by any word, new items added at POS
- ✓ **Better Business Decisions**-detailed reports and financial statements showing the status of your business, charge account credit limit checking, parts explosion for kits tracks every inventory item, built-in general ledger, accounts receivable and accounts payable
- ✓ **Increased Accuracy**-100% accurate built-in barcode scanning and printing, instant price lookup, price quotes, serial number tracking, multiple pricing levels, multi-unit pricing (i.e. 3/\$1.00)
- ✓ **Better Customer Service**-customer purchase history, complete layaway, mail list management, instant customer lookup, multiple price level support by category of customer
- ✓ **Reduced Theft**-cash register reconciliation, salesperson tracking, password protection, pole display sale verification, accurate inventory tracking
- ✓ **Unique Features**-powerful size/ color matrix for clothing and shoe stores, electronic scale compatibility, convenience store/gas station pump compatible, supports 99 work stations per store, multi-store ready, FREE file conversions from 32 other POS systems
- ✓ **Cost Reductions**-real time inventory control, dynamic update of item sales and inventory data, reorder point alarms, extensive reporting capabilities, multi vendor P.O. selection (5 vendors per item)

**FREE!**  
Take a  
**FREE 30-day  
General Store  
Test Drive**  
(call now for  
details)

### PC AMERICA PRICE LIST

Using another  
P.O.S. system?  
Call for  
**SPECIAL  
COMPETITIVE  
UPGRADE  
PRICE!!!**

**DEALERS  
WANTED!**

Join our new dealer  
program. It's **FREE**. It's  
the fastest way to make  
money...**AND** we make it  
**EASY**. Call now for details.

- The General Store Professional Edition (single user, multisite ready)..... \$995.00
- The General Store Network Edition (multisite ready) ..... \$1,495.95
- The General Store Starter Kit (abridged version)..... \$149.95
- Cash Drawer ..... \$199.00\*
- Citizen Receipt Printer ..... \$299.95\*
- Pole Display ..... \$299.00\*
- CCD Bar Code Reader \$399.00\*
- Laser Bar Code Scanner ..... \$429.00\*

\* Call for Competitive Prices

# 1-800-PC-AMERICA

Call Toll Free 1-800-722-6374  
In Canada Call SunRise Computer: 416-372-3977

Phone: 914-426-2600  
Circle 195 on reader service card

PC America  
25 South Main Street  
Spring Valley, NY 10977

Fax: 914-426-0140



# You Get The Greatest Value When

## Multimedia has reached a new level.

Pentium power, Built-In CD-ROM and Local Bus Video all in one package.

- Internal 5.25" Double-Speed CD. Supports CD-ROM and CD Audio
- Choice of Intel 3.3v Pentium™ Processors, 75, 90 or 100MHz
- 10.4 LCD Available in Dual-Scan Color or Active Matrix Color Displays
- 16-bit Stereo Sound - Sound Blaster™ & SoundBlaster Pro™ Compatible
- Built-In TouchPad
- Supports PCMCIA 1 Type III or 2 Type II Cards
- Removable Hard Drive (250 to 800MB)
- 8MB RAM expandable to 40MB
- Built-In SIR Infrared Interface
- Built-In 1.44MB Flappy Drive
- Parts: 1S, 1P, 1VGA, 1 Keyboard/Mouse, Modem & 2Audio in/out
- 1MB VRAM, Local Bus Video and Hard Drive
- Over 3 Hours of Battery Life
- Internal 1.44 3.5" Removable Flappy Drive
- Dual Battery Support
- 7.5 lbs including battery
- Includes Microsoft DOS & Windows, NiMH Battery, & Carrying Case
- Optional Part Replicator or Multimedia Docking Station
- **Optional Multimedia Bundle: \$185.00** Includes: 6 Software Titles including 4 CDs, External Speakers & Microsoft Sound System Software

### Power CD Dual Scan

Intel Pentium™ P-90 CPU 8MB RAM/340MB HD

# \$3575

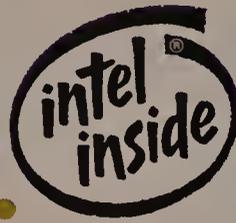
Or Lease For \$135/Month\*

### Power CD Active Matrix

Intel Pentium™ P-90 CPU 8MB RAM/340MB HD

# \$4295

Or Lease For \$160/Month\*



pentium  
PROCESSOR



### SoundPro CD



## This portable has a built-in CD ROM!

- Upgradable CPU options: Intel DX4™ 100 or 75MHz, DX2-66 or DX2-50 CPU's
- Built-in double speed CD ROM supports 5.25" CD's
- Base 4MB RAM upgradable to 32MB
- Removable Hard Drive up to 800MB Capacity
- 9.5" LCD Available in Dual Scan or Active Matrix Displays
- Accelerated 32-bit VESA Local Bus Video w/ 1MB V-RAM
- Supports PCMCIA - 1 Type III or 2 Type II Cards
- 16-bit Stereo Sound - Sound Blaster™ & SoundBlaster Pro™ Compatible
- Built-In Microphone & Stereo Speakers
- Parts: 1S, 1P, VGA, Floppy & Audio in/out
- Weight: 6.6lbs. Including Battery
- Includes: MS DOS 6.22, Windows for Workgroups 3.11, NiMH Battery, AC Adapter & Carrying Case.
- **Optional Multimedia Bundle: \$185.00** Includes: 6 Software Titles including 4 CDs, External Speakers & Microsoft Sound System Software

### SoundPro CD Dual Scan

DX4™-75 Dual Scan Color, 4MB RAM/340MB HD

# \$2495

Or Lease For \$98/Month\*

### SoundPro CD Active Matrix

DX4™-75 Active Matrix Color, 4MB RAM/340MB HD

# \$3459

Or Lease For \$136/Month\*



## Optional Multimedia Bundle - \$185.00

Bundle Includes Microsoft Sound System and Portable Speakers Plus Six Software Titles:

- ◆ MS Works CD-Multi - Media Version
- ◆ MS Encarta CD - Multi-Media Version
- ◆ MS Musical Instruments CD
- ◆ MS Ancient Lands CD
- ◆ MS Money - On 3.5" disk
- ◆ MS Entertainment Pack - On 3.5" disk



**UPGRADE**  
Upgrade your CPU, Hard Drive, Memory or Display at our expense. For 90 days after original purchase, you pay only the price difference of the more powerful components you need. Call your AMS Sales Representative for details.



If for any reason you are not completely satisfied with your AMS Notebook Computer, just return it within 30 days and we will promptly refund your money \*\*



**Lifetime Toll Free Technical Support**  
Your use of the computer doesn't stop after your warranty expires and neither should your support. We're there to assist you, toll-free, for as long as you own your AMS computer.



**24 Hour BBS**  
No matter where you are, no matter the time of day AMS is just a phone call away with full support services via our 24 hour Bulletin Board System.



\*AT&T Capital Based on 36-month lease with 10% purchase option. Sales tax and shipping are additional. Rates subject to change without notice. Leasing is provided by AT&T Capital for qualified commercial purchasers. Call for details. All trademarks and trade names are the property of their respective companies. Intel and Intel Inside are registered trademarks and Pentium is a trademark of Intel Corporation. Not responsible for errors in advertising. \*\* Money Back Guarantee: S/H and open software are non-refundable. Prices and specifications are subject to change without notice.

# You Buy AMS DIRECT



## SoundPro P-54

**PENTIUM  
PROCESSOR  
POWER**

9.5" Display

Parts: 1 Serial,  
1 Parallel,  
1 Video,  
1 Keyboard/Mouse,  
1 Docking Station

Easy Memory  
Upgrades

Upgradable  
RAM to 40MB

PCMCIA Type III  
Expansion Slot

Removable  
Hard Drive

Built-In  
Trackball

16-bit Stereo  
Sound Module

## Our SoundPro just got more powerful!

Now available with Intel Pentium™ Processor Power in a 6.7 lb package...  
Multimedia Design Adds Built-In Sound, 256K Cache and 1 MB Local Bus Video And I/O.

- Powerful Intel Pentium™ 75 or 90MHz CPU
- Upgradable 9.5" Display. Available in Dual Scan or Active Matrix Color
- 5.9 lbs. Monochrome - 6.7 lbs. Color
- 8MB RAM - Upgradable to 16 or 40MB's
- Local Bus Video & Local Bus HD I/O with built-in 256k cache
- Over 3 Hours of Battery Life

**UPGRADE TO  
PENTIUM™ 90  
FOR \$225.00**

- Parts: 1 16550 High Speed Serial Port, 1 Parallel, 1 Video, 1 Keyboard/Mouse, 1 Docking Station, Audio in/out
- Removable Hard Drive Up to 800MB Capacity
- Includes AC Adapter, NiMH Battery, Carrying Case, MS DOS 6.22 & Windows for Workgroups 3.11
- Options: Docking Station, Internal 14.4/14.4 Fax Modem, Car Adapter, External Battery Charger, Extra Batteries
- **Sound System Upgrade: \$125.00**  
Includes: External Speakers & Microsoft Sound System Software

### SoundPro P-54 Dual Scan

Intel Pentium™ P-75 CPU 8MB RAM/340MB HD

**\$2575**

Or Lease For \$101/Month\*

### SoundPro P-54 Active Matrix

Intel Pentium™ P-75 CPU 8MB RAM/340MB HD

**\$3075**

Or Lease For \$114/Month\*

## SoundPro

**ACTIVE  
MATRIX  
BLOWOUT!**

9.5" Display

Parts: 1 Serial,  
1 Parallel,  
1 Video,  
1 Keyboard/Mouse,  
1 Docking Station

Easy Memory  
Upgrades

Upgradable  
RAM to 32MB

Removable  
Hard Drive

Built-In  
Trackball

16-bit Stereo  
Sound Module

PCMCIA Type III  
Expansion Slot

## Our Award winning TravelPro 5300 series just got better!

Now with sound module and local bus I/O, the SoundPro is the clear winner.

- Upgradable CPU options: Intel DX4™-100 or 75MHz, DX2-50, or SX-33
- Available in upgradable 9.5" Active Matrix, Dual Scan Passive or Monochrome Displays
- 6.3 lbs. Color, 5.9 lbs. Monochrome
- 4MB RAM, 1.44MB Floppy
- Local Bus Video & Local Bus HD I/O

- Over 3 Hours of Battery Life
- Removable Hard Drive Up to 800MB Capacity
- Includes AC Adapter, NiMH Battery, Carrying Case, MS DOS 6.22 & Windows for Workgroups 3.11
- Options: Docking Station, Internal 14.4/14.4 Fax Modem
- **Sound System Upgrade: \$125.00**  
Includes: External Speakers & Microsoft Sound System Software

### SoundPro Dual Scan

DX4™-75 4MB RAM/340MB HD

**\$1995**

Or Lease For \$78/Month\*

### SoundPro Active Matrix

DX4™-75 4MB RAM/340MB HD

**\$2595**

Or Lease For \$102/Month\*

## TravelPro 350C

**BEST  
BUY**

9.5" Display

PCMCIA Type III

Removable  
Hard Drive

Upgradable  
RAM to 20MB

Built-In Trackball

## When you're looking for the best value in a notebook computer, look no further than the TravelPro 350C.

- Choice of Upgradable Intel CPU's. 486 SX-33, DX 2-50 or DX4™ 75MHz
- 3.3v Low Voltage for Extended Power Management
- 9.5" Dual Scan Passive Color Display
- PCMCIA Type III - Takes either 1 Type III or 2 Type II Cords
- Large Center Based 25mm Trackball with Palmrest
- 4MB RAM - Upgradable to 8, 16 or 20MB's
- Unique Removable Keyboard for easy access to upgrades and International Keyboard support
- Includes AC Adapter, NiMH Battery, Carrying Case, MS DOS 6.22 and Windows for Workgroups 3.11

### TravelPro 350C

DX2-50 Dual Scan Color, 4MB RAM/250MB HD

**\$1495**

Or Lease For \$59/Month\*



TO ORDER CALL

**800-868-8108**

MONDAY THRU FRIDAY 6:00 am - 6:00 pm SATURDAY 9:00 am - 3:00 pm PST

Corporate, Dealer & Government Pricing Available



**AMS  
DIRECT**

12881 Ramona Blvd., Irwindale, CA 91706  
Tel: 818/814-8851 Fax: 818/814-0782

Circle 38 on reader service card

# Arlington Computer Products...great prices and service since 1984

PC Computing Mail Order Review of Peripheral Specialists (8/93). We received the only 5 star rating for price!

PC MAGAZINE "...Arlington offers worry-free mail order purchasing!"

PC COMPUTING "...Courteous service and terrific technical support!"



## OKIDATA®

400e.....\$399	ML380.....\$205
410e PS ..\$735	ML520.....\$365
410e.....\$519	ML521.....\$489
OL810.....\$899	ML590.....\$409
OL830.....\$1079	ML591.....\$559
ML320.....\$295	ML395.....\$949
ML321.....\$415	ML3410..\$1199
DocIt 3000/4000.....\$1049/\$1389	

## Canon

BJ-10SX/100.....\$239/\$199
BJ-200ex.....\$229
BJ-230-Wide Carriage.....\$389
BJC-600E.....\$459
BJC-800/4000.....\$799/\$349
LBP-430/1260.....\$579/\$1269
Notejet 486 200MG.....\$1289
Notejet 200MG - color.....\$1939
Notejet II 50Mhz-340MG ..\$2699



Laserjet IV/IV+.....\$1149/\$1389
Laserjet IVP w/toner.....\$999
Laserjet IVL w/toner.....\$599
Laserjet IV SI w/toner.....\$299
Laserjet IVM+/MP.....\$1949/\$1389
Laserjet IV V/MV.....\$1989/\$2899
2MG/4MG upgrade.....\$99/\$199
8MG upgrade.....\$399
DeskJet 540/560C.....\$285/\$499
DeskJet 1200C.....\$499
DeskJet 1200C/PS.....\$1699
IIP/IIC Scanner.....\$379/\$799

\*after rebate

## EPSON®

FX870.....\$265	LQ870.....\$429	DFX5000+ ..\$1329	Stylus 1000...\$425	Action 1400...\$649
FX1170.....\$359	LQ1070+.....\$355	DFX8000 ..\$2239	Stylus Color..\$495	Action 1500...\$449
LQ570+.....\$239	LQ1170.....\$599	Stylus 800+ ..\$209	Action 1100...\$379	Action 1600...\$739

Thousands of printers in stock! Most shipped same day!

## NOTEBOOKS

### EPSON®

650C  
DX2-50 Dual  
Scan Color  
.....\$1849



ActionNote 866C-DX2/66.....\$2299

### TOSHIBA

T1910/CS.....\$1289/\$1739  
T1960CS/CT.....\$2139/\$2579  
T2400CS/CT.....\$2419/\$2895  
T2450CT/T3600CT ..\$4249/\$3439  
T4700CS/CT.....\$2799/\$2949  
T4800CT/T4850CT ..\$4199/\$4549

### NEC

Versa V 4/50 250 Dual color..\$2299  
Versa V 4/50 250 Act color....\$2825  
Versa V 4/50 340 Act color....\$2949  
Versa V/C 540MG.....\$3349  
Versa M 4/75 250 Dual color \$2999  
Versa M 4/75 340 Act color...\$3749  
Versa M/75C 540MG.....\$4125  
Versa M 4/100 340 Act color..\$4099  
Versa P/75C 540MB.....\$4999

## NETWORKING

NetWare 3.12 5-user.....\$569  
NetWare 3.12 10-user.....\$1279  
NetWare 3.12 25-user.....\$1839  
NetWare 3.12 50-user.....\$2299  
Net 3.12 100/250.....\$3199/\$4499  
Net 4.1 10/25-user....\$1449/\$2179  
Lantastic Starter 6.0.....\$219  
NE2000/5-pack.....\$69/\$289  
SMC Hub 8-port T/P.....\$279  
SMC Ethercard + Elite.....\$105  
3 Com Etherlink III.....\$109  
3 Com III 5/20-pack ...\$419/\$1499  
Intel Ether 16 or Pro.....\$89  
Intel Ether Pro 5-pack.....\$379  
Intel Ether 16 20-pack.....\$1579  
Intel Ether Pro TP 20-pack..\$1299  
Intel Flash/5-pack.....\$99/\$479  
Intel Netport EL/XL.....\$359/\$409  
Xircom Pocket Ethernet.....\$249

## MONITORS

### NEC

2V / 3V / XV15.....\$329/\$399/CALL  
XE 15/17 MultiSync.....\$519/\$959  
XP 15/17 MultiSync.....\$639/\$1199  
XE21/XP21.....\$1929/\$2359

### NANAO

F550IW/F560IW.....\$969/\$1199  
T560I/F760IW.....\$1459/\$1949  
T2-17 ESP.....\$1249  
T2-20 ESP.....\$1895

### VIEWSONIC

15G/17G.....\$389/\$709  
17-2.....\$829  
20/21.....\$1419/\$1649

### MAG INNOVISION

DX15F/MX15F 15".....\$329/\$429  
DX17F/MXP17F 17".....\$599/\$849  
MX21F.....\$1619



## VIDEO BOARDS

ATI Mach 32.....\$145  
ATI Graph Prof 2MG.....\$249  
ATI Prof Turbo 2MG.....\$299  
ATI Prof Turbo 4MG.....\$499  
Diamond Stealth 64 4MG.....\$449

## SOFTWARE

Aldus PageMaker 5.0.....\$499  
D Base IV.....\$379  
Lotus 123 2.4/3.4.....\$279/\$325  
Lotus 123 4.0/5.0.....\$279  
Microsoft Office.....\$429  
Microsoft Office Pro.....\$509  
Microsoft Windows 3.1.....\$79  
Microsoft DOS 6.2 upgrade ....\$59  
Word Perfect 6.0A.....\$249  
Word Perfect Windows.....\$239

## CHIPS

Special Orders—please call!

1MB/4MB Simms.....\$45/\$139  
8MB/16MB Simms.....\$319/\$539  
IBM ThinkPad.....CALL  
Cyrix DRx2-20/40 or 25/50 ...\$179  
Cyrix DRx2-33/66.....\$199

### intel OVERDRIVE

DX2-50 Double 20-25Mhz.....\$119  
DX2-66 Double 33Mhz.....\$175  
DX4 75Mhz/100Mhz.....\$209/\$275  
Pentium 63MHz.....\$349

## MODEMS



Accura 14.4/Fax-Int/Ext ...\$89/\$99  
Accura 28.8 Int/Ext.....\$159/\$199  
Optima Pocket 14.4.....\$279  
Optima 28.8 Int/Ext.....\$329/\$389  
PCMCIA 14.4/28.8.....\$189/CALL



14.4 Int./Ext.....\$89/\$99  
28.8 Int/Ext V.34.....\$179/\$199  
PCMCIA 14.4.....\$189  
Pocket 14.4/28.8.....\$249/\$359



Sportster 14.4 Fax Int/Ext..\$95/\$109  
Sport 28.8 V.34 Int/Ext..\$209/\$225  
Courier V.34 Int/Ext.....\$379/\$419  
Worldport PCMCIA 14.4.....\$179

## SCANNERS/DIGITIZERS

Epson Scanning 600.....\$479  
Epson Scanning 800C.....\$729  
Epson Scanning 1200 Prof.....\$1169  
Microtek ScanMaker IISP.....\$739  
Microtek ScanMaker III.....\$2389  
Relisys 9612/9624.....\$1379/\$1789  
Relisys 2412/4816.....\$749/\$919  
ScanMan w/OmniPage.....\$139  
Summasketch 12 x 12.....\$269  
Summasketch 12 x 18.....\$499  
UMAX Vista S6/600.....\$749/\$589  
UMAX 1260/1260 Pro..\$979/\$1089  
UMAX PS 2400x2400.....\$2829

## DRIVES & TAPES

Backpack 250/900.....\$279/\$499  
Dual Floppy.....\$199  
3 1/2" 1.44.....\$199  
Connor 250 Tape.....\$199  
West Digit 420/540.....\$189/\$299  
West Digit 730/1GB.....\$299/\$499



Jumbo 250/350.....\$145/\$199  
Jumbo 700.....\$299  
Trakker 250/350.....\$269/\$399  
Trakker 700.....\$399  
Qik 80 formatted tape.....\$199  
PowerTape 1.1GB internal....\$699

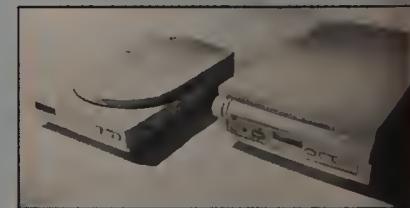
### AMERICAN UPS

280.....\$99  
400.....\$149  
450.....\$179  
600.....\$239  
900.....\$399  
1250.....\$499  
Smart600..\$399  
Smart900..\$499

### CD ROM

Sound Blaster 16 SCSI-2.....\$199  
Plextor Quad Int/Ext.....\$389/\$499

## NEC



MultiSpin 2V Deluxe: sound card, speakers, five CD titles.....\$299  
NEC DS 2V1.....\$199  
NEC 3Xp+/4X Pro.....\$379/\$699  
NEC 4Xi Quad or kit....\$365/\$499  
NEC 4Xe Quad or kit....\$459/\$599

### SEAGATE HARD DRIVES

2.5" 320 MG IDE.....\$299  
452MG 3491A.....\$399  
535MG IDE 5660.....\$299  
1.0 GB ST31220 IDE.....\$499  
1.0GB 31200N.....\$599

Arlington  
Computer  
Products, inc.

Prices and availability subject to change without notice. Qualified purchase orders accepted. No surcharge for charge cards!

851 Commerce Court, Buffalo Grove, IL 60089  
HOURS (CENTRAL TIME)  
7:30am-8:30pm / Monday thru Friday  
9:00am-5:00pm / Saturday

For orders & quotes

800-548-5105

We export!

Customer Service and in Illinois 708-541-6333

Shipping 708-541-6599

Technical Assistance 708-541-6599

FAX 708-541-6888



Circle 8 on reader service card



## Showcase Item

### TOSHIBA

### Mobile Pentium T4900CT

#### Maximum performance color notebook

*Pentium™ power with an explosion of multimedia!*

- ✓ 75MHz Intel Pentium™ CPU (3.3 volt and SL-enhanced)
- ✓ Integrated floating point math coprocessor, 16KB CPU cache
- ✓ 8MB high speed RAM std., 40MB max.
- ✓ 772MB hard drive
- ✓ Large active matrix color display: 10.4" diagonal
- ✓ Local bus video with graphics accelerator: 64K colors at 640 x480
- ✓ Supports simultaneous external VGA monitor, 1024 x 768 maximum resolution
- ✓ 16-bit .WAV and MIDI sound capability: built-in microphone and speaker
- ✓ 2 PCMCIA slots: 5mm Type II and 10.5mm
- ✓ AccuPoint keyboard-integrated pointing device, QuickRead status icons
- ✓ Ports: serial, parallel, PS/2 mouse, PS/2 keyboard, expansion bus, external monitor, headphone/speaker, and microphone
- ✓ NiMH battery pack, 2+ hours life
- ✓ Maxtime Power System: hard drive/display shutdown, CPU sleep mode, AutoResume electronic bookmark
- ✓ Pre-loaded MS-DOS®, Windows for Workgroups, Windows Sound System
- ✓ Three year warranty

## ONLY

## \$6278.97

CDW 47052



For all your computing needs, call for your free catalog today!

## WHY PAY RETAIL? CDW® SELLS SOFTWARE FOR LESS!

Adobe Illustrator V4.0 WIN	439.71
Adobe Photoshop V3.0 WIN	565.76
Aldus Pagemaker V5.0 WIN	507.22
Aldus Type Twister V1.0 WIN	29.88
Arabesque ECCO Pro V2.0 WIN	175.09
Arabesque ECCO Simplicity V2.0	63.03
Ares Fontminder V2.5 WIN	49.48
Autodesk AutoCAD LT V1.0 WIN	418.45
Autodesk AutoSketch V2.0 WIN	131.90
Autodesk Generic CADD V6.1 DOS	64.53
Avantus Manage Pro V2.1 WIN	161.87
Activision Mechwarrior II CD	46.60
Berkeley After Dark V3.0 WIN	31.18

**NEW**

**WordPerfect  
PerfectOffice  
Standard  
V3.0 for Windows  
Version upgrade**

**ONLY \$179.53**  
48125

Berkeley After Dark-Ster Trek WIN	29.88
Berkeley Disney Screen Svr WIN	29.88
Berkeley More After Dark WIN	27.01
Borland Dashboard V2.0 WIN	36.98
Borland Dashboard/Sidekick WIN	46.46
Borland dBASE V5.0 DOS	523.27
Borland dBASE V5.0 DOS LIC	279.24
Borland dBASE V5.0 DOS vers upg	143.39
Borland dBASE V5.0 WIN CD	325.82
Borland dBASE V5.0 WIN upg	119.86
Borland Paradox V4.5 DOS	526.37
Borland Paradox V4.5 DOS upg	134.76
Borland Paradox V5.0 WIN	325.03
Borland Paradox V5.0 WIN upgrade	119.74
Borland Paradox V5.0 WIN vers upg CD	119.74
Borland ReportSmith V2.5 WIN	98.66
Borland Sidekick V1.0 WIN	29.94
Borland Turbo C++ V3.0	66.43
Borland Turbo C++ WIN visual ed	73.59
Borland Turbo Pascal V1.5 WIN	97.55
Borland Turbo Pascal V7.0 DOS	98.96
Broderbund Automap V3.0 WIN	47.07
Broderbund CN1 1993 WIN CD	19.03
Broderbund Printshop Dix V2.0 WIN	48.46
Caere OmniPage Direct V2.0 WIN	59.72
Caere OmniPage Pro V5.0 WIN	452.60
Caere PageKeeper V1.1 WIN	359.87
Caere Personal PageKeeper V2.0 WIN	87.11
Caldera WordScan Plus V3.0 WIN	375.83
Colorado Backup V2.0 WIN	37.28
CA Clipper V5.2	509.58
CA Clipper V5.2 vers upg	103.16
CA Realizer V2.0 WIN	71.30
Corel CD Power Peck w/headphones	36.56
Corel Flow V2.0 WIN + CD	63.03
Corel Gallery V1.0 WIN CD	34.43
Corel Photopaint Plus V5.0 WIN	154.47
Corel Photopaint Plus V5.0 WIN CD-only	65.69
CorelDRAW V3.0	96.73
CorelDRAW V3.0 CD only	65.70
CorelDRAW V3.0 to V5.0 upg CD only	304.37
CorelDRAW V3.0 to V5.0 upgrade	387.21

**NEW**

**WordPerfect  
V6.1 for Windows  
Version upgrade**

**ONLY \$86.63**  
47666

CorelDRAW V4.0	161.54
CorelDRAW V4.0 CD only	129.45
CorelDRAW V4.0 to V5.0 upg	211.03
CorelDRAW V4.0 to V5.0 upg CD only	169.80
CorelDRAW V5.0	544.01
CorelDRAW V5.0 CD only	422.36
CorelSCSI V2.0	82.29
CompuServe Member Kit WIN	26.30
Claris FileMaker Pro V2.1 WIN	115.99
Claris Works V3.0 WIN	63.61
Diagsoft OA Plus V6.0 WIN	55.44
Danana WinSleuth Gold+	58.80
DCA Crosstalk V2.1 WIN	95.70
Delrina Communications Suite V2.1 WIN	106.99
Delrina WinFAX PRO V4.0	76.48
DeLorme MapExpert WIN	247.29
Farallon Timbuktu V1.0 WIN	127.71
Frame Tech Framewriter V4.0 WIN	43.75
Fractal Design Dabbler V1.0 WIN	59.20
Fractal Design Painter V3.0 WIN	303.82
Frame Tech Framemaker V4.0 WIN	559.58
Hilgrave HyperAccess WIN	79.49
Helix Netroom V3.0 DOS	58.80
IBM OS/2 Warp V3.0	76.22
IBM OS/2 Warp V3.0 CD	76.22
IBM PC-DOS V6.3 UPG	49.00
id Software DOOM II	44.95
id Software DOOM II CD	44.95
Inset Systems Hijaak Suite V1.0 WIN	85.33
Intuit QuickBooks V3.0 WIN	93.98
Intuit Quicken Companion V2.0 WIN	26.80
Intuit Quicken V4.0 WIN	43.27
Intuit Quicken V8.0 DOS	43.88
Intuit QuickPay V3.0 DOS/WIN	46.82
LaserTools Print Cache	46.46
Landmark WINProbe V3.0	39.71
Lotus 1-2-3 V2.4 DOS	322.82
Lotus 1-2-3 V2.4 DOS upg	93.99
Lotus 1-2-3 V3.4A DOS	366.89
Lotus 1-2-3 V4.0 DOS license	312.63
Lotus 1-2-3 V4.0 DOS upg	93.99
Lotus 1-2-3 V5.0 WIN	303.82
Lotus 1-2-3 V5.0 WIN upgrade	95.91
Lotus Ami Pro V3.1 WIN	95.70
Lotus Approach V3.0 WIN	95.17
Lotus cc:Mail Desktop V2.1 WIN	63.79

**Symantec  
Norton pcANYWHERE  
V2.0 for Windows**

**ONLY \$119.86**  
48136

Lotus cc:Mail Desktop V4.02 DOS	63.83
Lotus cc:Mail Mobile V2.1 WIN	129.95
Lotus cc:Mail Router V5.1	66.48
Lotus Freedom V2.1 WIN	323.92
Lotus Notes Client V3.2 WIN	397.70
Lotus Organizer V2.0 WIN	93.41
Lotus ScreenCam V1.1 WIN	52.08
Lotus SmartSuite V3.0 WIN	452.03
Lotus SmartSuite V3.0 WIN upg	265.61
LucasArts Rebel Assault	45.72
LucasArts TIE Fighter	46.58
LucasArts X-Wing	39.73
Mathsoft MathCAD V5.0 WIN	88.82
McAfee VirusScan V2.1 WIN	42.18
Microcom Carbon Copy V2.5 WIN	124.34
Microcom Carbon Copy V6.1 DOS	125.36
MECA Managing Your Money V10.0 DOS	24.49
Procomm Plus V2.0 WIN	123.89
Procomm Plus V2.01 DOS	91.52
Microhelp Uninstaller V2.0 WIN	39.12
Microsoft Access V2.0 WIN	291.10
Microsoft Access V2.0 WIN dev kit	292.59
Microsoft Access V2.0 WIN solutions pk	42.01
Microsoft Access V2.0 WIN upg	112.91
Microsoft Ancient Lands V1.0 WIN CD	52.20
Microsoft Arcade V1.0 WIN	14.84

Microsoft Baseball 1994 WIN CD	39.79
Microsoft Bookshelf 1994 CD	59.18
Microsoft Cinemania 1995 CD	52.01
Microsoft Complete Basketball V1.0 WIN CD	39.71
Microsoft Creative Writer V1.0 WIN	45.13
Microsoft Dangerous Creatures V1.0 WIN CD	52.01
Microsoft Dinosaurs CD	51.95
Microsoft Electronic Forms Design V1.0 WIN	234.67
Microsoft Encarta 1995 CD	84.56
Microsoft Entertainment Pack (Best) WIN	23.63
Microsoft Excel V5.0 WIN	279.10
Microsoft Excel V5.0 WIN comp upg	109.72
Microsoft Fine Artist V1.0 WIN	39.85
Microsoft Flight Simulator V5.0 DOS	42.24
Microsoft FORTAN V5.1	148.27
Microsoft FoxPro V2.6 DOS	89.28
Microsoft FoxPro V2.6 DOS disk kit upg	23.30
Microsoft FoxPro V2.6 DOS upg	23.33
Microsoft FoxPro V2.6 Pro DOS	412.50
Microsoft FoxPro V2.6 Pro DOS upg	259.65
Microsoft FoxPro V2.6 Pro WIN	413.10
Microsoft FoxPro V2.6 Pro WIN upg	259.65

**Microsoft Office  
V4.2 for Windows  
Version upgrade**

**ONLY \$249.49**  
39330

Microsoft FoxPro V2.6 WIN	89.43
Microsoft FoxPro V2.6 WIN disk kit upg	23.44
Microsoft FoxPro V2.6 WIN upg	23.44
Microsoft MS-DOS V6.22 step-up	9.95
Microsoft MS-DOS V6.22 upg	49.93
Microsoft MS-DOS V6.22 upg 3pk	112.55
Microsoft Multimedia Beethoven CD	51.98
Microsoft Multimedia Golf V2.0 WIN CD	42.01
Microsoft Musical Instruments CD	51.99
Microsoft Office Pro V4.3 WIN	519.08
MS Office Pro V4.3 WIN CD w/Bookshelf	519.98
Microsoft Office Pro V4.3 WIN license	449.00
Microsoft Office Pro V4.3 WIN upg	334.74
Microsoft Office V4.2 WIN	429.91
Microsoft Office V4.2 WIN CD	429.91
Microsoft Office V4.2 WIN license	365.57
Microsoft Office V4.2 WIN upg	249.49
Microsoft PowerPoint V4.0 WIN	279.10
Microsoft PowerPoint V4.0 WIN upg	109.29
Microsoft Project V4.0 WIN	414.51
Microsoft Project V4.0 WIN vers upg	131.53
Microsoft Publisher V2.0 WIN	27.46
Microsoft Publisher V2.0 WIN starter kit	84.77
Microsoft Schedule+ v1.0 WIN	116.18
Microsoft Testing Tools for Windows V3.0 CD	528.41
Microsoft TrueType Font Pack	45.48
MS Visual BASIC Pro V3.0 WIN	294.88
MS Visual BASIC Pro V3.0 WIN comp upg	175.30
Microsoft Visual C++ V1.0 WIN	72.50
Microsoft Visual C++ V2.0 WIN	351.41
Microsoft Win NT Advanced Server V3.5 CD	322.00
Microsoft Win NT Workstation V3.5	279.57
Microsoft Win NT Workstation V3.5 CD	279.57
MS Win NT Workstation V3.5 DOS vers upg	89.41
Microsoft Win NT Workstation V3.5 vers upg	88.94
Microsoft Win/Wrkgroups V3.11	131.05
Microsoft Win/Wrkgroups V3.11 edd-on	45.48
Microsoft Win/Wrkgroups V3.11 resource kit	29.65
Microsoft Windows V3.11	89.50
Microsoft Windows V3.11 license	77.23
Microsoft Windows V3.11 upg	49.97
Microsoft Word V6.0 DOS	294.03
Microsoft Word V6.0 DOS vers upg	112.72
Microsoft Word V6.0 WIN	279.88
Microsoft Word V6.0 WIN upg	109.29
Microsoft Works V3.0 DOS	84.36
Microsoft Works V3.0 DOS	85.11
Macromedia Freehand V4.0 WIN	375.83
Maxis SimCity 2000 DOS	39.82
Maxis Wrath of the Gods	35.93

Norton Lambert Close-Up V6.0	114.93
Norton-Lambert Close-Up V6.0 remote	74.50
Patton&Patton Flowcharting 4 WIN	105.40
Peachtree Accounting V3.0 WIN	105.17
Peachtree Complete Accounting V8.0 DOS	173.63
Persoft Smartform 420 V3.0 WIN	165.68
Qualias 386MAX V7.0 DOS	59.02
Quarterdeck DESOVIEW 386 V2.6	92.84
Quarterdeck Desqview V2.0 WIN	164.11
Quarterdeck OEMM V7.5	61.03
Quarterdeck OEMM V7.5 UPG	37.40
Quarterdeck SideBar V1.0 WIN	19.79
Quark QuarkXPress V3.3 WIN	597.93
SPC Harv. Graph. V3.0 WIN	266.95
SPC Harv. Graph. V3.0 WIN vers/comp upg	88.96
SPC Harvard Graphics V3.06 DOS	379.40
SPC Harvard Spotlight V1.0 WIN	68.31
SPC Pro Write Plus V1.0 WIN	178.33
Saber LAN Workstation V5.0	134.43
Saber LAN Workstation V5.0 node	35.69
ShapeWare Visio Express for MS Office	48.91
ShapeWare Visio Express for SmartSuite	49.75
Shapelite Visio V3.0 WIN	114.26
Softkey Calendar Creator Plus V2.0 WIN	38.35
Stacker V4.0 special upg	49.12
Stacker V4.0 WIN/DOS	91.12
Symantec ACT V2.0 WIN	169.95
Symantec ACT V2.1 DOS	246.29
Symantec Direct Access V1.0 WIN	62.70
Symantec Direct Access V5.1 DOS	61.90
Symantec First ACT V1.1 WIN	56.24
Symantec Norton Anti Virus V3.0 DOS/WIN	92.61
Symantec Norton Backup V3.0 WIN	114.26
Symantec Norton Desktop V3.0 WIN	109.60
Symantec Norton Speedrive V4.0	63.04
Symantec Norton Utilities V8.0 DOS/WIN	112.22
Symantec PC Tools Pro V5.0 DOS	85.39
Symantec PC Tools V2.0 WIN	84.19
Symantec pcAnywhere V2.0 WIN	119.86
Symantec pcAnywhere V5.0 DOS	109.34
Symantec Q&A V4.0 DOS	81.27
Symantec Q&A V4.0 WIN	155.26
Symantec Q&A V4.0 WIN comp upg	89.94
Symantec XTree Gold V3.0 DOS	92.27
Symantec XTree Gold V4.0 WIN	66.63
Timeslips V5.1 DOS	178.89
Timeslips V5.1 WIN	181.13
Touchstone Check It Pro: Set	79.66
Traveling SW Laplink V 5.0 DOS	102.09
Virgin 7th Guest CD	44.99
Quattro Pro V6.0 WIN + CD	237.88
Quattro Pro V6.0 WIN upgrade	48.53
WordPerfect Clr Art Collection CD	69.83
WordPerfect Grammarik V6.0 WIN	36.63
WordPerfect InfoCentral V1.1 WIN	65.33
WordPerfect Inform Designer/Filler V1.0	282.59
WordPerfect Perfect Office V3.0 WIN	418.45
WP Perfect Office V3.0 WIN comp upg	214.66
WP Perfect Office V3.0 WIN vers upg	179.53

**Microsoft Word  
V6.0 for Windows  
Upgrade  
ONLY \$79.29\***  
32852  
\*After \$30 manufacturer rebate (ends 4/30/95)

WordPerfect Quattro Pro V5.0 DOS	49.91
WordPerfect V5.1+ DOS	298.55
WordPerfect V6.0b DOS	257.38
WordPerfect V6.0b DOS license	169.50
WordPerfect V6.0b DOS perfect upg	77.94
WordPerfect V6.1 WIN	245.08
WordPerfect V6.1 WIN CD	245.08
WordPerfect V6.1 WIN comp upg	113.70
WordPerfect V6.1 WIN vers upg	86.63
WordPerfect Works V1.0 DOS	71.52
Walker Reflections 1 V4.1 WIN	284.83
Walker Reflections 2 V4.1 WIN	215.23

**CDW® HOURS**  
Sales: 7:00-9:00 CST Mon-Fri / 9:00-5:00 CST Sat.  
TECH SUPPORT  
8:00-7:00 CST Mon-Fri / 9:00-5:00 CST Sat.



PCW 1205

WE SELL NAME BRAND ITEMS FOR LESS!

# (800) 865-4CDW

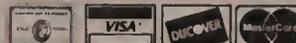
FAX  
(708) 465-6800

NASDAQ  
CDW® is a NASDAQ traded company  
TICKER SYMBOL COWC

D & B Rated 5A1 Duns 10-762-7952

Turn the Page  
For More  
CDW® Savings.

No Surcharge For Credit Card



High Volume Bids Welcome

©1995 CDW® Computer Centers, Inc.

PC World 4/85

COMPUTER DISCOUNT WAREHOUSE™

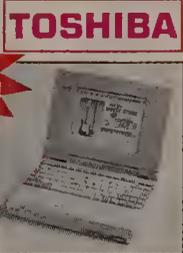


# COMPUTER DISCOUNT WAREHOUSE™

## Toshiba T2400C Series 50MHz color notebooks

- ◆ 3.3 volt IntelDX2™
- 50MHz CPU ◆ 4MB RAM std., 20MB max. ◆ 250MB or 320MB hard drive
- ◆ 9.5" dual-scan color display (T2400CS) ◆ 8.4" active matrix color display (T2400CT) ◆ 1) Type III and 1) Type II PCMCIA slot ◆ Keyboard-integrated AccuPoint™ pointing device ◆ 3 year warranty

SPECIAL PURCHASE!



T2400CS, 250MB.....	<b>\$2399.77</b>	CDW 43341
T2400CS, 320MB.....	<b>\$2549.46</b>	CDW 45054
T2400CT, 250MB.....	<b>\$2879.55</b>	CDW 43342
T2400CT, 320MB.....	<b>\$3088.96</b>	CDW 43343

## WHY PAY RETAIL?

### CDW® Sells For Less



TOP SELLER!

## Sportster V.34 28.8K bps data/fax modem

- ◆ True V.34: transmit data twice as fast as 14,400 bps modems ◆ High-speed protocols: V.34 (28.8K bps), V.FC (28.8K bps), V.32bis (14.4K bps) ◆ V.42 and MNP 2-4 error correction ◆ V.42bis and MNP 5 data compression ◆ 7 LED status lights, external volume control
- ◆ Includes fax and data software ◆ FREE! over \$300 in online service offers ◆ 5 year warranty, made in USA



Internal.....	<b>\$219.60</b>	CDW 45115
External.....	<b>\$237.25</b>	CDW 45114

## HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

### NETWORKING PRODUCTS

#### NOVELL Netware V4.1

5 User CD.....	659.95
10 User CD.....	1499.68
25 User CD.....	2219.74
50 User CD.....	2994.24
100 User CD.....	4089.83

#### Netware V3.12

5 User 3.5".....	616.44
10 User 3.5".....	1397.43
25 User 3.5".....	2064.22
50 User 3.5".....	2786.57
100 User 3.5".....	3889.84

Call for Pricing on Novell NetWare upgrades!

#### PERSONAL NETWORK V1.0

1 User.....	59.88
5 User.....	259.52

NOVELL PRICING IS SUBJECT TO CHANGE. PLEASE CALL CDW FOR THE MOST CURRENT PRICING

#### 3Com

3C503 Etherlink II coax.....	159.44
3C509B Etherlink III coax.....	114.14
3C509B Etherlink III coax 5pk.....	479.65
3C509B Etherlink III 10BT.....	111.14
3C509B Etherlink III 10BT 5pk.....	442.36
3C509B Etherlink III combo.....	123.77
3C509B Etherlink III combo 5pk.....	526.78
3C579 Etherlink EISA coax.....	229.91
3C579 Etherlink EISA 10BT.....	229.91
3C1627 12 port Linkbuilder 10BT.....	623.87

#### ARTISOFT

NodeRunner 2000A.....	215.58
NodeRunner 2000T.....	169.05
NodeRunner 2000C.....	169.05
NodeRunner/SI 2000A.....	87.13
NodeRunner/SI 2000T.....	73.62
NodeRunner/SI 2000C.....	73.62
LANTastic V6.0.....	79.50
LANTastic V6.0 5 user.....	329.87
LANTastic V6.0 Starter Kit.....	229.13
Central Station II.....	389.13
Simply LANTastic starter kit.....	163.79
T-Runner 8 port 10BT.....	179.99
T-Runner 12 port 10BT.....	199.82



ASP COMPUTER PRODUCTS, INC.

Multiprotocol print server 10BT HP MID.....	247.75
Multiprotocol print server 10BT pocket.....	287.30
Multiprotocol 2 printer server combo.....	309.61
Multiprotocol 4 printer server combo.....	499.82
SNAP starter kit-2 computers, 1 printer.....	119.10
SNAP add-on transmitter.....	49.50
Fax Authority Solo network fax server.....	499.86

#### IBM

IBM Token Ring 16/4 ISA.....	299.84
IBM Token Ring 16/4 MCA.....	309.90
IBM Token Ring MAU.....	409.88



EtherExpress PRO/10 Fish 10BT.....	115.07
EtherExpress PRO/10 Fish 10BT 5pk.....	482.72
EtherExpress PRO/10 Fish combo.....	115.07
EtherExpress PRO/10 Fish combo 5pk.....	505.98
EtherExpress 16 coax.....	99.33
EtherExpress 16 coax 5pk.....	454.13
EtherExpress 16 10BT.....	99.33
EtherExpress 16 10BT 5pk.....	454.13
EtherExpress 16 10BT 20pk.....	1698.38
EtherExpress MCA 10BT.....	166.52
EtherExpress 16 combo.....	116.77
EtherExpress 16 combo 5pk.....	549.72
EtherExpress Flash 10BT.....	111.88
EtherExpress Flash 10BT 5pk.....	519.62
EtherExpress Flash combo.....	129.79
EtherExpress Flash combo 5pk.....	599.82
TokenExpress 16/4.....	349.94
NetportExpress II COAX.....	387.07
NetportExpress II 10BT.....	368.85

#### MICRODYNE

NE2000T+ ISA 10BT.....	68.64
NE2000T+ ISA 10BT 5pk.....	309.93
NE2000+ ISA coax.....	75.73
NE2000+ ISA coax 5pk.....	342.32
NE2000+3 ISA combo.....	84.40
NE2000+3 combo 5pk.....	379.99
NE3200 EISA coax.....	416.07
NE3200 EISA 10BT.....	416.07

### NETWORKING PRODUCTS

#### SMC

Ultra 16 Ethernet coax.....	94.96
Ultra 16 coax 6pk.....	509.88
Ultra 16 Ethernet 10BT.....	94.96
Ultra 16 10BT 24pk.....	459.23
Ultra 16 Ethernet 10BT.....	1573.71
Ultra 16 Ethernet combo.....	107.71
Ultra 16 combo 6pk.....	568.15
EtherCard+ Elite combo.....	139.57
TigerHub TP6 6 port + AU.....	177.90
TigerHub TP6B 6 port + BNC.....	195.93
TigerHub TP12 12 port + AU.....	379.79
3608 Ethernet 8 port hub 10BT.....	298.85
3512 Ethernet 12-2 port hub 10BT.....	548.55
PC600WS ARCNET coax.....	119.93
PC650WS ARCNET TP.....	119.88
ARCNET 8 port active hub coax.....	229.41
TokenCard Elite 16/4.....	249.88



TC5143 Ethernet coax.....	99.93
TC5143 Ethernet coax 6pk.....	667.25
TC5143 Ethernet 10BT.....	88.59
TC5143 Ethernet 10BT 6pk.....	399.94
TC6242 ARCNET 8-bit coax.....	66.86
TC6245 ARCNET coax.....	179.99
TC6040 ARCNET passive 4 port hub coax.....	39.50
TC5055 Ethernet 8 port hub 10BT.....	339.47
TC4045 Token Ring 16/4.....	303.63

CDW Carries the Complete Line of TCNS Products. Call for Details!

#### TERMINALS

Link MC5 amber/green/white.....	209.88
Link MAX900 amber/green/white.....	309.76
Link MC80 14" color.....	419.50
Wyse 55 amber/green/white.....	223.21
Wyse 80 amber/green/white.....	279.60
Wyse 160 amber/green/white.....	329.88

#### Xircom

PE310BC pocket Ethernet coax.....	309.89
PE310B2 pocket Ethernet coax.....	267.80
PE310BT pocket Ethernet 10BT.....	268.31
PT316CTP pocket Token Ring III.....	455.89
PPX03 Parallel port multiplexor.....	77.80
PS-CE2 PCMCIA Ethernet 10BT.....	209.35
PS-CE2 PCMCIA Ethernet combo.....	255.52
PS-CE2 PCMCIA Token Ring.....	458.43

### TAPE & REMOVABLE MEDIA DRIVES

#### COLORADO MEMORY SYSTEMS INC.

Jumbo 250 internal.....	155.34
Jumbo 350 internal.....	174.29
Jumbo 700 internal.....	266.58
Jumbo 1400 internal.....	369.57
Trakker 250 parallel port.....	289.44
Trakker 350 parallel port.....	328.91
Trakker 700 parallel port.....	444.45
Powertrape 2.4GB SCSI internal.....	937.58
Powertrape 2.4GB SCSI external.....	1077.99
PowerDAT 4GB SCSI internal.....	998.79

#### iomega

Tape 250MB internal.....	136.36
Bernoulli 150MB Insider SCSI.....	413.03
Bernoulli 150MB Insider IDE.....	389.71
Bernoulli 230MB Insider SCSI.....	454.44
Bernoulli 230MB Transportable.....	454.44
230MB cartridge.....	99.81

#### MICROSOLUTIONS

Backpack 3.5" 1.44MB floppy parallel.....	146.32
Backpack 5.25" 1.2MB floppy parallel.....	155.28
Backpack 340MB HD parallel.....	439.75
Backpack 250MB tape backup parallel.....	287.58

### TAPE & REMOVABLE MEDIA DRIVES

#### CONNER

Tape*Stor 250MB internal.....	151.08
Tape*Stor 420MB internal.....	181.17
Tape*Stor 420MB parallel port.....	337.29
Tape*Stor 850MB internal.....	273.25
Tape*Stor 850MB parallel port.....	429.96



TD-250 250MB IDE internal.....	158.63
FS8500 305MB IDE internal.....	313.53
SideCar II 305MB parallel.....	309.44
1200-4 4GB SCSI external.....	1634.49

### MULTIMEDIA AND CD

#### Creative Labs

Digital School House CD 2X kit internal.....	298.95
Edutainment CD 2X kit internal.....	435.14
Game Blaster CD 2X kit internal.....	389.64
Omni CD 3X kit internal.....	299.87
SoundBlaster value edition.....	51.95
SoundBlaster Pro value edition.....	74.95
SoundBlaster 16 value edition.....	98.95
SoundBlaster 16 MCD.....	148.95
SoundBlaster 16 SCSI-2.....	178.95
SoundBlaster 16 ASP MCD.....	178.95
SoundBlaster 16 ASP SCSI-2.....	198.95
SoundBlaster AWE32 value edition.....	228.39
SoundBlaster AWE32.....	298.95

Acoustic Res PP570 speakers 35W.....	249.92
Acoustic Res PP622 spkr/subwoofer.....	209.20
Chinon CDS535 CD-ROM kit internal.....	249.73
Chinon CDX535 CD-ROM kit external.....	347.88
Diamond 4000 Quad CD kit internal.....	381.14
Diamond 5000 Quad CD kit internal.....	479.98
Ensoniq Soundscape wavetable.....	188.88
Jensen JPS35 speakers 5W.....	62.88
Jensen JPS45 speakers 10W.....	115.90
Logitech SoundMan Wave.....	119.49
Microsolutions 2X CD parallel.....	322.44
NEC 2V.....	174.52
NEC 2V Deluxe.....	289.88
NEC 3Xp Plus.....	384.54
NEC 3Xp Plus Kit.....	458.93
NEC 4Xi.....	379.54
NEC 4Xi Kit.....	449.76
NEC 4Xe.....	479.85
NEC 4Xe Kit.....	549.25
NEC 4X Pro.....	697.80
Pioneer DRM604X 4X 6 disc.....	899.00
Pioneer DRM1804X 4X 18 disc.....	1969.85
Plextor 4plex quad external.....	579.58
Plextor 4plex quad internal.....	422.72
Sigma Designs RealMagic Lite.....	289.93
Sigma Designs RealMagic.....	379.89
Sigma Designs RealMagic CD Kit.....	659.22
Sony CDU-55E 2X internal.....	119.84
Sony CDU-55S SCSI 2X internal.....	166.57
Sun Moon Star CD 2X kit internal.....	149.79
Sun Moon Star CD 2X kit internal w/sound.....	211.76
Teac SuperQuad 4X internal.....	244.95
Toshiba 3501 SCSI 4X internal.....	329.75
Toshiba 3501 SCSI 4X external.....	439.48
Turtle Beach Monte Carlo.....	83.85
Turtle Beach Tropez.....	193.67
Turtle Beach Monteray.....	307.77

### DIGITIZERS & SCANNERS



DB III 12X12 4 button.....	248.90
DB III 12X12 16 button.....	248.90
DB III 12X12 pressure pen.....	399.85
Drawing Slate II 12X12 4 button cordless.....	246.98

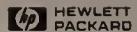
### DIGITIZERS & SCANNERS

#### Canon

IX4015 color scanner.....	698.28
IX 3010 scanner.....	396.13

#### EPSON

ActionScanner ES600C.....	518.63
ES-1200-ProPC.....	1237.36



ScanJet 3P.....	467.40
ScanJet 3P document feeder.....	179.57
ScanJet IICX W/ISA interface.....	959.88
ScanJet IICX document feeder.....	468.50
ScanJet IICX transparency adapter.....	633.26

#### MICROTEK

Scanmaker IIG grayscale.....	395.26
Scanmaker II color.....	523.84
Scanmaker IIS color.....	765.38
Scanmaker IIR color.....	1084.80
ScanMaker III color.....	2409.95
Scanmaker 35T slide scanner.....	978.72

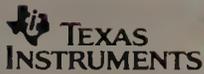
#### Summagraphics.

Summasketch III 12 X 12 16 button.....	289.60
Summasketch III 18 X 12 4 button.....	524.44

### MONITORS

Mag Innovision DX15F.....	339.00
Mag Innovision MX15F.....	457.44
Mag Innovision DX17F.....	639.73
Mag Innovision MXP17F.....	896.97
Mag Innovision MX21F.....	1682.42
Magnavox CM2089 14" .28.....	238.60
Magnavox CM2099 14" .28 NI.....	247.44
Magnavox CM2015 15" 1024.....	298.89
Magnavox CM4015 15" 1280.....	347.81
Magnavox CM4017 17" .31.....	609.25
Magnavox CM4018 17" .28.....	639.83
Magnavox 20CM64 20".....	999.00
NEC 2V 14".....	319.86
NEC XV15 15".....	429.88
NEC XE15 15".....	539.50
NEC XE17 17".....	998.43
NEC XE21 21".....	1979.74
NEC XP15 15".....	659.49
NEC XP17 17".....	1236.86
NEC XP21 21".....	2447.49
Samsung 3 14".....	225.85
Samsung 15GL 15".....	358.75
Samsung 17GL 17".....	859.82
Sony 15SF 15".....	439.27
Sony 17SF1 17".....	879.48
Sony 20SE1 20".....	1895.00
ViewSonic 15G 15".....	387.85
ViewSonic 17G 17".....	719.78
ViewSonic 21PS 21".....	1693.70

### VIDEO CARDS



**NEW Low Price!**



## Texas Instruments TM4000M 100MHz multimedia notebook

- ◆ 3.3 volt SL-enhanced IntelDX4™ 100MHz CPU ◆ 4MB RAM std., 20MB max. ◆ Type III PCMCIA expansion slot
- ◆ High performance 524MB IDE hard drive ◆ Internal 16-bit Sound Blaster® compatible sound card ◆ Integrated Adaptec Fast SCSI-2 adapter ◆ Keyboard-integrated pointing device ◆ NEW! 9.5" active matrix color display
- ◆ Optional CD-ROM docking system

**ONLY! \$4749.87** CDW 48588

## WHY SETTLE FOR LESS?

# CDW® SERVICES YOU BETTER



## NEC MultiSync XV15 15" monitor

- ◆ 15" diagonal (13.8" viewable) flat square CRT ◆ .28mm dot pitch, high-contrast anti-static screen ◆ Maximum resolution: 1280 x 1024, non-interlaced ◆ Refresh: up to 75Hz at 800 x 600, 76Hz at 1024 x 768 ◆ Convenient up-front user controls ◆ Plug And Play (PnP) compatible ◆ VESA DPMS, MPR II and Energy Star compliant ◆ 3 year warranty

**ONLY! \$429.88** CDW 50417

**CDW® CARRIES OVER 20,000 PRODUCTS. IF YOU DON'T SEE IT, CALL!**

### COMPUTERS

#### TOSHIBA

T1910 200MB mono.....	1299.87
T1910CS 200MB dual color.....	1748.85
T1960CS 200MB dual color.....	1967.20
T1960CS 320MB dual color.....	2134.70
T1960CT 200MB act color.....	2599.49
T1960CT 320MB act color.....	2768.82
T2400CS 250MB dual color.....	2399.77
T2400CS 320MB dual color.....	2549.46
T2400CT 250MB act color.....	2879.55
T2400CT 320MB act color.....	3088.96
T2450CT 320MB act color.....	4059.82
T2450CT 500MB act color.....	4349.62
T3600CT 250MB act color.....	3448.73
T4700CT 320MB act color.....	2998.45
T4800CT 500MB act color.....	3999.84
T4850CT 4/75 520MB act color.....	4349.65
T4900CT P75 772MB act color.....	6278.97

#### AST

Ascentia 910N 4/50D 340MB pas color.....	2955.16
Ascentia 910N 4/75 510MB pas color.....	3445.25
Ascentia 910N 4/75 510MB act color.....	4709.82
Advantagel 6000 4/66 420MB CD.....	1534.73
Ascentia 910N 4/75 710MB act color.....	4999.98
Advantagel 8000 4/66 540MB CD.....	1699.83
Advantagel 8000 5/60 540MB CD.....	1965.60
Advantagel 8000 5/90 730MB CD.....	2406.14
Bravo MS 4/66 270MB.....	1519.57
Bravo LC 4/100 270MB.....	1769.83
Bravo MST 5/90 540MB.....	2279.82

#### Canon

Innova Media 4/66 420MB MT.....	1389.84
Innova Media 5/60 420MB MT.....	1799.00
Innova Media 5/90 540MB MT.....	2259.22

#### IBM ThinkPad Portables

360C 4/33S 170MB act color.....	1999.00
360C 4/33S 340MB act color.....	2399.00
360CSE 4/50D 540MB pas color.....	3449.00
360CE 4/50D 340MB act color.....	3099.00
360CE 4/50D 540MB act color.....	3449.00

#### PC300 Series desktops

PC330 4/50 8MB, 364MB.....	1399.00
PC330 4/66 8MB, 364MB.....	1689.00
PC330 5/60 16MB, 540MB.....	2743.00
PC350 4/66 8MB, 540MB.....	1895.00
PC350 4/100 8MB, 540MB.....	2475.00
PC350 5/60 8MB, 364MB.....	2299.00

#### NEC

Versa V 4/50 250MB dual color.....	2449.77
Versa V 4/50 250MB act color.....	2989.77
Versa V 4/50 340MB act color.....	3134.09
Versa V 4/50 540MB act color.....	3519.93
Versa S 4/33S 210MB mono.....	1305.82
Versa S 4/33S 210MB pas color.....	1449.92
Versa S 4/50 260MB act color.....	2411.36
Versa M 4/75 250MB dual clr.....	3149.81
Versa M 4/75 340MB dual clr.....	3329.55
Versa M 4/75 340MB act clr.....	3929.95
Versa M 4/75 340MB true clr.....	4249.76
Versa M 4/75 540MB act clr.....	4347.73
Versa M 4/75 540MB hi-res clr.....	4734.09
Versa M 4/100 340MB act color.....	4298.86
Versa M 4/100 810MB act color.....	5209.86
Versa M 4/100 540MB hi-res color.....	5068.18
Versa M 4/100 540MB true color.....	4977.27
Versa M 4/100 810MB hi-res clr.....	5599.84
Ready 4/33S 270MB CD.....	1336.21
Ready 4/66 340MB CD.....	1486.05
Ready 4/66M 420MB 2X CD.....	1525.19
Ready 5/60M 420MB 2X CD.....	1899.94

#### PACKARD BELL

Force 52CD 4/50SX 420MB MM.....	1449.17
Force 54CD 4/66 420MB MM.....	1449.17
Force 57CD 4/66 540MB MM.....	1659.84
Force102CD 5/90 540MB MM.....	2158.42

### COMPUTERS

#### TEXAS INSTRUMENTS

TM4000M 4/50SX 200MB dual color.....	2406.14
TM4000M 4/50SX 340MB act color.....	3139.85
TM4000M 4/50DX 340MB dual clr.....	2576.68
TM4000M 4/50DX 455MB act clr.....	3259.03
TM4000M 4/75 344MB act color.....	4109.66
TM4000M 4/75 455MB dual color.....	3429.68
TM4000M 4/100 524MB act color.....	4749.87

### DOT MATRIX & LASER PRINTERS

#### OKIDATA

184 Turbo.....	219.14	ML591.....	579.86
ML320.....	304.45	Pacemark 3410.....	1219.49
ML321.....	427.40	OL400E.....	399.98
ML380.....	214.95	OL410E.....	548.89
ML395.....	987.32	OL410E/PS.....	548.89
ML395C.....	1039.74	4ppm 600dpi.....	769.78
ML520.....	369.82	OL810.....	905.50
ML521.....	495.18	BJ100.....	209.99
ML590.....	429.51		

#### Canon

BJ10SX.....	244.88	BJ230.....	388.00
BJ200E.....	229.86	BJC600e color.....	465.18
BJC4000 720dpi + color.....	359.78		
LBP430 300dpi 4ppm laser.....	579.00		

#### EPSON

AP2250.....	96.55	DFX5000 Plus.....	1354.86
AP3250.....	146.31	DFX8000.....	2259.45
AP3260.....	167.82	Stylus 300.....	186.85
LX300.....	165.01	Stylus 400.....	198.70
FX870.....	274.56	Stylus 800+.....	209.88
FX1170.....	364.00	Stylus 1000.....	434.44
AP5000+.....	229.71	Stylus Color.....	509.53
LO1070+.....	369.85	ActionLaser 1100.....	383.62
LO870.....	454.44	ActionLaser 1400.....	669.84
LO1170.....	623.51	ActionLaser 1500.....	458.82
LO2550.....	916.99	ActionLaser 1600.....	757.45

### IBM LEXMARK LASER PRINTERS

WinWriter 100 inkjet.....	283.43
WinWriter 200 laser.....	453.61
WinWriter 400 laser.....	755.03
WinWriter 600 laser.....	999.00
ValueWriter 300 (4037 5E 5PPM).....	644.87
ValueWriter 600 laser.....	815.87
Optra R 600dpi laser.....	1426.89
ExecJet IIc.....	319.83

#### Digital Corporation

DECwriter 500i inkjet.....	262.47
Color upgrade for 500i.....	44.29
DECLaser 1152 4 ppm.....	629.85
DECLaser 5100 8 ppm.....	1147.26

#### Panasonic

1150.....	133.49
1624.....	385.20
2023.....	182.27
2130.....	204.40
2135 Color.....	247.43
2624.....	409.49
3123.....	249.00
4400 Laser.....	454.90
5400 Laser.....	495.53

#### TEXAS INSTRUMENTS

microMarc Color inkjet.....	334.76
microWriter PS23.....	639.65
microLaser Pro 600 PS23.....	1197.02
microLaser Pro 600 PS65.....	1524.25
microLaser Pro E.....	1395.49

#### HEWLETT PACKARD

OfficeJet inkjet fax/copier/pntrdr.....	779.59
DeskJet 540.....	289.75
DeskJet 560C.....	479.89
DeskJet 1200C.....	999.88
DeskJet 1200C PS.....	1599.49
LaserJet 4L.....	529.57
LaserJet 4P.....	959.47
LaserJet 4MP.....	1387.21
LaserJet 4 plus.....	1449.96
LaserJet 4SI.....	2998.95
LaserJet 4V.....	1967.38
LaserJet Color.....	5929.62

#### COSTAR

LabelWriter XL DOS/Win.....	139.86
LabelWriter XL Plus DOS/Win.....	224.89

### HARD DRIVES & CONTROLLERS

#### Maxtor

270MB Fast-ATA.....	169.54
345MB SCSI-2.....	189.88
420MB Fast-ATA.....	202.51
540MB Fast-ATA.....	232.84

#### MICROPOLIS

2217 1.7GB SCSI-2.....	1038.46
3243 4.3GB SCSI-2.....	1759.26
1936 3GB SCSI-2.....	1299.87

#### CONNER

425MB IDE.....	214.29
540MB IDE.....	249.80
850MB Fast-ATA.....	317.86
1.27GB Fast-ATA.....	517.97

All Conner drives listed include complete installation hardware and software.

#### Seagate

341MB Fast-ATA.....	238.79
428MB Fast-ATA.....	224.08
545MB Fast-ATA.....	225.36
722MB Fast-ATA2.....	299.71
1GB Fast-ATA2.....	454.52
1.0GB SCSI-2.....	584.36

#### WESTERN DIGITAL

Caviar 420MB EIDE.....	208.06
Caviar 540MB EIDE.....	254.81
Caviar 730MB EIDE.....	279.08
Caviar 1GB EIDE.....	449.14

#### CONTROLLERS

Acculogic SIDE-3+ w/on-board BIOS.....	48.90
Acculogic SIDE-4+ w/par, 2ser, game.....	35.06
Acculogic SIDE-4VL EIDE, 16550 serial.....	89.76
Acculogic ISApport SCSI-2.....	121.60
Adaptec AVA1505 SCSI-2 CD Kit.....	54.95
Adaptec AHA1542CF SCSI-2.....	265.45
Adaptec AVA2825 VLB SCSI-2/EIDE.....	166.87
Adaptec 2842 VLB SCSI-2.....	249.83
Promise 2300+ EIDE VLB.....	59.87

### MODEMS & COMMUNICATIONS

#### Robotics SPORTSTER MODEMS

V.34 28.8K internal w/fax.....	219.60
V.34 28.8K external w/fax.....	237.25
14.4K internal w/fax.....	98.45
14.4K external w/fax.....	114.79

#### COURIER MODEMS

V.34 internal w/fax.....	386.95
V.34 external w/fax.....	422.32

#### Hayes

ACCURA 144 internal w/fax.....	93.99
ACCURA 144 external w/fax.....	111.18
ACCURA 288 V.34 internal w/fax.....	188.13
ACCURA 288 V.34 external w/fax.....	228.44
OPTIMA 144 external w/fax.....	374.30
OPTIMA 144 pocket w/fax.....	296.93
OPTIMA 288 V.34 internal w/fax.....	365.14
OPTIMA 288 V.34 external w/fax.....	421.54

#### PRACTICAL PERIPHERALS

14.4 internal w/fax.....	89.96
14.4 Mini Tower w/fax.....	109.02
V.34 28.8 internal w/fax.....	196.59
V.34 28.8 Mini Tower w/fax.....	209.64
Practical Pro Series.....	CALL!

#### BOCA

Online Express 14.4 internal w/fax.....	64.25
Online Express 14.4 external w/fax.....	79.78
V.34 28.8 internal w/fax.....	169.89
V.34 28.8 external w/fax.....	209.90

#### MICROCOM

Deskport ES 14.4.....	146.39
Deskport Fast ES V.FC 28.8.....	179.94
Deskport Fast EP V.FC 28.8.....	244.30

### BATTERY BACKUP AND UPS

#### American Power Conversion

BackUPS 280.....	99.53
BackUPS 400.....	144.26
BackUPS 450.....	175.81
BackUPS 600.....	243.00
BackUPS 900.....	345.76
BackUPS 1250.....	449.29
SmartUPS 400.....	299.69
SmartUPS 600.....	363.38
SmartUPS 900.....	514.61
SmartUPS 1250.....	644.24
SurgeArrest Network.....	33.25
SurgeArrest Pro.....	29.45
SurgeArrest Network + Phone.....	49.98
Line-R 600.....	119.09

#### Tripp Lite

BC250.....	94.97
BC400.....	138.91
BC500.....	173.09
BC600 LAN.....	231.43
BC750 LAN.....	289.03
BC900 LAN.....	327.59
BC1250 LAN.....	426.10

#### Tripp Lite Smart UPS Series

SMART 250 LAN.....	218.97
SMART 400 LAN.....	262.87
SMART 500 LAN.....	279.44
SMART 600 LAN.....	289.16
SMART 750 LAN.....	348.82
SMART 900 LAN.....	422.58
SMART 1250 LAN.....	555.73
Isobar 4 OUTLET.....	38.95
Isobar 6 OUTLET.....	46.38

### PCMCIA

3Com Etherlink IIIB combo.....	239.70
Hayes OPTIMA 144 w/fax.....	189.82
IBM Token Ring 16/4.....	412.46
Linksys Ethernet combo.....	165.74
Megahertz 14.4 data/fax.....	179.48
Megahertz 14.4 Gold data/fax XJack.....	198.89
Megahertz V.34 XJack.....	385.61
National Semi NE4100T ethernet 10BT.....	172.96
New Media Bus Toaster SCSI-2 host.....	229.42
New Media Wave Jammer sound card.....	248.88
Simple Tech 14.4K data/fax.....	145.51
Adaptec APA1460 SCSI-2.....	247.94
Turtle Beach Audio Advantage.....	129.38
USR Sportster 14.4K.....	189.89
USR Sportster V.34.....	368.67
Xircor Ethernet 10BT.....	209.56
Xircor Ethernet combo.....	255.59
Xircor Ethernet+modem 10BT.....	477.02
Xircor Ethernet+modem combo.....	547.38
Xircor Token Ring 16/4.....	449.18

### INTEL OVERDRIVE

Intel OverDrive DX2/50.....	125.68
Intel OverDrive DX2/66.....	188.68
Intel OverDrive DX4/75.....	238.34
Intel OverDrive DX4/100.....	309.88

### MEMORY UPGRADES

#### simple TECHNOLOGY

Lifetime Warranty!

AST Ascentia 900 4MB.....	CALL!
AST PowerExec 4/33SL 4MB.....	CALL!
AST PowerExec 4/33SL 16MB.....	CALL!
HP LaserJet 4L 1MB.....	CALL!
HP LaserJet 4P 4MB.....	CALL!
HP LaserJet 4 4MB.....	CALL!
HP LaserJet 4 8MB.....	CALL!
IBM ThinkPad 500 4MB.....	CALL!
IBM ThinkPad 500 8MB.....	CALL!
IBM ThinkPad 755 4MB.....	CALL!
IBM ThinkPad 755 8MB.....	CALL!
Toshiba 1900-4600 4MB.....	CALL!
Toshiba 1900-4600 8MB.....	CALL!
Toshiba 1900-4600 16MB.....	CALL!
Toshiba 4700/4800 32MB.....	CALL!
NEC Versa 4MB.....	CALL!
NEC Versa 8MB.....	CALL!

WE WILL TRY TO MATCH OR BEAT ANY ADVERTISED PRICE. CALL FOR LATEST PRICING!!

WE ACCEPT PO'S FROM QUALIFIED FIRMS

# M E M O R Y

SECURITY WILL CALL WINDOW NOW OPEN NO SURCHARGE FOR MC, VISA AE & DISCOVER

## CACHE MEMORY

	12NS	15NS	20NS	25NS
8Kx8	6.50	8.00	8.00	5.50
32Kx8	19.00	9.00	8.00	7.00
32Kx8 (3.3V)	-	-	14.50	-
64Kx1	-	11.00	9.00	8.00
64Kx4	-	11.00	9.00	8.00
16Kx4	-	8.00	7.00	6.00
128Kx8	-	59.00	39.00	29.00

## Individual D-RAM Chips

MEMORY FOR IBM & APPLE	50NS					60NS					70NS					80NS					100NS				
	1M	2M	4M	8M	16M	1M	2M	4M	8M	16M	1M	2M	4M	8M	16M	1M	2M	4M	8M	16M	1M	2M	4M	8M	16M
1Megx1	-	6.85	8.45	9.95	4.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1Megx4	-	49.00	39.00	38.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1Megx4 (Zip Pk)	-	24.00	22.00	21.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256x4 (Page Dip)	-	7.25	6.75	6.50	5.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256x4 (Static Dip)	-	9.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256x4 (Page Zip)	-	9.25	9.00	8.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256x4 (Video Zip)	-	12.95	11.95	9.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256x1 (SD)	-	29.00	24.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256x1	-	3.25	2.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64x1	-	-	-	3.75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64x1	-	-	-	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256x16 SDJ	-	49.00	39.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
256x16 Video Zip	-	49.00	39.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## INTEL Math Chips

MODEL	PRICE
8087	39.00
8087-2	45.00
8087-1	79.00
8087-XL	49.00
80387-16 DX	39.00
80387-20 DX	44.00
80387-20 DX	74.00
80487-SX (Does All)	229.00
Intel SX (Does All)	69.00
Intel SL Mobil	39.00
Intel 16SX	49.00
Intel 20SX	39.00

Lowest price on Intel overdrive chips

## AMBRA

Model	Capacity	Price
Ambra Pentium-60	4/8/16 Meg	175.00/369.00/599.00
Ambra NC 4255L	2/4/8 Meg	109.00/209.00/449.00
Ambra N Series	4/8/12/16 Meg	189.00/349.00/509.00/679.00
Ambra SN Series	4/16 Meg	189.00/699.00
Ambra Sprinta SLC II	2/8 Meg	89.00/319.00
Ambra N-7S, N-100	4/8/16	189.00/369.00/659.00

## CYRIX DRx2 386 to 486 Upgrade

Clock Doubler

Model	Price
CX486 DRx2-25/50	229.00
CX486 DRx2-33/66	279.00
CX486 SRx2 25/50	229.00

- Single chip upgrade solution
- Clock doubling technology
- Compatible with industry standard 386DX CPU socket
- Compatible with DDS, Windows, 3.X, OS/2 1.3 end 2.x
- Uses industry standard math chip
- Easy to install—about 15 minutes.

## DIMM MODULES

4Meg/8Meg/16Meg	194/369/799
-----------------	-------------

## SIMM MODULES (Add \$5.00 for SIPP)

Model	40NS	50NS	60NS	70NS	80NS	100NS
1Meg x 9 (3 chip)	-	48.00	45.00	42.00	40.00	-
1Meg x 9 (9 chip)	-	49.00	46.00	43.00	41.00	39.00
4Meg x 9	-	154.00	149.00	139.00	-	-
16Meg x 9 (9 chip)	-	-	-	669.00	-	-

## 72 PIN SIMMS (EISA)

Model	Price
256 x 36 1 mg	69.00
512 x 36 2 mg	94.00
1 meg x 36 4 mg	184.00
2 x 36 8 mg	359.00
4 x 36 16 mg	569.00
8 x 36 32 mg	1149.00
16 x 36 64 mg	2349.00
1 x 32 4 mg	159.00
2 x 32 8 mg	329.00
4 x 32 16 mg	489.00

## CYRIX FASMATH PROCESSOR

Programs executed up to 3X faster • Plug & object code compat. w/Intel  
 83D87-40MHz - 79.00    83D87-33MHz - 49.00    83S87-25SX Ver. - 49.00  
 83S87-33SX - 65.00    PC Week™ rated #1 over all math chips  
 5 Year Warranty • "All Downward Compatible"

## AST MEMORY

MODEL	AMT. UPGRADED	AST PART #	PRICE
Bravo LC 4/25S, 4/33, 4/33S, 4/50d, 4/66d	4Meg	500987-002	174.00
	8Meg	500987-003	330.00
	16Meg	500987-004	619.00
	32Meg	500987-005	1399.00
Premium 486/25, 25E, 33, 33E	4Meg	500780-001	398.00
Premium 386/33TE, 486/25TE, 33TE	4Meg	500780-004	189.00
Prem. Serv., Prem II 386SX/20, 25	1Meg	500780-003	59.00
Prem. II 386/25, 386/33, 486/33, 486SX/20	8Meg	501159-002	379.00
Premium 386/33T, Prem. 386SX/16	4Meg	501159-004	789.00
Prem. II 386SX/20, 25	4Meg	501159-004	1469.00
Premium 386/25, 33, 386/33T, 386SX/16	1Meg	501159-005	3111.00
Premila 4/33S, 4/33, 4/50d, 4/66d	8Meg	500818-001	179.00
Premia	16Meg	-	-
Premia	32Meg	-	-
Premia	64Meg	-	-
AST Cupid Bd	0-32Meg	-	-

## ZENITH MEMORY MODULES

MODEL	AMT. UPGRADED	AST PART #	PRICE
Z386/33, 25, 20, 33E	1Meg	ZA3800ME	59.00
Z386/33, 25, 20, 33E, 486/25E	4Meg	ZA3800MK	180.00
Z386SX	2Meg	Z-605-1	119.00

## MAGNAVOX

286/386SX-16, 386SX-20, 486SX-20 & 386-33 all are 72PIN SIMM.	
1MEG - 59.00    4MEG - 180.00    8MEG - 349.00    16MEG - 659.00	

## MEMORY BOARDS

IBM Compatibles & PS/2

### BOCA AT PLUS

16 BIT MEMORY BD. FOR 286, 386 AT • 0K-8Meg 8d. 4.0 LIM Compat. • New 5 Yr. Warr. Convnt., Expend & Extnd. Memory • Supports ODS, OS/2, LIM/EMS & EEMS • Versatile Split Memory Addressing • Operates w/CPU Speeds to 33 MHz • Supports Desqview, Multitask operations • Bd. made by Boca Research, AT Plus  
 0K - \$84.00    2Meg - \$159.00    4Meg - \$239.00    8Meg - \$399.00

### BOCA XT 8 BIT BUS

Expanded memory for XT • Lim 4.0 compat. 0-2Meg • Uses 256x1-100  
 0-K - \$99.00    1Meg \$189.00    2Meg - \$229.00

## IBM P/S2 32BIT EXPANSION BD.

Model	Price
0-16Meg, Ext. Expend. Memory 8d. for P/S2 70, 80, 90, Lim 4.0	
0Meg	\$139.00
2Meg	\$238.00
4Meg	\$319.00
8Meg	\$499.00
16Meg	\$659.00

## PS/2 MCA 0-8MEG EXPANSION BD.

0-8Meg Extended and/or Expanded Memory for all IBM P/S2 Models 50, 50Z, 60, 55SX, 65SX, 16 Bit, 4.0 LIM Compat.  
 0K - 119.00    2Meg - 199.00    4Meg - 283.00    8Meg - 449.00

## CHANGE YOUR 286 TO A 486

• Features IBM® 486 SLC2 Processor Clock 286 (CPU) PLCC (Type) 25/50 MHz 299.00  
 Doubling, (25/50 or 33/66), 16K of Internal Cache 286 (CPU) PGA (Type) 25/50 MHz 239.00  
 • Simply Replaces existing 286 Processor\*

## IBM PS/1, PS/2 MEMORY MODULES

IBM PART NO.	WORKS WITH MODEL NO.	PRICE
30F3248 (512K)	30-286	37.00
30F3360 (2Meg)	30-286, 25-286, 50 MTHR Bd	104.00
64S0375 (1Meg)	80-041	79.00
64S0379 (2Meg)	80-111, 311-121, 321, 081, 161	84.00
64S0604 (4Meg)	80-A21, A-61, 80-A31, 80-111, 80-311	189.00
64S0604/92G7196 (2Meg)	70-061, E61, 121, 50Z, 55SX, 65SX, P-70	99.00
64S0608 (2Meg)	55LS, 65LS, X-Station 120 & 130, 35SX, 35LS, 40SX	90.00
78X8955 (128K)	70-A21, A-61, 8-21, B-61, 35SX, 35LS, 40SX, Val Pt. 325T	35.00
34F2933 (4Meg)	35SX, 40SX, 55SX, 65SX, 55LS, 65LS	175.00
87F9977/92G7199 (4Meg)	55SX, 55LS, 65SX, 40SX, 35SX, 35LS	175.00
1057035 (S12K)	P/S1-286	49.00
92F9935 (2Meg)	P/S1 & P/S1/386SX-2121	109.00
92F9964 (4Meg)	P/S1 & P/S1/386SX, Model-2121	189.00
92G7200 (4Meg)	PSI Expert, Consultant, Willow	175.00
92G7201, 72G3131 (4Meg)	Value Point Performance, PC Server 4/66	339.00
73G3132/92G7203 (8Meg)	Value Point Performance, PC Server 4/66	609.00
60G1622/92G7204 (16Meg)	Value Point Performance, PC Server 4/66	1239.00
92G7205 (32Meg)	Value Point Performance, PC Server 4/66	90.00
64S0902 (2Meg)	S6, S7, S7SX, 90, 95, P-7S, S7SLC	175.00
64S0128/92G7200 (4Meg)	Value Point 77 486DX2, 486SX, SVR 85	339.00
64S0129/92G7208 (8Meg)	57SX, 90, 95, P-7S, S7SLC, 58, 58SLC, P/S1, 386SX	339.00
64S0130/92G7202 (8Meg)	Mod-2123, 2133, 2155, Val Pt. 77 486SX2, 486SX, SVR85	339.00
64S1158 (4Meg ecc)	35SX, 40SX	339.00
64S1159 (8Meg ecc)	56, S7, S7SX, 90, 95, P-7S, S7SLC	339.00
	Value Point 77 486DX2, 486SX, SVR 85	339.00
	486, 95XP, 95A (install in pairs)	199.00
	486, 95XP, 95A (install in pairs)	399.00
	9595 OPT	749.00

## IBM NOTEBOOK & LAPTOP MEMORY

Model	Price
8189098 (4Meg)	209.00
8189098 (8Meg)	389.00
8189113 (16Meg)	869.00
79F0999 (2Meg)	103.00
79F1000 (4Meg)	189.00
79F1001 (8Meg)	349.00
Hard Drive (524Meg, 710 Meg.)	949.00/1149.00
07G1415 (4Meg)	199.00
07G1418 (8Meg)	349.00
85G0094 (16Meg)	749.00
4Meg/16Meg	209.00/849.00
4Meg/16 Meg w/Adap	319.00/999.00
07G1420 (4Meg)	209.00
07G1421 (8Meg)	389.00
60G0378 (8Meg)	319.00
60G0379 (16Meg)	569.00
92F8804 (2Meg)	109.00

## COMPAQ MEMORY MODULES

MODEL	AMT. UPGRADED	CMPO PART #	PRICE
DeskPro 386/33, 386/33L, 486/25, 486/33L, 486/SOL, System Pro	2Meg Module	115144-001	109.00
DeskPro 386/33L, 486/33L	8Meg Module	115651-001	399.00
DeskPro 386/25, 386/20	32Meg Module (Exp Bd)	116568-001	1399.00
	1Meg Module	116569-001	279.00
DeskPro 386S-16MHz	4Meg Module	113131-001	79.00
	1Meg Exp Bd	113132-001	199.00
	4Meg Exp Bd	113633-001	149.00
	1Meg Module	113634-001	279.00
	1Meg Module	113646-001	79.00
	1Meg Exp Bd	112534-001	199.00
DeskPro 386/20E	1Meg Exp Bd	113644-001	149.00
DeskPro 386/25E	4Meg Exp Bd	113645-001	279.00
	1Meg Module	113131-001	79.00
	4Meg Module	113132-001	199.00
DeskPro 286N, 386N, 386SX20, all "M" series, system LT series, all "T" series	1Meg Module	118668-001	59.00
	2Meg Module	118669-001	89.00
	4Meg Module	118690-001	169.00

# MEMORY DISCOUNT WAREHOUSE

1-800-636-6792 HOURS: E.S.T. 9:00-9:00 FAX 1-215-922-0116

**GOVERNMENT, EDUCATIONAL, CORPORATE & INTERNATIONAL ORDER SPECIALISTS**

- 215-922-0050 EXPRESS International Order Line
- 215-922-4640 EXPRESS Technical Support
- 215-922-0116 EXPRESS FAX - Domestic - International
- 800-636-6792 EXPRESS Order Line - TOLL FREE
- Dedicated to serving Purchasing Agents Worldwide
- Pre-Approved Open Accounts for all Fortune 2000

AMERICAN EXPRESS VISA MASTERCARD DISCOVER

**NO SURCHARGE**

**BEST BUY 1995!**

## HARD DRIVES

### Seagate

**FACTORY NEW 1-5 YEAR WARRANTY**

13390A	341MB	13MS	IDE	\$186
13870A	545MB	12MS	IDE	217
13860A	722MB	12MS	IDE	289
13120A	105GB	9MS	IDE	419
131200N	105GB	9MS	SCSI-2	525
131230N	100GB	10MS	SCSI-2	559
119300N	17GB	9MS	SCSI-2	959
112400N	2.1GB	9MS	SCSI-2	949
124300N	2.1GB	10MS	SCSI-2	999
140400N	3.5GB	11MS	SCSI-2	1850
115230N	4.2GB	9MS	SCSI-2	1879
140600N	9.0GB	11MS	SCSI-2	3299

**CSI-BARRACUDA - 7200 RPM**

111950N	1.6GB	8MS	SCSI-2	1109
123550N	2.1GB	8MS	SCSI-2	1109
115150N	4.2GB	8MS	SCSI-2	2199

### IBM STANDARD

94G2441	527MB	12MS	SCSI	\$265
94G8512	728MB	12MS	SCSI	350
94G3184	106GB	10MS	SCSI	559
70G8492	106GB	8MS	SCSI	699
70G8493	204GB	9MS	SCSI	1129
90F0780	4.25GB	11MS	SCSI	2149
70G8487	270MB	12MS	IDE	177
70G8488	364MB	12MS	IDE	193
70G8489	527MB	12MS	IDE	246
70G8511	728MB	12MS	IDE	325
70G8512	105GB	8MS	IDE	569

### IBM PS/2 INTERNAL DRIVE KITS

30-8086, 30-286, 25-6086, 25-286

210MB	IDE	\$299
420MB	IDE	329
540MB	IDE	499
1.2GB	SCSI	799

### MICROCHANNEL CONTROLLER

IDE 169 SCSI-2 179

MC2210A	1.05GB	10MS	IDE	\$845
MC2217A	1.75GB	10MS	IDE	875
MC4110	1.05GB	9MS	SCSI-2	650
MC2217	1.75GB	10MS	SCSI-2	875
MC4221	2.05GB	8.5MS	SCSI-2	1089
MC1936	3.0GB	11MS	SCSI-2	1399
MC3243	4.3GB	8MS	SCSI-2	1989
MC1991	9.0GB	11MS	SCSI-2	3179
MC2217AV	1.7GB	10MS	SCSI-AV	962
MC4221AV	2.05GB	8.5MS	SCSI-AV	1179
MC1936AV	3.0GB	11MS	SCSI-AV	1545
MC3243AV	4.3GB	8.5MS	SCSI-AV	2099
MC1991AV	9.0GB	11MS	SCSI-AV	3329

### IBM PS/2

PS/2 50, 50Z, 60, 70, 80, P70, 55SX

200MB	15MS	IDE	\$349
420MB	13MS	IDE	399
540MB	12MS	IDE	499
540MB	12MS	SCSI	499
1.2GB	12MS	SCSI	799

### WESTERN DIGITAL

**FACTORY NEW-3 YEAR WARRANTY**

AC2540	425MB	12MS	IDE	\$183
AC2540	540MB	11MS	IDE	217
AC2700	730MB	10MS	IDE	274
AC2850	850MB	10MS	IDE	309
AC3100	1.1GB	10MS	IDE	399
AC3120	1.2GB	10MS	IDE	CALL

### CONNER

**FACTORY NEW-1 YEAR WARRANTY**

CFA540A	420MB	13MS	IDE	\$186
CFA540A	540MB	12MS	IDE	219
CFA650A	850MB	10MS	IDE	305
CNR1275A	1.3GB	10MS	IDE	475
CFP1080S	1.06GB	9MS	SCSI-2	543
CFP2105S	2.1GB	9MS	SCSI-2	1015
CFP2107S	2.1GB	9MS	SCSI-2	1219
CFP2407S	4.2GB	9MS	SCSI-2	1425

### FUJITSU

**FACTORY NEW-5 YEAR WARRANTY**

M2694	530MB	13MS	IDE	\$208
M2684S	630MB	12MS	SCSI	224
M2694ESA	1.2GB	10MS	SCSI	480

### Quantum

**FACTORY NEW-2 YEAR WARRANTY**

L7365A	365MB	11MS	IDE	\$176
T8420A	420MB	12MS	IDE	180
M180A	540MB	11MS	IDE	222
L7540A	541MB	11MS	IDE	222
L7370A	731MB	11MS	IDE	274
L7365S	365MB	11MS	SCSI-2	209
L7540S	540MB	14MS	SCSI-2	240
L7541S	541MB	11MS	SCSI-2	240
L7370S	731MB	11MS	SCSI-2	285
JMP1040S	1.06GB	9MS	SCSI-2	525
JMP1400S	1.4GB	9MS	SCSI-2	699
IMP2180S	2.1GB	9MS	SCSI-2	899
CP2140S	2.1GB	8MS	SCSI-2	1289
GP4280S	4.2GB	8MS	SCSI-2	2039

### MOUSES

2 BUTTON	IDE	\$20
3 BUTTON	IDE	35
MICROSOFT	IDE	35

### IBM STANDARD

**CONNER**

CP10F00	1.0GB	10MS	3.5"	\$799
---------	-------	------	------	-------

**Seagate**

ST31200W	1.05GB	9MS	3.5"	\$749
ST12550W	2.13GB	BMS	3.5"	1329
ST115150W	4.29GB	BMS	3.5"	2499

### MICROPOLIS

MC4221	2.05GB	8.5MS	LP3.5	\$1229
MC3243	4.30GB	8.5MS	3.5	2169
MC1991	9.0GB	10MS	FH	3359

### WIDE SCSI HARD DRIVES

**IBM STANDARD**

0862512W	1.05GB	8 BMS	LP3.5	\$725
08644W	2.04GB	9MS	3.5"	1279
066456H	4.25GB	11MS	FH	2279

**CONNER**

CP10F00	1.0GB	10MS	3.5"	\$799
---------	-------	------	------	-------

**Seagate**

ST31200W	1.05GB	9MS	3.5"	\$749
ST12550W	2.13GB	BMS	3.5"	1329
ST115150W	4.29GB	BMS	3.5"	2499

### NOTEBOOK HARD DRIVES

**TOSHIBA**

NOTEBOOK DRIVES/1 YEAR WARRANTY ON 2.5"				
MX1522FC	120MB	15MS	IDE	\$199
HDDN8259	258MB	15MS	IDE	295
MW232FC	340MB	15MS	IDE	344
MW242FC	524MB	15MS	IDE	524
MW252FC	700MB	15MS	IDE	880

**Seagate**

IBMH0N520	520MB	IDE	650
-----------	-------	-----	-----

**Seagate**

ST9145AG	128MB	16MS	\$275
ST150AG	128MB	17MS	275
ST9235AG	210MB	16MS	275
ST9385AG	340MB	16MS	375
ST950AG	455MB	16MS	429
ST965AG	524MB	16MS	529

### REMOVABLE OPTICAL DRIVES

**SIYOUQUEST**

REMOVABLE CARTRIDGE DRIVES				
SO555	44MB INTERNAL/EXTERNAL	\$235	\$380	
SO510C	88MB C INTERNAL/EXTERNAL	299		
88MB C EXTERNAL W/CAI & CABLES		424		
SO105S	105MB SCSI	279		
105MB EXTERNAL W/CAI		399		
270MB INTERNAL/EXTERNAL FOR PC		349	449	
270MB EXT FOR MAC/ATOS		499		
270MB CARTRIDGE SINGLE'S PACK		85	405	
CARTS 4AMB/8MB/105MB		63	95	69
500 200MB INTERNAL		399		
500 200MB EXTERNAL W/CAI		599		

**IBM**

128MB, 3.5" REWRITABLE OPTICAL DRIVES				
Internal/External		\$779	\$899	
1.3GB, 5.25" REWRITABLE OPTICAL DRIVES		\$299	\$659	
Internal/External		\$2199	\$2999	

**MAXOPTIX**

1-6G & 1.3GB REWRITABLE OPTICAL DRIVES				
TAHITI III 1MB INT/EXT		\$2,259	\$2,479	
TAHITI III 1MB INT/EXT		2,399	2,569	
1.1/3GB CARTRIDGE GLASS/POLY		179	199	

**HEWLETT PACKARD**

1-6G & 1.3GB REWRITABLE OPTICAL DRIVES				
CT1781 1.3GB INTERNAL/EXTERNAL		\$2,199	\$2,429	
1.3GB OR 650 MB CARTRIDGE			145	

**FUJITSU**

REWRITABLE EXTERNAL OPTICAL DRIVES				
230MB 3.5" OPTICAL DRIVE INTERNAL W/CAI		\$799		
230MB CARTRIDGE 1-PACK 566 5-PACK		319		

**RICOH**

128MB, 3.5" Rewritable Optical Drives				
Int. (RD 3012E) Ext. w/CAI (EXT3012)		\$479	\$629	
1.3GB, 5.25" Rewritable Optical Drives				
Int. (RD 5061E) Ext. (EXT 5061)		\$1699	\$1999	

### Maxtor

**FACTORY NEW-2 YEAR WARRANTY**

7420AV	420MB	12MS	IDE	\$184
7540AV	540MB	12MS	IDE	214
7850AV	853MB	12MS	IDE	300
71260AV	853MB	12MS	IDE	459
XT540A	540MB	8MS	SCSI	345
XT540S	540MB	8MS	SCSI	345
3X410	105MB	MBL MAX	PCMCIA	360

### CONNER

**FACTORY NEW-1 YEAR WARRANTY**

CFA540A	420MB	13MS	IDE	\$186
CFA540A	540MB	12MS	IDE	219
CFA650A	850MB	10MS	IDE	305
CNR1275A	1.3GB	10MS	IDE	475
CFP1080S	1.06GB	9MS	SCSI-2	543
CFP2105S	2.1GB	9MS	SCSI-2	1015
CFP2107S	2.1GB	9MS	SCSI-2	1219
CFP2407S	4.2GB	9MS	SCSI-2	1425

### FUJITSU

**FACTORY NEW-5 YEAR WARRANTY**

M2694	530MB	13MS	IDE	\$208
M2684S	630MB	12MS	SCSI	224
M2694ESA	1.2GB	10MS	SCSI	480

### WESTERN DIGITAL

**FACTORY NEW-3 YEAR WARRANTY**

AC2540	425MB	12MS	IDE	\$183
AC2540	540MB	11MS	IDE	217
AC2700	730MB	10MS	IDE	274
AC2850	850MB	10MS	IDE	309
AC3100	1.1GB	10MS	IDE	399
AC3120	1.2GB	10MS	IDE	CALL

### CONNER

**FACTORY NEW-1 YEAR WARRANTY**

CFA540A	420MB	13MS	IDE	\$186
CFA540A	540MB	12MS	IDE	219
CFA650A	850MB	10MS	IDE	305
CNR1275A	1.3GB	10MS	IDE	475
CFP1080S	1.06GB	9MS	SCSI-2	543
CFP2105S	2.1GB	9MS	SCSI-2	1015
CFP2107S	2.1GB	9MS	SCSI-2	1219
CFP2407S	4.2GB	9MS	SCSI-2	1425

### FUJITSU

**FACTORY NEW-5 YEAR WARRANTY**

M2694	530MB	13MS	IDE	\$208
M2684S	630MB	12MS	SCSI	224
M2694ESA	1.2GB	10MS	SCSI	480

### Quantum

**FACTORY NEW-2 YEAR WARRANTY**

L7365A	365MB	11MS	IDE	\$176
T8420A	420MB	12MS	IDE	180
M180A	540MB	11MS	IDE	222
L7540A	541MB	11MS	IDE	222
L7370A	731MB	11MS	IDE	274
L7365S	365MB	11MS	SCSI-2	209
L7540S	540MB	14MS	SCSI-2	240
L7541S	541MB	11MS	SCSI-2	240
L7370S	731MB	11MS	SCSI-2	285
JMP1040S	1.06GB	9MS	SCSI-2	525
JMP1400S	1.4GB	9MS	SCSI-2	699
IMP2180S	2.1GB	9MS	SCSI-2	899
CP2140S	2.1GB	8MS	SCSI-2	1289
GP4280S	4.2GB	8MS	SCSI-2	2039

### MOUSES

2 BUTTON	IDE	\$20
3 BUTTON	IDE	35
MICROSOFT	IDE	35

## IBM THINKPAD NOTEBOOK HARD DRIVE

**MODELS 520MB HARD DRIVE 750 755C \$995**

### EXT. SCSI HARD DRIVE CASES

Half Ht for 5.25" or 3.5" Devices (1 Bay) \$125

Half Ht for CD-ROM or 3.5" Floppy (1 Bay)	\$125
Full Ht for CD-ROM or 3.5" Floppy (1 Bay)	125
JMR Wide Choc 3.5" Drive Case w/term Cable	299
5.25" Full Ht for (1) FH or (2) FH Devices (2 Bay)	199
5.25" Full Ht for (1) FH or (2) FH Devices (4 Bay)	299
5.25" Full Ht for (1) FH or (2) FH Devices (8 Bay)	499

### FLOPPY DRIVES

**TEAC**

1.44MB	\$39
1.2MB	49
DUAL FLOPPY 1.44 & 1.2	99

## TAPE BACKUPS

## CONNER

## WANGDAT

## MATH CO-PROCESSORS

## IBM

## SCSI-IDE CONTROLLERS

## TRANFOR

### COLORADO MEMORY SYSTEMS

mbo 250 Internal	\$159
mbo 350 Internal	179
mbo 700 Internal	328
skker 250 parallel port	299
skker 350 parallel port	339
skker 700 parallel port	499
wertape 2 4GB SCSI Internal	927
wertape 2 4GB SCSI External	1177
wertAD 4GB SCSI Internal	997
20 CARTS 50K/SPK	19.89

### CONNER

peStar 250MB Internal	\$151
peStar 250MB Ext. Par. A250ep	339
peStar 420MB Internal	337
peStar 420MB Parallel Port	288
peStar 850MB Internal	429
peStar 820MB Parallel Port	429
130S 250MB OC6000	
6MB/MIN. BARE INT/EXT	339/439
525 525MB OC6000	
14MB/MIN. BARE INT/EXT	469/569
320 2GB EXT 11MB/MIN	
BARE INT/EXT	799/899
340 4-8MB TURBO DAT	
4MB/BIN. BARE INT/EXT	999/1099

### WangDAT

00 2.0GB TAPE TAPE INT/EXT	849/949
00 4-8GB TAPE TAPE INT/EXT	899/999
300X 4-8GB TAPE TAPE INT/EXT	999/1099

### CONNER

# PC WORLD

## CLASSIFIED

FOR ADVERTISING RATES AND INFORMATION

CALL:

**(203) 857-5101**

For Eastern & Central time zones

**(203) 857-5102**

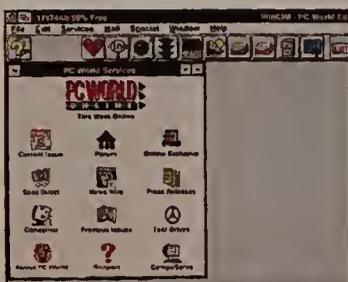
For Pacific & Mountain time zones

### ONLINE SHOPPING

#### PC WORLD EXEC/DIRECT Online Shopping

Advertisers can sell computer products directly to users of CompuServe through PC World's exciting new *Exec/Direct* Service, on the PC World Online area. Forming a "virtual shopping mall", *Exec/Direct* enables 1.5 million online subscribers to shop for, preview and purchase PC hardware, software and accessory products using their credit cards.

The new service lets buyers browse and place orders 24 hours a day, at any location where they have their PCs. They can preview products as VGA graphics or text-based descriptions, or download a software demo for a test drive.



To advertise on the PC World Online *Exec/Direct* Service: please contact your PC World advertising sales representative or call 1-800-PC WORLD.

To join PC World Online, please consult ordering information located elsewhere in this issue

CIRCLE 494 DN READER SERVICE CARD

### DATABASE

#### Create-a-Base for Windows

Introduced at Comdex '94, Create-a-Base for Windows is quickly becoming an internationally recognized database. Create-a-Base is designed for the person who wants the functions of a powerful database, but without all the bells and whistles. Simplicity is the key word describing this database. Installation is a one-disk operation. The manual is concise and includes easy-to-follow screen emulations. User-designed templates are very simple to create and enable the user to customize the database to specific needs. Create-a-Base is perfect for the hobbyist, home office, student, and anyone who wants a "just plain simple" database.

Introductory price: \$49.95 +S&H

#### Micro System Services

5711 Eighth Ave.  
Kenosha, WI 53140

TEL: (800) 468-3772

FAX: (414) 654-6266

CIRCLE 425 DN READER SERVICE CARD



### TAPE STORAGE SOLUTIONS

## Tape Storage Solutions From The Tape Storage Experts !

Qualstar is a leading manufacturer of tape drives and tape libraries for data interchange and mass data storage. Our products set industry standards for quality, reliability, and performance. Bring main frame capabilities to your computer system. Call today for information on our cost-effective 9-track, 3480, 3490, 3490E tape drives, and the TLS-4000, our new 8mm tape library family.

### ...THE TAPE EXPERTS



CIRCLE 417 DN READER SERVICE CARD

- 9 TRACK
- 3480
- 3490
- 3490E
- LIBRARIES

**Qualstar Corporation**  
6709 Independence Avenue  
Canoga Park, CA 91303

FAX: (818) 592-0116

TEL: (818) 592-0061

(800) 468-0680

### BUSINESS SOFTWARE

#### ORIGINAL FORMS FILLER

**Form-Mat** uses your computer to fill forms. Give the forms you have to fill the professional look that your company's image must project. Save hundreds of dollars by using **Form-Mat** to fill all those forms that a company has to complete in today's market.

**Form-Mat** is the only software that fills original forms. No need for scanner or other devices. **Form-Mat** is complete. Nothing else to buy.

Retailing at \$84.95, **Form-Mat** is offered at \$59.95 for a limited time only.

Visa-Master card accepted  
\$4.50 S&H extra.

**Southwind™  
Technologies\***

A Software Development Company

610 E. Bell Rd., Suite 2-106  
Phoenix, AZ, 85022-2399

TEL: (800) 375-9870

CIRCLE 454 DN READER SERVICE CARD



# Get the Best Universal Diagnostics Toolkit on the market!

Works on any PC!

Featuring these  
two top-rated,  
award-winning  
diagnostic  
tools from  
MICRO 2000, Inc.:



Winners of these awards:



"You name it,  
this tests it. If you  
maintain PC's,  
you'll love it."

—Jerry Pournelle,  
BYTE Magazine, May 94



Govt. Serv. #: GS-00K-94AGS-5396

New  
Version  
Release

Call for upgrade pricing &  
complete new features list!

## Micro-Scope 6.0 UNIVERSAL DIAGNOSTIC SOFTWARE

Fully O/S independent  
diagnostic software...

**M**ICRO-SCOPE Universal Computer Diagnostics was developed to satisfy the expanding need for accurate system diagnosis in the rapidly growing desktop computer market. Patterned after super-mini and mainframe diagnostic routines, **MICRO-SCOPE** runs independently of any standard operating system, and is therefore at home on any machine in the Intel world. Speed, ease-of-use, and razor sharp accuracy are a few of the advantages that arise from this system independence, together with an impressive list of functions including the ability to perform low level formatting on every drive currently manufactured, including all IDE drives.

- ◆ **LOW-LEVEL FORMAT**—Performs Low-level format on all drive types including IDE drives. This function cannot hurt IDE drives.
- ◆ **USE CONTROLLER BIOS**—Program will access BIOS format built into any hard disk controller—even Controllers yet to be invented.
- ◆ **O/S INDEPENDENT**—Does not rely on O/S for diagnostics. Talks to PC on hardware level. All tests are full function regardless of O/S (i.e. Novell, UNIX, OS/2).
- ◆ **TRUE HARDWARE DIAGNOSTICS**—Accurate testing of CPU, IRQ's, DMA's, memory, hard drives, floppy drives, video cards, etc.
- ◆ **BATCH CONTROL**—All tests, even destructive, may be selected for testing.

- ◆ **ERROR LOGGING**—Automatically inputs errors during testing to an error log.
- ◆ **AUTOMAPPING**—Automatically bad sector maps errors found on hard disks.
- ◆ **IRQ DISPLAY**—Show bits enabled in IRQ chip for finding cards that are software driven. (Network, Tape Backup, etc.)
- ◆ **IRQ CHECK**—Talks directly to hardware and shows I/O address and IRQ of devices that respond.
- ◆ **MEMORY EXAMINE**—Displays any physical bit of memory under 1 Meg. Very useful for determining memory conflicts. Very useful for determining available memory space.
- ◆ **SECTOR EDITOR**—Allows the editing of any sector of floppy or hard disk media (even track 0).
- ◆ **AND MUCH MORE...**We don't have enough space here for everything this software can do!

## POST-PROBE™ 1ST EVER UNIVERSAL POST CARD FOR ALL PCs!

The only Power-On Self-Test  
card you need to debug any  
"dead" PC...

"This is the only card that will function in every system on the market. The documentation is extensive, and not only covers the expected POST Codes for different BIOS versions, but also includes a detailed reference to the bus signals monitored by the card." — **Scott Mueller** from his globally recognized book, *'Upgrading & Repairing PCs, Second Edition'*

- ◆ Includes pads for voltmeter to attach for actual voltage testing under load.
- ◆ 4 LEDs monitor +5vdc -5vdc +12vdc -12vdc.
- ◆ Monitors Hi & Lo clock and OSC cycles to distinguish between clock chip or crystal failure.
- ◆ Monitors I/O Write and I/O Read to distinguish between write and read errors.
- ◆ Monitors memory write/ read to distinguish between address line failures and memory chip failures.
- ◆ Monitors ALE for proper CPU/DMA operation.
- ◆ Monitors Reset to determine if reset is occurring during POST, indicating short.
- ◆ Monitors progress of POST *without* POST codes.
- ◆ Reads POST codes from any IBM or compatible that emits POST codes. ISA/EISA/MCA.
- ◆ Compatible with Micro Channel computers.
- ◆ Dip switch allows easy selection of I/O ports to read.
- ◆ Includes tri-state **LOGIC PROBE** to determine actual chip failures.
- ◆ Manual includes chip layouts and detailed POST procedures for all major BIOS's.
- ◆ **AND MUCH MORE...**

Also ask about our other Universally  
Compatible Products—

**Micro-Scope CLIENT:** The practical answer to remote diagnostics (no modem required).

**The COMPUTER CONSULTANT:** 100% accurate realtime benchmarking tool.

**Micro-Scope CENSUS:** Inventory software to see and record what's inside all of your PCs.

**911-Recover:** Foolproof data recovery for everyone.

**MICRO  
2000**

Call Now for Special Pricing: **1-800-864-8008** or Fax (818) 547-0397

1100 East Broadway, Suite 301, Glendale, California • Phone 818/547-0125 • Fax 818/547-0397

International Orders please call: MICRO 2000 Australia: 61-42-574144 • MICRO 2000 Europe (UK): 44-462-483-483

# Up to 4 Users can Access Multiple PC, Macintosh and Sun Computers from a Central Location!

- **Multiuser** Up to 4 users can access different computers simultaneously!
- **Multiplatform** Supports any combination of PC, Macintosh and Sun computers. Use any platform's peripherals to access any type of computer in the system.
- **Multimedia** Every user has full multimedia capabilities; keyboard, mouse, video, speakers, microphone and high speed serial port available.



**AUTOBOOT  
COMMANDER 4XP™**

PC is a trademark of International Business Machines Corporation. Macintosh is a registered trademark of Apple Computer, Inc. Sun is a trademark of Sun Microsystems. Cybex, Commander, AutoBoot, and 4xP are trademarks of Cybex Corporation.

**Cybex Corporation**  
4912 Research Drive Huntsville AL 35805 USA  
(205) 430-4000 (205) 430-4030 fax



CIRCLE 516 ON READER SERVICE CARD

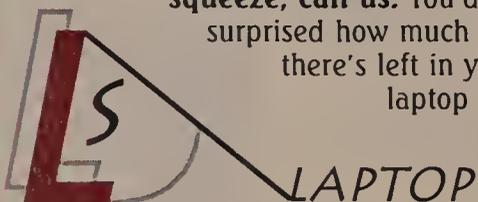
HARDWARE/COMMUNICATIONS • LAPTOPS • PRESENTATIONS



## Old before its time?

### Don't replace – upgrade!

Now you can get the hard drive capacity and processor power you need . . . at a fraction of replacement cost. We upgrade Toshiba, Compaq, and most other brand name portables without adding bulk or weight. If you're feeling the applications squeeze, call us. You'd be surprised how much life there's left in your laptop . . .



**SOLUTIONS • INC**

\* All upgrades performed and tested at LSI \*

All product names are trademarks or registered trademarks of their respective owners.

- Laptops up to 4.4 GB**
- Notebooks up to 810 MB**
- '486 Clock Doubled Power for '386 Portables**
- PLUS Repairs and Service**

**(800) 683-6839**

10700 Richmond Ave.,  
Suite 114  
Houston, Texas 77042  
(713) 789-0878  
Fax (713) 789-8177

CIRCLE 407 ON READER SERVICE CARD

Bright color. Bright price.

## \$2,299.

**SPECIAL OFFER!**



The BOXLIGHT 1200 ColorShow Projection Panel. Our Brightest true-color panel. And for \$500 off the list price, it's an unbeatable value.

- ◆ Compact, easy-travel panel
- ◆ 640 x 480 resolution
- ◆ PC and Mac compatible
- ◆ FREE remote and cables

Your direct source for all the bright answers.

- ◆ Widest selection
- ◆ Instant availability
- ◆ Overnight shipping
- ◆ 30-day guarantee

**BOXLIGHT CORPORATION**

17771 Ejord Dr. N.E., Poulsbo, WA 98370  
206/779-7901 • Payment VISA, MasterCard, American Express, COD and Purchase Orders  
(Some restrictions). Leasing and rental options available. 30-Day Money-Back Guarantee.

## Call Today 1-800-762-5757

CIRCLE 511 ON READER SERVICE CARD

# At Last, Computer Furniture You Can Live With.

Create the ultimate personalized work space with sturdy, real oak furniture that beautifully complements the decor of your home.

SPECIAL DELIVERY AND SET-UP  
IN YOUR HOME OR OFFICE.

Designed for computer users by computer users, our flexible styles ingeniously accommodate a wide variety of hardware and accessories. Make the most of limited space to comfortably fit the way you work — turn as little as 42 inches of wall space into a fully equipped home office.

Don't settle for less. Bring home top-quality American craftsmanship at factory-direct savings. Your satisfaction is guaranteed.



CALL TODAY FOR YOUR FREE CATALOG: 1-800-423-2157

CIRCLE 423 ON READER SERVICE CARD

We Want to Send You a

## FREE!

268 PAGE CATALOG OF COMPUTER SUPPLIES & ACCESSORIES

**Plus!**

We will add you to our mailing list for one year on a trial basis — in which time you will receive 4 catalogs from the most unique company in our industry

### WHAT MAKES US DIFFERENT!

A complete selection of computer supplies, hardware, networking products and software for every computer need, whether business or individual. Plus, we do it without marketing glitz or hype — instead we operate in a down-to-earth straightforward and honest manner. And lastly — we've been in business over 12 years and have grown every year by putting our customers and employees first!



5545 Bridgewood, Sterling Heights, MI 48310

PH: (810) 268-8100 FAX: (810) 268-8899

Simply utilize the reader service number below — or call, write or fax us for your free catalog.

CIRCLE 491 ON READER SERVICE CARD

PC WORLD'S PC-proficient managers are involved throughout the buying process. They have the budget authority to sign off on final purchases and the knowledge necessary to recommend and evaluate brands.

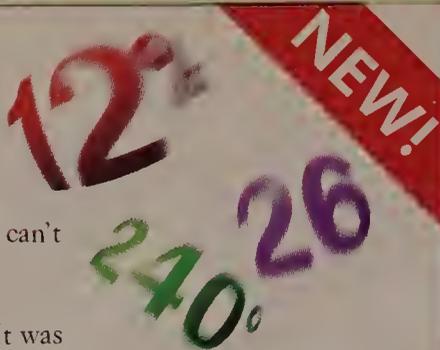
**Call the PC WORLD  
Classified Department  
Now for More Details  
(203) 857-5101 or -5102**

# Got Fuzzy Numbers?

Conventional spreadsheets can't cope with uncertain or fuzzy numbers.

But now there's FuziCalc. It was designed from the ground up using revolutionary fuzzy math technology to achieve breakthrough performance.

FuziCalc is perfect for projections, planning, and estimating. See for yourself. Call now for FREE info kit.



Call 800-472-6183

**FuziCalc**  
The Fuzzy Spreadsheet™

CIRCLE 428 ON READER SERVICE CARD

## GET THE MESSAGE - OR ELSE!



### WINDOWS-BASED

- ◆ Voice Mail
- ◆ Auto - Attendant
- ◆ Fax - On - Demand

**1-800-934-4884**

Don't trade your life for a lost message!

**TALKING TECHNOLOGY, INC.**  
1125 Atlantic Avenue, Alameda, California, 94501  
Voice: 510-522-3800 Fax: 510-522-5556

CIRCLE 444 ON READER SERVICE CARD



## ADD UP THESE HANDY ACCESSORIES

### TruTime™ for Windows

The new and easy way to control labor costs

Attendance • Scheduling • Employee Time Management

**1 (800) 367-6649**

**AMANO CINCINNATI**  
making time technology work for you™

80 Little Falls Road, Fairfield, NJ 07004 Fax: (201) 227-0453



CIRCLE 514 ON READER SERVICE CARD

## PAPERLESS METHOD TO ASSESS EMPLOYEES AND GATHER SURVEY INFORMATION



Windows-based software lets user create, distribute, track, take and score tests on a computer for any topic. Full graphic, video and audio capabilities. Design unlimited tests or assessments. May also be used as a learning tool. Prescription available for test taker as soon as the test is taken.



Offers a completely paperless method to create, distribute, and take surveys. Analyzes survey results in a spreadsheet using complex formulas and built-in statistical functions. Powerful graphic, audio and video capabilities. Works with Windows™-compatible touch-screen monitors.

**CTSC**  
SUPPORT CORPORATION

**1-800-884-CTSC**

CIRCLE 426 ON READER SERVICE CARD

## The Next Generation in Label Design Software

# LABELWORKS™

for Windows



LabelWorks sets the new performance standard for professional quality label design. No other program combines such easy operation with this much power!

- Provides Desktop Publishing features to enhance label design. Features include: WYSIWYG, rulers, guides, page zooms, lines, shapes.
- Rich text support allows you to edit font styles, types, and sizes within the same line.
- Supports all major Bar Code symbologies, including Code 39, 93, 128, POSTNET, UPC, Bookland EAN. 19 types in all.
- Imports & Exports using TIFF, GIF, BMP, PCX, WPG, WMF, TARGA graphic files.
- Rotates Text, Bar Codes and imported graphics in 90 degree increments.
- Prints labels on virtually any windows supported printer.
- Prints labels directly from dBase, DIF & ASCII files.

Dealer Inquires Welcome.

Call for Free DEMO Software

**AMERICAN MICROSYSTEMS, LTD.**  
2190 Regal Parkway, Euless, TX 76040

(800) 648-4452 (817) 571-9015 FAX (817) 685-6232

# Hardware

## COMPUTER SYSTEMS

# 800-910-0085 NOTEBOOKS

**Toshiba**  
**\$499**  
**286 NTBK**

T1910/120	\$1099
T1910/200	\$1199
T1950/120	\$1299
T1950/200	\$1499
T1950CT/200	\$2099
T1950CT/320	\$2299
T1960CS/320	\$2199
T1960CT/200	\$2499
T2400CS/320	\$2599
T2400CT/250	\$2899
T3400CT/120	\$1699
T3600CT/250	\$2999
T4800CT	\$4299
T4900CT	\$Call
T6400/200	\$Call

**IBM 486**  
Built by  
**\$599**  
**4MB**  
**80MB**



- ◆ 6" Display
  - ◆ Weighs 3.5 lbs.
  - ◆ FaxModem - **FREE**
  - ◆ Pen Pointing Device - **FREE**
  - ◆ Leather Case
  - ◆ Double Spaced HDD
  - Extra Battery \$14.99
  - Ext. 3.5", 1.44 FDD (needed) \$89
- Lowest Price 486!!!**  
Call for Color Models!

**386 Notebook**  
**NEC CD-ROM**  
◆ 20 MHz  
◆ 4/60MB  
◆ Floppy  
**\$699**  
◆ Trackball ◆ DOS  
w/o CD - \$599

**GRID Laptop**  
**\$349**

**Leather Cases**  
**\$39** Carries Notebook and Printer

**IBM Thinkpad 500**  
◆ 486 SLC/50 ◆ Mono VGA  
◆ 4MB ◆ PCMCIA ◆ 80MB  
120MB - \$Call **\$799**

**486SX Color Notebook**  
◆ 33 MHz ◆ 4 MB  
◆ 2 PCMCIA ◆ 120 MB  
◆ 1.44 FDD ◆ Fax Modem **\$1199**

Written authorization required on all credit cards for verification.  
Fax Orders: 714-975-1560  
Cust. Service: 714-975-0873  
Inquiries: 714-975-0552



**Dollar Computer Corporation**  
1809 E. Dyer Road, #304, Santa Ana, CA 92705

## MEMORY CARDS

**WE'LL PAY YOU  
FOR YOUR OLD MEMORY**

1x9, 4x9, 30 Pin, 72 Pin,  
Ind. Chips, Mem. Bds., IC Dram Cards

— ANY MEMORY —  
All Memory Has Value!



Don't let your old  
memory collect dust

Call or fax what you have available

**1-800-718-7755**

**THE MEMORY LIQUIDATORS**

"The company that buys memory back"

531 Main St., Ste. 1174, El Segundo, CA 90245-3060  
Ph. 310-676-3074 Fax 310-676-3076

**Miscellaneous**

## COMPUTER INSURANCE

### SAFEWARE

The Computer owners™ Policy insures your computer against theft, fire, accidental damage, power surge and more! Rates as low as \$49 a year. Now available in Ontario. Call for immediate coverage or information.

**1-800-SAFEWARE**  
or **1-800-800-1492**

### SAFEWARE

The Insurance Agency Inc  
2929 N. High St., PO Box 02211  
Columbus, OH 43202

**FACT:** 84% of  
PC WORLD'S  
employed subscribers  
are managers.

## BAR CODING

**BAR CODE READERS**  
**AMERICAN MICROSYSTEMS**  
2190 A Regal Pkwy. • Eules, Texas 76040 • (817) 571-9015

**FOR PC, XT, AT, PS/2 & TERMINALS:**

- No software changes required
- Data appears as keyboard input
- Reads Code 39, 1-2of5, UPC/EAN, Codabar, 128, 93, 11, MSI/Plessey
- Auto-discriminates between codes
- Accepts WAND, SLOT, CCD, LASER, MAG STRIPE

**BAR CODE PRINTING SOFTWARE:**

- For Epson, OKI, IBM, Dot Matrix and HP LaserJet Printers
- Prints Code 39, 1-2of5, UPC/EAN, Codabar, 128, 93, 11, MSI/Plessey
- Easy To Use

**(800) 648-4452 • FAX: (817) 685-6232**  
**30 Day Money Back Guarantee**  
**One Year Warranty**

## BAR CODING

**BAR CODE EQUIPMENT**  
**FAST GUNS**  
FROM  
**VARIANT**

SYMBOL  
LASER SCANNERS

OPTICON  
CCD SCANNERS

VARIANT  
WAND READERS

**Unbeatable Prices!!**  
Call for a fast quote on any popular bar code scanners, portable readers or accessories

variant microsystems

46560 Fremont Blvd., #105, Fremont, Ca. 94538  
Orders: 800-VARIANT  
Phne: (510) 440-2870 Fax: (510) 440-2873

## COMPUTER SERVICES

**DIGITAL SERVICE BUREAU**

Slides • Overheads  
4x5's • Big Posters  
Canon's • Dyesubs

**Photo**

Professional PrePress Scans  
35mm format - \$ .90 Pro 4x5 - \$8

Digital 4-Color Offset Printing  
Call For Details...

Satisfaction Always Guaranteed

**IMAGERS**  
**(800) 232-5411**  
1575 Northside Dr. Bldg 490 Atlanta 30318

**PC WORLD DELIVERS THE  
BUYERS YOU NEED TO REACH**

Study after study has proven that managers proficient with PCs now control the business PC buying process. Make sure your advertising gets maximum exposure in your best target market.

HARDWARE/COMPUTER SYSTEMS • MEMORY CARDS • MISCELLANEOUS/BAR CODING • COMPUTER INSURANCE • COMPUTER SERVICES

**DATA RECOVERY**

**ABSOLUTE DATA RECOVERY!**

We rescue data from drives that won't spin, bad tracks, bad FAT tables, flood/fire damage and other catastrophic failures. DOS, Macintosh and Novell operating systems. Recommended by major manufacturers. Small evaluation fee, fast turnaround and reasonable recovery rates.

**TOTAL RECALL™**

The Data Recovery Experts™  
2440 Waynoka Rd.,  
Colo. Springs, CO 80915  
800/743-0594 • 719/380-7022 Fax

CIRCLE 437 ON READER SERVICE CARD

**FACT:** 84% of PC WORLD'S employed subscribers are managers.

**DISK SERVICES**

**DUPLICATION FROM \$.49**

**HIGHEST QUALITY MEDIA**

From \$.49 (5.25") and \$.80 (3.50")

- All Diskette Formats
- Custom Labels
- Diskette Mailers / Accessories
- Assembly Services
- Generous Volume Discounts

**FORMATTED DISKETTES**

QTY	SONY	OEM
250	VERBATIM	GENERIC
3.5"DD	\$.47	\$.45
3.5"HD	\$.57	\$.53

- 10% Discount on First Order
- DOS, Macintosh, or Custom Formats
- Colored Media add \$.05
- Private Labeling / Volume Discounts

**800-255-3142**

Diversified Systems Group, Inc.  
PO Box 1114, Issaquah WA 98027

**DISK COPY SERVICE**

**MIRROR IMAGES**

**WIBBOB WIBOBB**

**DISKETTE DUPLICATION**

Superior duplication...

Your reputation depends on it. Our reputation assures you of it.

- ALL DISK FORMATS
- FAST 24 HOUR TURNAROUND
- EXCEPTIONAL PRICING AND SERVICE

Call for more information and quotation.

**800-322-0577**

OHIO - NEW JERSEY

**SUPPLIES**

**Toner Cartridges**  
Quality Pricing from \$29.70

Free Trial Offer!!!

Money back Guarantee

Toner/Drum/Developer

New & Remanufactured

Corp. Sales & Dealers Programs

We Buy Empties

Ultimate Image, Inc.  
304 S. Price Rd. Suite 102  
Tempe, AZ 85281  
(800) 459-9876/Int'l (602) 966-8973  
FAX: (602) 829-6706 -Visa/MC/Amex

CIRCLE 509 ON READER SERVICE CARD

**PC WORLD'S**

PC-proficient managers are involved throughout the buying process. They have the budget authority to sign off on final purchases and the knowledge necessary to recommend and evaluate brands.

**Call the PC WORLD Classified Department Now for More Details (203) 857-5101 or -5102**

**SUPPLIES**

**QUALITY TONER CARTRIDGES**

- New • Remanufactured • Recycled
- Apple, Canon, HP, IBM, etc.
- Prices Starting At \$25
- We Buy Empties - Call



Quality Recharge Co.  
3965 Park Ave.  
St. Louis, MO 63110

FREE BROCHURE  
**1-800-238-2333**  
**314-865-0929**

CIRCLE 501 ON READER SERVICE CARD

**FACT:** 82% of PC WORLD subscribers have advised an average of 5 people each month on PC purchases.

**Software**

**BUSINESS APPLICATIONS**

**UPS Shipping Software**

Direct interface to Macola, DacEasy, RealWorld, Great Plains and Platinum. Used as TSR can work with almost any software. Also works great stand-alone. Computes zone & charges. Prints Manifests, COD tags, shipping labels, etc. Optional 100WT, GSV, RPS, USPS, FedEx, scale intf. Guaranteed UPS acceptance. 60-Day money back.

V-Technologies LLC

PO. Box 6261  
Wolcott, CT 06716  
(800) 462-4016  
Fax (203) 879-6962

CIRCLE 461 ON READER SERVICE CARD

**CHURCH APPLICATIONS**

**Bible Book Store on Disk**

Full featured, fast and friendly Bible Study Software. As the leader in Bible Study Software since 1981 we have continued to listen to our customers and provide them with the tools they need. We offer a complete line of Windows and DOS Bible Study Tools.

Call for free Catalog.

Bible Research Systems  
2013 Wells Branch Pkwy #304  
Austin TX 78728  
800/423-1228 • 512/251-7541

**CHURCH APPLICATIONS**

**CHURCH SOFTWARE**

Discover for yourself why more churches are choosing **PowerChurch Plus.®** Try out the leading membership and accounting package. Call today for Free information in the mail.

**F1 SOFTWARE**, 208 Ridgefield Drive, Asheville, NC 28806  
**800/486-1800**

CIRCLE 482 ON READER SERVICE CARD

**CHURCH APPLICATIONS**

**Church Partner**

New accounting, new features -- the best has gotten better. Before you buy -- look at our system's power, simplicity, and unique ability to fit into your church needs -- now, one of the most affordable systems around with 10 years of use by hundreds of churches. For IBM compatibles, networks

Summit Systems Inc.  
Suite 121, 16 Berry Hill Road  
Columbia, SC 29210 USA  
803/798-9749, 800/228-5857  
Fax: 803/731-0349

**DATA ENTRY**

**THE DATA ENTRY EMULATOR™**

Full featured, heads-down entry, with two-pass verification, batch control, output record reformat, operator stats, edit language, customizable menus, help text. Free technical support.

PC from \$395  
Also for LAN's,  
IBM AS/400™,  
IBM S/36

**FREE trial**  
206/776-6443  
800/356-0203

**COMPUTER KEYES**  
21929 Makah Rd  
Woodway, WA 98020

**EDUCATION**

**Be a PC repair expert!**



Home study. Learn PC repair, upgrading, installation. Open up your own business, or increase your value on the job. No high-tech instruments or costly workshop. **Free literature.**

**Call now: 800-223-4542**

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
**The School of PC Repair**  
PCDI, 6065 Roswell Road  
Dept. JJE684, Atlanta, Georgia 30328

CIRCLE 451 ON READER SERVICE CARD

DATA RECOVERY • DISK COPY SERVICE • SUPPLIES • SOFTWARE/BUSINESS APPLICATIONS • CHURCH APPLICATIONS • DATA ENTRY • EDUCATION

**FINANCIAL**

**Loan-Amortization**

EXEC-AMORT. Replace Desktop Financial Calculators, Avoid Inaccuracies, Quit Using Your Spreadsheet, Store Loans to Disk, Solve for PV, FV, I, PMT, N. Easy to read amortization reports, fixed & ARM's, APR's per Reg Z, Points & Fees, Balloons, irregular & skipped payments. \$149.95 US + \$5 s/h. Int'l add \$25

**ELECTROSONICS**

36380 Garfield Rd., Suite 1  
Clinton Twp., MI 48035  
800-858-8448, 810-791-3010 fax  
Int'l phone: 810-791-0770

**FLOW CHARTING**

**RFFLOW**  
Professional Flowcharting  
For Microsoft® Windows™

Create professional, fine quality charts quickly and easily. Call for free trial disk: (303) 663-5767 FAX (303) 669-4889

**\$12900** **RFF ELECTRONICS**  
1053 Banyan Court, Loveland, CO 80538

**FORTRAN**

**Lahey Fortran**

- New! 32-Bit Fortran 90
  - 
  - FORTRAN 77 Professional and Student Versions
  - 
  - New Code or Downsizing
  - 
  - Includes Suite of Tools
  - 
  - Free Technical Support
  - 
  - A Decade of PC Fortrans
- (800) 548-4778 or (702) 831-2500  
Fax: (702) 831-8123

CIRCLE 47D ON READER SERVICE CARD

**MAIL ORDER**

**Mail Order Manager (M.O.M.)™**

America's most popular, complete, and affordable solution for the mail order business - order entry/review, credit card processing with draft capture, UPS manifesting, profit analysis, accounting, telemarketing, list management. Clipper compiled, dBase III + files. Single and Multi-user versions. Find out why more people buy MOM after comparing! Call for demo kit.

**Dydacomp Development Corporation**  
150 River Road, Suite N1, Dept. PCW  
Montville, NJ 07045  
(800)858-DMOM (201) 335-1256

**The Mail Order Wizard**

Complete management system for a catalog, inbound telemarketing, or mail order company. Order processing, inventory mgt, ad forecasting, sales/banking, list mgt, modem charge approval, EDC, UPS manifest w/scale interface. Single and Multi User Systems. Inbound/Outbound Editor's choice.

**Haven Corporation**  
1227 Dodge Ave., Dept. W93  
Evanston, IL 60202  
800/676-0098, 708/869-3434

**MUSIC**

**SongWright V**

MUSIC PROCESSOR prints professional sheet music, songs, scores with text, chords, dynamics. Compose, edit, record, play, transcribe, copy, transpose, extract import, publish - all in standard notation. Symbol editor/librarian. PC, MIDI/AdLib, or SMF entry & playback. Matrix/laser/Deskjet printers. \$119.95+\$5 s/h. Free sample output.

**SongWright Software**  
7 Loudoun Street, S.E. Ste 5B  
Leesburg, VA 22075  
1-800-877-8070, 703-777-7232

**POINT OF SALE**

**SELLIT!  
INTRODUCTORY  
OFFER: \$99**

Sellit is the best laser capable Point of Sale software for small businesses. Sellit integrates inventory control and accounts receivable into a simple menu driven program. Each feature follows a step-by-step procedure with simple, yet explanatory instructions every step of the way. After having learned only a few of the features, which takes little time, all of the other capabilities become easy to use, because of the simple, easy to follow, on-screen instructions. Sellit is power point of selling made simple.

Sellit! \$99 Regularly \$199!  
C.S. System  
1403 W. Michigan  
Battle Creek, MI 49017  
Phone 616-962-8434

CIRCLE 5D3 DN READER SERVICE CARD

**ENTERTAINMENT**

**FANTASY SOFTWARE**



RELIEVE THE STRESS OF DAILY LIFE WITH OUR **FANTASY DISKS**

**FANTASY VGA MOVIES** - Over 1 MB  
- TALK thru your speaker or SoundBlaster.  
1 Movie \$29 - 3 Movies \$65 - 5 Movies \$94

**FANTASY VGA GAME** - Over 5 MB  
with SOUND - 80 Romantic Scenes - 2-8 Players  
\$79 or \$69 w/ purchase of any FANTASY MOVIE above

**FANTASY CD-ROM** - 650 MB with 2500+  
VGA pictures, stories, cartoons & games.  
PRICE: \$69.

CD-ROM BUNDLE - 3 different FANTASY CD-ROMs \$149.

Orders only: 800-243-1515 Ext. 600 BH  
24 HRS/7 DAYS • in PA Add Tax  
For IBM & Compat. - NO SOUND CARD NEEDED  
3.5" or Foreign Orders Add \$2 per disk  
CK/MO to: S Software, P.O. Box 220,  
Dept. 600BH, Hatfield, PA 19440/ADD \$3 S/H

CIRCLE 405 DN READER SERVICE CARD

**FACT: 84% of  
PC WORLD'S  
employed subscribers  
are managers.**

**ON-LINE SERVICE**

**FREE GIFS!**

Download Entertaining Images from our On-Line Men's Magazine - FREE!



LACE offers you:

- POSITIVELY the best Color Photographic Scans in the World! GIF's not available on any other BBS!
- COMPUTER MOVIES. LACE offers both .AVI and .MOV movie files. Download a video file for FREE!
- MULTIMEDIA files. Exciting Centerfold Photo Shoots set to entertaining music soundtracks.
- GORGEOUS Models both Amateur and Professional!
- LOCAL ACCESS #s for over 1000 cities in the United States.
- HIGH SPEED 28.8 Access available Set your modem to 8-N-1 and your terminal emulation to ANSI and dial:

(818) 709-4275  
**LACE**

the on-line men's magazine  
Questions? (818) 718-9977 (voice)  
Limited Offer

CIRCLE 447 ON READER SERVICE CARD

**ULTIMATE MODEM**

•The Ultimate BBS•

- FREE
- Lively Network Chat
  - 100,000 Shareware & GIF's, Windows, Mac and DOS files
  - Free Internet Accounts
  - UNLIMITED ACCESS
  - Unlimited Downloads
  - Up to 16.8k on all 96 Lines
  - New GIF's posted daily by our photographers

**1-217-792-3663**

Customer Support Voice Line 415-281-4429

CIRCLE 445 DN READER SERVICE CARD

**FOREIGN LANGUAGE**

**Foreign Language Software**

Translators-Word Processors-Tutorials & More

**Japanese Power Tools**  
Automatic Translation  
Japanese/English WP  
Learn Japanese \$97

**HanWenDao \$97**  
Chinese True Type Fonts!  
Type, Print, & Fax Chinese!  
50,000 word English/Chinese dictionary!  
Type Chinese In All your Windows Applications~

**Hanme Hangul 2.5**  
Use Hindi, Bengali, Gujurati, Tamil, True Type Fonts in English Windows

Great Buys on language software you can't find in retail stores!  
free catalog (800)308-8883 free catalog  
Business solutions All Languages  
TransLanguage Inc. POBox18024 Anaheim Hills CA.92807 Fax(714) 998-1296

CIRCLE 432 DN READER SERVICE CARD

**STATISTICS**

**NCSS 5.x Series - \$125**

Easy-to-use menus & spread sheet. Multiple regression. T-tests. ANOVA (up to 10 factors, rep. measures, covariance). Forecasting, Factor, cluster, & discriminant analysis. Nonparametrics. Cross Tabulation. Graphics: histograms, box, scatter, etc. Reads ASCII/LOTUS. Many new add-on modules.

NCSS  
329 North 1000 East  
Kaysville, UT 84037  
Phone: 801-546-0445  
Fax: 801-546-3907

**SURVEYS**

**The Survey System**

Analyzes: marketing, public opinion, customer satisfaction, employee attitude surveys. Handles mail, personal, phone, scanner, disk-by-mail or computer interviews. Records verbatim text and actual voice answers. Graphics, network version, user friendly. Free support.

**Creative Research Systems**  
140 Vista View - Ste 101  
Petaluma, CA 94952-4728  
Phone: (707)765-1001  
Fax: (707)765-1068

FINANCIAL • FLOW CHARTING • FORTRAN • FOREIGN LANGUAGE • MAIL ORDER • MUSIC • POINT OF SALE • ON-LINE SERVICE • ENTERTAINMENT • STATISTICS • SURVEYS

WINDOWS

# Bar Code Headquarters

## Labeling Software For Dot Matrix or LaserJet

For Windows  
and DOS!



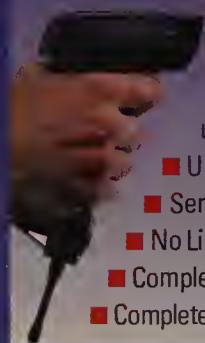
- Any Format, Any Label. WYSIWYG, Text Design
- Formats for Sears, K-Mart, Penney's, WalMart, TCIF, Logmars, AIAG, etc.
- UCC-128, UPC/EAN, 2 of 5, Codabar, & Code 39
- Big Text and PCX. Powerful, Versatile, Easy!
- Imports ASCII data files from dBase, etc.
- LabelRIGHT™ for Windows™ - \$295
- LabelRIGHT™ for DOS - \$279

## Bar Codes for Windows™

- Insert bar codes into any font based Windows program via "Hot Key"
- UPC/EAN, UCC-128, 128, 2of5, Codabar, Code 39
- Fonts, Bitmaps and Metafiles, Complete - \$199

## Cordless RF Wands & Lasers

- For IBM or Macintosh Computers
- Base Station to Wand - 100'
- \$200 units extend range by 100+ feet each. Multiple units cover large area
- USA and Canada Approved
- Serial or Keyboard Interface
- No License Needed
- Complete Cordless Wand - \$695
- Complete Cordless Laser System - \$1775



## Thermal Transfer Printers

- 2" per second Thermal Transfer - Up to 4" wide
- Supports all Popular Bar Codes; 1 year Warranty
- Prints Bar Codes, Big Text, and PCX Graphics
- Small size, Weighs 20 lbs.
- Complete with labels, ribbon, cable, LabelRIGHT DOS software, and Datamax Allegro Printer - \$1895



## Portable Bar Code Readers for PC, Mac and Serial

WITH  
VOICE!

- Battery Operated Reader - 64K or 256K
- Attaches as 2nd Keyboard or Serial
- Display messages & voice messages prompt operator.
- Pick lists, tables.
- Wand, CCD or Laser Scanner
- UPC/EAN, 128, 2of5, MSI, Code 39, etc.
- Date/time stamps
- Built-in Inventory Programs - No Programming Necessary
- Very Easy to Create Custom Prompts
- Small Size - Weighs Only 12.5 oz.
- 64K Unit Complete with Wand & Voice - \$799
- 256K Unit Complete with Wand & Voice - \$899



## Bar Code Readers for PC, XT, AT, PS/2, Mac and RS-232 Terminals



- Attaches as 2nd Keyboard
- UPC/EAN, Code 128, 2of5, MSI, Code 39, etc.
- Wand, Magstripe, CCD, Slot Badge or Laser
- All European Keyboards Supported
- Superior Read Rates. Made in USA.
- Top Rated by Independent Reviews
- Complete MagStripe only Reader - \$219
- Complete Wand only Reader - \$329
- Complete with CCD Scanner - \$624

## Low Cost Laser Reader

- Integrated Laser Handheld Wedge Reader with Decoder in Handle for PC or Mac
- Outstanding Price, complete only - \$784

# Ordering is Easy!

# 800-345-4220

Europe Phone: (353) 1 6614 566 • Europe Fax: (353) 1 6614 622 USA Phone: 408-458-9938 • USA Fax: 408-458-9964

- Same Day Shipping
- 30 Day Money Back Guarantee
- Direct from Manufacturer
- Free "800" Support
- Free UPS Blue in USA

In Europe call our Ireland Office:

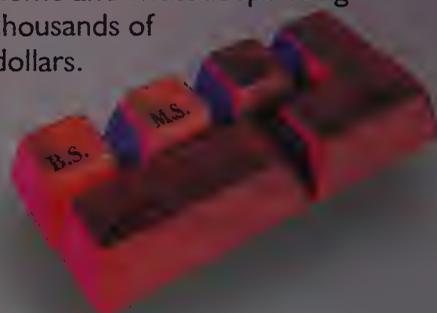
353 1 6614 566 (Fax: 353 1 6614 622)

**WORTHINGTON**  
DATA SOLUTIONS

Call for  
our Free  
Catalog

## Keys To Success

Earn your B.S. or M.S. degree in Computer Science—without leaving home and without spending thousands of dollars.



- All Courses Home Study
- Approved for tuition reimbursement by leading corporations
- C++, Using Windows, and Ada courses available
- CareerPath training in computer programming available

AMERICAN  
INSTITUTE  
FOR  
COMPUTER  
SCIENCES

ACCREDITED MEMBER  
World Association of  
Universities and Colleges

For free information  
call 1-800-767-AICS

**FACT: PC WORLD** delivers the managers crucial to your marketing success. 84% of **PC WORLD'S** employed subscribers are managers, the key people your advertising must reach in today's highly competitive marketing environment

**Call Now  
for More Details  
(203) 857-5101 or -5102**

# SAVINGS CERTIFICATE

## PC WORLD

**YES!** I want to save over 61%. Send me one year (12 issues) of PC World for only \$22.97. I understand that I'll save 61% off the annual newsstand price. Plus I'll also receive a Windows tips mouse pad — FREE with my order.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY/STATE/ZIP \_\_\_\_\_

4LKG3



Savings based on an annual newsstand price of \$59.40.  
Please allow 6 to 8 weeks for delivery of your first issue. Foreign orders add \$46 postage.  
Canadian and Mexican orders add \$20 postage.



**Please  
Accept Your  
FREE GIFT!**



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

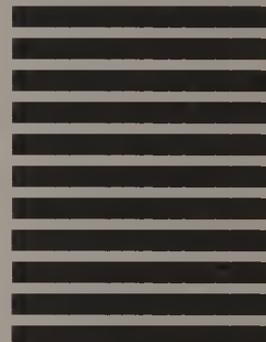
**BUSINESS REPLY MAIL**

FIRST CLASS MAIL PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

**PC WORLD**

Subscription Department  
P.O. Box 51833  
Boulder, Colorado 80321-1833



# DUAL PENTIUM™ POWER



## Polywell Computers gives you more Power to Work!

### Dual 100MHz EISA/PCI Server

8MB to 512MB RAM, 512 Cache  
 1 to 1500GB SCSI-2&3 Disk  
 Swap Disk Array Option with  
 CD-ROM, 3.5" FDD  
 64-bit Graphic (1 to 4MB)  
 12 Channel PCI Ethernet  
 Redundant Power Supply Option  
 8-Bay Super Chassis Option

Basic Model from \$5,000  
 Price doesn't include monitor)

### Dual 100MHz PCI/ISA Client Workstation

16MB to 512MB, 256K Cache  
 1GB IDE to 28GB SCSI - 2&3 disk  
 Fax/Modem/Voice-Mail/Sound  
 4x CD-ROM, 3.5" FDD  
 PCI 64-bit Graphic (1 to 2MB)  
 10 to 100Mbit PCI Ethernet  
 Uninterrupt Power Supply Option  
 8-bay Mid-Size Tower w/230W P/S

Single CPU Model from \$3,100  
 Dual CPU Model from \$3,995

### 75MHz PCI/ISA Basic Station

8MB to 512MB RAM, 256K Cache  
 540 MB IDE to 9GB SCSI-3 Disk  
 Creative Lab Multimedia Kit  
 2 x CD-ROM, 16 bit Sound Blaster  
 PCI 64-bit Graphic (1 to 4MB)  
 Optional PCI 32-bit Ethernet  
 Uninterrupt Power Supply Option  
 7-Bay Mini-Size Tower w/230W P/S

Single CPU Model from \$1,995  
 (Upgradable to Dual 100MHz CPU)



Polywell Computers, Inc.  
 1461 - 1, San Mateo Ave.  
 South San Francisco,  
 CA 94080 USA

800-300-POLY (7659)  
 Tel 415-583-7222 Fax 415-583-1974

Free custom configuration for the professional user 5-year labor, 3-year limited parts Lifetime toll free support  
 NetWare/NT Server, CAD/CAM, Imaging/Video Editing are our specialty.

Pentium is a trademark of Intel Corporation.



Circle 227 on reader service card

# Compaq

**Dependable and Hassle Free**

## ProLinea Desktops

- ▲ 4MB RAM expandable to 100MB
- ▲ 3.5" floppy drive
- ▲ Local bus graphics
- ▲ Pentium upgradable
- ▲ Energy Star compliant
- ▲ MS DOS 6.0, Windows 3.1

Processor	RAM	Hard Drive	Price
486SX/33	4MB	270MB	\$1059
486SX2/50	4MB	270MB	1169
486DX2/50	4MB	420MB	1379
486DX2/66	4MB	420MB	1499
486DX2/66	4MB	525MB	1639
486DX4/100	8MB	420MB	1999

\*COMPAQ color monitors start at \$279.99

## Contura 410

- ▲ 486DX2/50 processor
- ▲ Upgradable processor
- ▲ 4MB RAM expandable to 20MB
- ▲ 2 Type II or 1 Type III PCMCIA slots
- ▲ Large built-in trackball
- ▲ MS-DOS, Windows 3.1, Tabworks, Lotus Organizer



Screen	Hard Drive	Price
9.5" Dual Scan	350MB	\$2369
8.4" Active	350MB	2839

**Business Lease: \$87/mo.**

**COMPAQ**



LTE Elite

**FREE Smart Station on selected models CALL for details!**

## LTE Elite

- ▲ 4/8MB RAM exp. to 20/24MB
- ▲ Built-in AC adapter
- ▲ Removable hard drive
- ▲ 2 Type II or 1 Type III PCMCIA slots
- ▲ Integrated trackball
- ▲ MS-DOS 6.2, Windows 3.1, MS Video for Windows Run Time

Processor	Display	Hard Drive	Price
486DX2/40	9.5" Dual Scan	170MB	\$2359
486DX2/40	8.4" Active	170MB	2929
486DX2/40	8.4" Active	340MB	3689
486DX2/50	9.5" Active	340MB	4439
486DX4/75	9.5" Active	340MB	4899
486DX4/75	9.5" Active	510MB	5199

**Business Lease: \$87/mo.**

# IBM®

**CALL FOR GUARANTEED LOWEST PRICE**

**The Ultimate Portable Multimedia**

**NOW AVAILABLE!**

## ThinkPad® 755CE, CSE and the ThinkPad® 755CD

- ▲ 486DX4/100 processor w/16KB cache
- ▲ 8MB RAM expandable to 40MB
- ▲ Brilliant Black Matrix on Array 10.4" Active Matrix display
- ▲ Built-in 16-bit stereo sound, 14.4 data fax modem, telephone answering machine & speaker phone (DSP software upgradable chip)
- ▲ Infrared ports for wireless data transfer
- ▲ 2 PCMCIA Type II slots
- ▲ 20 popular software titles included!

Processor	Screen	Hard Drive	Price
486DX4/100	10.4" Dual Scan	340MB	\$4899
486DX4/100	10.4" Dual Scan	540MB	5299
486DX4/100	10.4" Dual Scan	810MB	5849
486DX4/100	10.4" Active	340MB	6299
486DX4/100	10.4" Active	540MB	6649
486DX4/100	10.4" Active	810MB	7199
486DX4/100	10.4" Active	540MB	7599
486DX4/100	10.4" Active	810MB	8149

\* Features built-in CD-ROM Drive



ThinkPad® 755CD

**The ThinkPad 755CD Multimedia notebook also includes:**

- Removable full-size CD-ROM drive
- Enhanced video, stereo speakers, MIDI/joystick port
- Additional multimedia software!

## ThinkPad 360E Notebooks

- ▲ 4MB RAM exp. to 20MB
- ▲ Modular design with lift-up keyboard, removable hard drive & floppy drive
- ▲ 2 Type II or 1 Type III PCMCIA slot
- ▲ IBM DOS 6.3, Windows 3.1 & 15 FREE software titles including Lotus Organizer, cc:Mail, and Taxi tourist guide

Processor	Screen	Hard Drive	Price
486DX2/50	9.5" Dual Scan	340MB	\$3049
486DX2/50	9.5" Dual Scan	540MB	3449
486DX2/50	8.4" Active	340MB	3099
486DX2/50	8.4" Active	540MB	3449

**as low as \$3049**

# Hewlett-Packard

**Quality DeskJet/LaserJet Printers and Notebooks**

## HP OmniBook Notebook PCs 4000 Series Desktop to-go-PCs

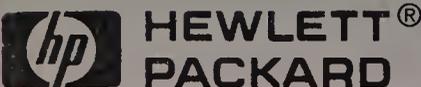
Processor	Screen	Hard Drive	Price
486DX2/50	10.3" Dual Scan	260MB	\$2969
486DX2/50	10.3" Dual Scan	340MB	3349
486DX2/50	10.3" Dual Scan	520MB	3729
486DX2/50	10.4" Active	340MB	4459
486DX2/50	10.4" Active	520MB	4839
486DX4/100	10.3" Dual Scan	340MB	4069
486DX4/100	10.3" Dual Scan	520MB	4449
486DX4/100	10.4" Active	340MB	5179
486DX4/100	10.4" Active	520MB	5559

## HP OmniBook Notebook PCs 600 Series Lightweight with Performance

Processor	Screen	Hard Drive	Price
486DX2/50	8.5" Dual Scan	170MB	\$2549
486DX2/50	8.5" Dual Scan	260MB	2829
486DX4/75	8.5" Dual Scan	170 MB	3099
486DX4/75	8.5" Dual Scan	260MB	3379



HP OmniBook 600 Notebook PC



## InkJet Printers

HP DeskJet 320	\$299.99
HP DeskJet 320 w/Sheet Feeder	359.99
HP DeskJet 540	289.99
HP DeskJet 560C	479.99
HP DeskJet 1200C	999.99
HP DeskWriter 320	299.99
HP DeskWriter 320 w/Sheet Feeder	359.99
HP DeskWriter 540	289.99
HP DeskWriter 560C	479.99
HP DeskJet 1200C/PS	1589.99
HP OfficeJet	769.99

## HP LaserJet Printers

HP LaserJet 4L	\$499.99
HP LaserJet 4P	959.99
HP LaserJet 4ML	1019.99
HP LaserJet 4MP	1379.99

**HP LaserJet 4L Now Only \$499.99**

# AST

**You Can't Beat Its Value**

## AST Advantage! Adventure Multimedia



- ▲ Quad speed IDE CD-ROM drive
- ▲ 16-bit Creative Labs SoundBlaster
- ▲ 14.4 Send/Receive Fax modem with telephone answering & speaker phone
- ▲ LOADS of FREE Software (titles included differ by model)
- ▲ 3-Year Warranty

Model	Screen	Hard Drive
486DX2/66	8MB	540MB
486DX2/66	4MB	540MB
486DX2/66	8MB	540MB
Pentium 75MHz	8MB	540MB
Pentium 75MHz	8MB	1GB
Pentium 100MHz	8MB	1GB

**CALL for latest pricing**

\*AST Color Monitors start at \$349.99

## Adventure Multimedia



**Ask about our Complete Advantage Multimedia Bundles!**



AST, AST logo are trademarks of AST Research, Inc. All rights reserved.

## AST Ascendia 910N

- ▲ 10.4" Active and 10.3" Dual Scan Displays
- ▲ NEW! Lithium Ion Battery for extra long life
- ▲ PanVision graphics for up to 1024x768 resolution
- ▲ 2 Type II or 1 Type III PCMCIA slot

Processor	Screen	Hard Drive	Price
486DX2/50	10.3" Dual Scan	340MB	\$2949
486DX4/75	10.3" Dual Scan	510MB	3439
486DX4/75	10.4" Active	510MB	4719
486DX4/75	10.4" Active	700MB	4999



**Ascendia 910N 10.4" Active Matrix screen**

## Ascendia 810N

- ▲ LARGE, 10.4" Dual Scan displays
- ▲ 4MB RAM expandable to 20MB
- ▲ Removable hard drive and floppy drive
- ▲ 2 Type II or 1 Type III PCMCIA slot

Model	Screen	Hard Drive	Price
486DX2/66	10.4 Dual Scan	250MB	\$2949
486DX2/66	10.4 Dual Scan	340MB	2949
486DX2/66	10.4 Dual Scan	510MB	2949

**Business Lease: \$88/mo.**

# Toshiba Direct

New Models...Low, Low Prices

## Satellite Notebooks and Satellite Pro Series

Performance at an Outstanding Price

- ▲ Built-in AC Adapter (T2100s)
- ▲ 2 Type II or 1 Type III PCMCIA slot (T2100 series), 1 Type II and 1 Type III PCMCIA slot (T2400 series)
- ▲ 82-key keyboard
- ▲ MS-DOS, Windows 3.1
- ▲ Accupoint pointing device
- ▲ Enhanced power management

**CALL**

Model	Processor	Screen	Hard Drive	Price
T2100	486DX2/50	9.5" Mono	250MB	CALL
T2100	486DX2/50	10.4" Dual Scan	330MB	CALL
T2100	486DX2/50	8.4" Active	330MB	CALL
T2400	486DX2/50	9.5" Dual Scan	250MB	\$2469
T2400	486DX2/50	9.5" Dual Scan	320MB	2619
T2400	486DX2/50	8.4" Active	250MB	2959
T2400	486DX2/50	8.4" Active	320MB	3219
T2450CT	486DX4/75	9.5" Active	320MB	3969
T2450CT	486DX4/75	9.5" Active	500MB	4269

Business Lease: \$90/mo.

Call About the NEW T2150 With Built-in CD-ROM Drive



T2400

**TOSHIBA**

## T4700, T4800 and T4850

Sight, Sound & Processing Power

- ▲ Brilliant color display with local bus video
- ▲ 1 Type II and 1 Type III PCMCIA slots
- ▲ Microsoft Sound System, built-in microphone, audio out port
- ▲ MS-DOS, Windows for Workgroups 3.11, UltraFont, Indeo video compression software

Model	Processor	Screen	Hard Drive	Price
T4700	486DX2/50	9.5" Active	320MB	\$3079
T4800	486DX4/75	9.5" Active	500MB	4189
T4850	486DX4/75	10.4" Active	500MB	4519
T4850	486DX4/75	10.4" Active	772MB	4829

Business Lease: \$101/mo.

## T4900 Your Dream Machine

- ▲ 75MHz Mobile Pentium Processor
- ▲ 8MB RAM expandable to 40MB
- ▲ 772MB hard drive
- ▲ 10.4" active matrix color display
- ▲ 1 Type II and 1 Type III PCMCIA slot
- ▲ Accupoint integrated pointing device
- ▲ Microsoft Sound System, built-in microphone, audio out port
- ▲ MS-DOS 6.21, Windows for Workgroups 3.11, Windows Sound System 2.0, Indeo Video, and MS Video for Windows Run Time

**\$6399**

**75MHz Pentium**

**10.4" Active Matrix Color Display**



T4900

Get up to \$200 Instant Rebate on Peripherals with Toshiba Grand Slam Notebook Purchase  
Call for Details

**Before You Buy**

TI ▲ IBM ▲ AST  
COMPAQ ▲ NEC  
PACKARD BELL  
TOSHIBA ▲ HP

**Shop and Compare**

**Don't Settle for Less**

	Supplier 1 PCs Compleat	Supplier 2	Supplier 3
Guaranteed Lowest Price	YES		
The Best Brand Names	YES		
30-day Money Back Guarantee	YES		
Never a Restocking Fee	YES		
30-day Price Protection	YES		
PC Computing Five Star Award	YES		
Lifetime Toll-Free Technical Support	YES		
FREE Hardware Configuration	YES		
FREE Software Installation	YES		
Same Day Shipment	YES		
Pre-Installed Software Discount	YES		
All Major Credit Cards Accepted	YES		
Never a Hidden Surcharge	YES		
\$4.95 Shipping on Most Peripherals	YES		
Compaq Authorized for Direct Marketing	YES		
Hewlett Packard and IBM Authorized	YES		
90 Days Same As Cash	YES		
Low Cost Business Leases	YES		
Volume Purchase Agreements	YES		
Customer Satisfaction Is Top Priority	YES		

# NEC

Pentium Power and Unparalleled Displays

## Versa M and Versa P

Pentium-Powered Multimedia

- ▲ 2 Type II or 1 Type III PCMCIA slot
- ▲ Removable hard drive, floppy & screen
- ▲ Integrated speaker and microphone
- ▲ MS-DOS, Windows 3.1, Windows Sound System, MS Video for Windows Run Time

Processor	Screen	Hard Drive	Price
486DX4/75	9.5" Dual Scan	340MB	\$3219
486DX4/75	9.5" Active	540MB	4199
486DX4/75	9.5" High Res.	540MB	4589
486DX4/100	9.5" Active	810MB	5049
Pentium 75	9.5" Active	540MB	5099
Pentium 75	9.5" Active	810MB	5599

Business Lease: \$106/mo.



Versa M

as low as  
**\$3219**

## Versa S

- ▲ Upgradable hard drive
- ▲ SurePoint integrated pointing device
- ▲ 2 Type II or 1 Type III PCMCIA slot
- ▲ Only 4.7 lbs.

Processor	Screen	Hard Drive	Price
486SX/33	9.5" Active	210MB	\$2179
486DX2/50	9.5" Active	260MB	2369
486DX2/50	9.5" Active	350MB	2549

Business Lease: \$80/mo.

as low as  
**\$2179**

**NEC**



PCW 4/95



**OPEN 24 HOURS**  
Weekdays  
Weekends and Holidays  
8 A.M. to 8 P.M. E.T.

**CALL TODAY!**

**800-398-4727**

Internet: sales@pcscomeat.com  
International (508) 624-6400

# Before You Order Any Accounting Software Can It Do This?



**"Readers Choice"**  
-Computer Monthly  
**"Best Buy"**  
-Computer Shopper

## NEW 9.5 FEATURES

- ✓ Notepads for all master records.
- ✓ Tips N Tricks-troubleshooting program.
- ✓ Promo pricing by date.
- ✓ Screen paging
- ✓ Macro ability
- ✓ Five lines of inventory description.
- ✓ Pricing per customer... AND MORE!
- ✓ Fully integrated-all modules.
- ✓ Allows bookkeeping for 250 companies with consolidation.
- ✓ Add on the fly (customers, vendors, inventory, G/L accounts, employees, etc.)
- ✓ Plain paper or user defined formats.
- ✓ Date sensitive system-allows 15 open periods.
- ✓ Context sensitive help-one key help that the user can modify.
- ✓ Import/export capability from all modules.
- ✓ Complete posting audit trail.
- ✓ Easily upgrades to networks
- ✓ Flexibility to handle small to large businesses.
- ✓ Allows up to 15 alphanumeric characters for account numbers in all modules.
- ✓ Auditability emulated by accounting software costing thousands more.

*"The power of your accounting software is in the flexibility and integrity it offers you. Dollar for dollar, feature for feature, benefit for benefit, this is the best value in the accounting market. You can spend a lot more money, but you can't get a better accounting value."*

-Bob Gossett, G.M.

*"Cougar Mountain's superb integrated accounting easily handles my accounting, both retail and wholesale very adequately. It beats accounting software that costs thousands of dollars more."*

-Jim Frederick, C.P.A.

*"I recommend accounting packages, so I keep 25 different packages on-hand and up-to-date. I find the best of all is Cougar Mountain Software. The presets for different businesses make it really easy to install."*

-Joe Plouffe, C.P.A.

## GENERAL LEDGER

- User defined numbering of accounts with up to 15 alphanumerics.
- Allows multiple departments.
- Allows transaction posting to prior or future financial periods.
- Standard G/L financials provided.
- G/L Report Writer with which user can design up to 250 financial reports per company.
- Allows recurring journal entries.
- Allows multi-company ledgers with or without consolidation.

## ACCOUNTS RECEIVABLE

- Allows open item or balance forward accounting.
- Allows recurring transactions.
- Prints user-defined or plain paper statements.
- Handles cash receipts or partial payments.
- Ages receivables with user-defined periods.
- Prints mailing labels, 1 to 4 across
- Payments can apply to up to 250 invoices.
- Provides aged reports by payment date.
- Customer file show: credit limit, collection status, finance charge, YTD charges and YTD payments.
- Reports can be sorted by: customer number, customer name, customer type, zip code, salesperson code or biller code.

## ACCOUNTS PAYABLE

- Prints checks.
- Calculates early payment discounts.
- Ability to distribute to 250 G/L expense accounts per invoice.
- Cash flow analysis/forecast.
- Allows entry of prepaid invoices to be expended later.
- Prepares check register of all payment transactions.
- Accounts for prepaid expenses (i.e. insurance).
- Allows immediate checks (hand-written or printed).
- Provides aged reports by payment date.
- Prints 1099's miscellaneous.
- Checks for duplicate transactions.
- User can define up to nine check formats.

## ORDER ENTRY

- Allows adding stock items and customers on the fly.
- Allows real-time update of inventory.
- Invoice for sales and/or service (allows billing for non-stock, special order items).

- Complete detail sales reports with user-defined sorts.
- Hold order feature (quotes on unfilled orders).
- Allows customer credit limits and alerts to exceeded limits.
- Allows for cost of non-inventory and special orders.
- User-defined tax sales rates.
- Produces back-order report by customer.
- Displays customer balance during invoicing.
- Allows recurring invoices.
- Allows price-level lookup during invoicing.
- Over 15 order Entry reports (sales analysis, history, etc.).

## PURCHASE ORDER

- Add vendors and inventory on the fly.
- Generates purchase orders from understock inventory items.
- Tracks multiple vendors for each stock item.
- Lists economical order quantity.
- Allows reprinting of purchase order.
- User-defined purchase order formats.
- Tracks promised date vs. actual date; quoted cost vs. actual cost.

## PAYROLL

- Calculates taxes.
- Allows user to update federal, state and local tax tables.
- Allows for 18 pay rates per employee.
- Prints W-2's, 941 and quarterly reports.
- Submit W-2 on disk or magnetic media.
- Allows per-diem pay, contract, piece work, hourly and salary.
- Multi-company payrolls.
- Prints checks.
- Allows "after the fact" payroll.
- Allows benefits and deductions on fixed amount, unit amounts, percentage of gross or variable amount.
- Allows 22 user-defined benefits and deductions per employee.
- Allows 401, cafeteria plans.
- Supports any user-defined pay periods from 1 to 52, including daily.
- Over 22 payroll reports.

## CHECK RECONCILIATION

- Single or multiple bank accounts.
- Prints user-defined checks.
- Sort by voided, stop-payment, deposit sources.
- Allows recurring transactions.
- Allows reconciliation either from checkbook or bank statement.
- Retains check register for 100 years.
- Sorts checks by number, date, payee, vendor or employees.

## INVENTORY

- Minimum/maximum quality levels (reorder points).
- Lookup by number or description.
- Allows quantity decimal precision up to four places.
- Supports up to 5 quantity price/break price/levels on each item.
- Provides bill of materials processing (kits and manufacturing).
- Provides purchase and sell conversions.
- Prints user-defined inventory labels.
- Supports LIFO, FIFO, weighted average, or standard costing with standard inventory reports.

## LYNX (ASCII File Converter)

- Allows importing and exporting data files (file formats provided.)



**TOTAL PACKAGE PRICE**

**INCLUDES ONE HOUR TECHNICAL SUPPORT ON TOLL-FREE LINES**

**SINGLE-USER ACT 1 \$299.50**

**1-800-388-3038**

## ADDITIONAL PRODUCTS FROM COUGAR MOUNTAIN SOFTWARE

### Data Query

- Optional data query module for the user who needs more than ACT Plus' 250 standard reports. Provides user with the ability to generate a multitude of custom reports using data from any ACT Plus file. Custom design unique reports and avoid the costs and lengthy timeframe of custom programming.

### Point-of-Sale

- Optional Point-of-Sale module integrates to ACT Plus to capture the data from the front end sales operation, and transfers it to the back office accounting package. This enables the user to know daily where things stand with inventory, sales, accounts receivable, accounts payable, profits and loss, etc. The POS module works with all kinds of electronic point-of-sale peripheral equipment, such as cash drawers, bar code readers, scanners and more.

### Special Savings!

Special savings when you purchase ACT Plus with CMS Data Query module as a single unit. Reg. \$649.50  
**Special price: \$599.50**  
plus shipping and handling.

### Job Costing

- Performs job costing for estimating, work-in-progress, phases, overhead and subcontracting. Integrates fully with ACT Plus.

### Fund Accounting

- Powerful fund accounting package designed to accommodate nonprofit organizations and institutions.

We're so sure you'll love our accounting package, we offer a **60-day money-back guarantee**. If, for any reason, you are not happy with your purchase, we will refund your money.

A 15% restocking fee applies.



P.O. Box 6886 • BOISE, ID 83707

# 1-800-388-3038

Call today to order the best buy of the year on business accounting.

Circle 56 on reader service card

# FREE PRODUCT INFORMATION

NAME \_\_\_\_\_  
 TITLE \_\_\_\_\_  
 COMPANY \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
 PHONE ( ) \_\_\_\_\_ FAX ( ) \_\_\_\_\_

## INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520

Check here for a 1-year (12 issue) subscription (U.S. only). You will be billed \$19.97.

Circle the number corresponding to the product or product category you need to know more about. Mail or fax the completed card today. Manufacturers will send product information directly to you. Fax to (413) 637-4343.

## PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

## PRODUCT CATEGORY INFORMATION

For information on all of the products mentioned in an article or an entire category of advertised products, circle the appropriate number below.

### Editorial Features (see article for numbers)

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

### Advertised Products

951	Desktop computers	955	Accounting software	959	Multimedia products
952	Notebook computers	956	Draw/paint software	960	Utilities
953	DTP/Presentation software	957	Network/sharing products	961	Mail order companies
954	Monitors and video boards	958	Printers	962	Storage devices

April 1995

This card expires August 10, 1995

L1

**Free Product Information**  
 For quicker response,  
 fax to (413) 637-4343.

## BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

NO POSTAGE  
 NECESSARY  
 IF MAILED  
 IN THE  
 UNITED STATES

Product Information Center  
 P.O. Box 5330  
 Pittsfield, MA 01203-9871



# FREE PRODUCT INFORMATION

NAME \_\_\_\_\_  
 TITLE \_\_\_\_\_  
 COMPANY \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
 PHONE ( ) \_\_\_\_\_ FAX ( ) \_\_\_\_\_

## INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520

Check here for a 1-year (12 issue) subscription (U.S. only). You will be billed \$19.97.

Circle the number corresponding to the product or product category you need to know more about. Mail or fax the completed card today. Manufacturers will send product information directly to you. Fax to (413) 637-4343.

## PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814						

**Free Product Information**  
 For quicker response,  
 fax to (413) 637-4343.

NO POSTAGE  
 NECESSARY  
 IF MAILED  
 IN THE  
 UNITED STATES

**BUSINESS REPLY MAIL**  
 FIRST CLASS MAIL PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE



Product Information Center  
 P.O. Box 5330  
 Pittsfield, MA 01203-9871



**FREE PRODUCT INFORMATION**

NAME \_\_\_\_\_  
 TITLE \_\_\_\_\_  
 COMPANY \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
 PHONE ( ) \_\_\_\_\_ FAX ( ) \_\_\_\_\_

**INFORMATION FROM ADVERTISERS**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520

Circle the number corresponding to the product or product category you need to know more about. Mail or fax the completed card today. Manufacturers will send product information directly to you. Fax to (413) 637-4343.

**PRODUCTS FEATURED IN EDITORIAL**

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

**PRODUCT CATEGORY INFORMATION**

For information on all of the products mentioned in an article or an entire category of advertised products, circle the appropriate number below.

**Editorial Features (see article for numbers)**

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

**Advertised Products**

951	Desktop computers	955	Accounting software	959	Multimedia products
952	Notebook computers	956	Draw/paint software	960	Utilities
953	DTP/Presentation software	957	Network/sharing products	961	Mail order companies
954	Monitors and video boards	958	Printers	962	Storage devices

April 1995

This card expires August 10, 1995

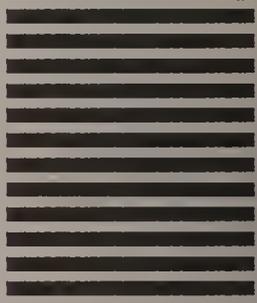
L2

**Free Product Information**  
 For quicker response,  
 fax to (413) 637-4343.

NO POSTAGE  
 NECESSARY  
 IF MAILED  
 IN THE  
 UNITED STATES

**BUSINESS REPLY MAIL**  
 FIRST CLASS MAIL PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE



Product Information Center  
 P.O. Box 5330  
 Pittsfield, MA 01203-9871



# FREE GIFT

## 1-2-3 INSTANT REFERENCE MOUSE PAD

You get the most commonly used commands for 1-2-3 at your fingertips. Printed in easy to read, never-fade 4 colors, with a firm plastic surface for fast, sure mouse movement, this is one mouse pad that won't wear out. It's not for sale anywhere at any price, but it's yours FREE just for ordering your subscription.



**Plus, you save \$34.45—it's almost like getting 7 issues free**

**YES**, sign me up to receive the next 12 monthly issues of PC WORLD Lotus Edition and bill me for only \$24.95—58% off the cover price. Rush my FREE 1-2-3 Instant Reference Mouse Pad, not available anywhere else!

42HX9

Name (please print) \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone ☎ 800 825-7595 ext. 501

Fax ☎ 415 882-0936 or

Mail ✉ Today

**PC WORLD**  
LOTUS EDITION

Please allow 6-8 weeks for delivery of your first issue. Basic annual subscription price \$29.90. Annual cover price \$59.40. Foreign orders add \$46 postage. Canadian orders add \$20 postage, plus 7% GST.



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST CLASS MAIL PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

**PC WORLD**

LOTUS EDITION

Subscription Department  
P.O. Box 55011  
Boulder, CO 80321-5011



PRESIDENT, PUBLISHER, & COO Richard J. Marino

Assistant to the President, Publisher, & COO Colette Cornish

## ADVERTISING SALES

Vice President, Director of Advertising  
Jeff Edman

Assistant to the Director of Advertising  
Patricia Owen

## EAST

Eastern Advertising Director  
Bob Ostrow (508/820-0440)

Administrative Assistant/Office Manager  
Ellen Sanderson

Mid-Atlantic/Manhattan/Eastern  
Canada

John Grogan, Mid-Atlantic  
Advertising Manager (201/587-0090)

Wayne Silverman, Account  
Manager (201/587-0090)

New England/Ohio/Michigan/  
Michael Welsh Carroll, Senior  
Account Manager (508/820-0440)

## Southeast

Judy Sutter, Senior Account  
Manager (404/394-0758)

## East

Kevin Normandeau, Account  
Representative (508/820-0440)

## MIDWEST

Midwestern Advertising Director  
Mark Taussig (708/827-4477)

Administrative Assistant Tammy Torp

## Midwest/Texas

Havey Diamond, Senior Account  
Manager, National Direct Account  
Manager (214/233-3492)

## Midwest

Jeff Kamikow, Account  
Representative (708/827-4477)

## WEST

Western Advertising Director  
Bob Carrigan (415/243-0500)

Administrative Assistant Jane Davey

San Francisco Bay Area  
(Area code 415 & 510)

Corinne Cox,  
Account Manager (415/243-0500)

San Jose, CA (Area code 408)/Oregon  
William M. Giller,  
Account Manager (415/243-0500)

## West

Duane Hampson, Account  
Representative (415/243-0500)

Southern California (San Diego),  
Colorado/Idaho/Nevada/Utah/  
New Mexico/Arizona  
Lisa Crutchfield,  
Account Manager (714/250-8081)

Los Angeles/Orange County/  
Washington/Montana/Wyoming/  
Western Canada  
Bill Hanck,  
Account Manager (310/312-8008)

## LOTUS EDITION ADVERTISING SALES

Michael Welsh Carroll,  
Director of Advertising  
(508/820-0440)

Kevin Normandeau,  
Account Representative  
(508/820-8113)

## SPECIAL PROGRAMS

Director of Strategic Markets  
Susan Simmons (415/978-3267)

## PC WORLD CLASSIFIED

Classified Manager  
Pat Fales (203/857-5115)

Eastern Account Manager  
Katherine Noto (203/857-5101)

Western Account Manager  
Tonya Hughes (203/857-5102)

## PC WORLD ACTION CARDS

Account Representatives  
Leslie Piper (415/978-3353)  
Amy Striplin (404/394-0758)

## PC WORLD ONLINE SHOPPING SALES

West: Leslie Piper (415/978-3353)  
East: Susan Simmons (415/978-3267)

## PC WORLD REPRINTS

Kyle Mork (612/582-3810)

## CIRCULATION, MARKETING, RESEARCH

Senior Vice President  
Heather Martin Maier

Assistant to the Senior Vice President  
Tammy Lockett

Circulation Director Shawne Burke Pecar

Senior Promotion Manager  
Ellen DiMatteo

Circulation Business Manager  
David Cobb

Single Copy Sales Manager  
Cheryl Grover

Promotion Managers Jane Kratochvil,  
Richard McCarthy

Circulation Assistant Chris Browning

Customer Service Specialist  
Jennifer Carson

Director of Marketing Alan Abrams  
Public Relations Manager Lee Doyle

Marketing Manager Sandy Wong

Administrative Assistant for Marketing  
and Research Kecia Nordgren

Research Director Cheryl Brink

Research Manager Jocelyn Ritchie

Sr. Research Analysts Kate Collins,  
Maryann Thompson

## PRODUCTION

Vice President, Manufacturing  
Linda Manes Goodwin

Senior Production Manager  
Nadia Maudsley

Advertising Information Manager  
Mike Wallace

Assistant Production Managers  
Kathy Badertscher, Nancy Jonathans

Advertising Production Coordinator  
Francis Aviani

Advertising Information Assistant  
Jon Friesch

## INTERACTIVE FAX PRODUCTS

Manager Zomitza Stefanova

Technical Systems Administrator  
Adam Block

## HUMAN RESOURCES

Vice President Richard Willoughby

Manager Thalia Ohara

## ADMINISTRATION

Chief Financial Officer Vicki Peilen

Director of Information Systems  
Wally Clegg

Information Systems Manager  
Norman Noble

Corporate Business Manager  
Christina Spence

Accounting/Operations Manager  
Pat Murphy

Accounting/Facilities Manager  
Michelle Reyes

Director of Financial Operations  
Madeleine Buckingham

Assistant to the CEO Kelly Milan

## Advertiser Index A-Z

Get more information—circle the appropriate number on the reader service card.

Reader Service Number	Page Number
102	Acer ..... 136-137
229	Acer America Corp. .... 65-69
66	Acma Computers ..... 265
51	AGFA ..... 154
20	Alaris ..... 131
41	Alpha Software ..... 171
9	ALR ..... 99
	— America Online ..... 261-262
45	American Power Conversion ..... 77
38	ANIS Computer. .... 274B-C
	— Anthro Corporation ..... 28
8	Arlington Computer Products ..... 276
87	AST Research ..... 20-21
4	AT & T Global Information ..... 73-75
114	AT & T True Connections ..... 117
22	Austin Direct ..... 45-48
	— Autodesk ..... 239
13	Berkeley Systems ..... 206
75	Boca Research ..... 255
91	Caere ..... 14
42	Canon ..... 197
	— Canon Computer Systems ..... 2,3
26	Clear Software ..... 83
122	Company Corp. .... 100C
47	Compaq Computer Corporation ..... 141
83	Compaq Direct Plus ..... 128-129
35	Compaq Direct Plus ..... 240
33	CompuServe ..... 85
	— Computer Bowl 1995 ..... 257
68	Computer Discount Warehouse ..... 277-279
93	Corel Corporation ..... 203
56	Cougar Mountain Software ..... 290D
54	Creative Labs ..... 42
7	Creative Labs ..... 234-235
74	CTX Int'l ..... 237
162	DacEasy, Inc. .... 259
94	Datastorm Technologies, Inc. .... 233
171	Dataviz ..... 100D
	— Dell ..... 301-305
	— Dell ..... C5-C8
49	Delphi Internet Services ..... 221
146	Delrina ..... 90-91
92	Delrina ..... 89
60	Diamond Multimedia Systems ..... 113
	— Digital Equipment ..... 142-143
84	D'TK, Inc. .... 215
107	Everex Systems ..... 243
82	Extron Electronics ..... 263
153	Fujitsu ..... 86-87
111	Fusion Software ..... 246
72	Future Micro ..... 269
	— Gateway 2000 ..... 33-41

PC World is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 190 computer publications in 62 countries. Forty million people read one or more International Data Group publications each month. International Data Group's publications include: ARGENTINA's Computerworld Argentina, Infoworld Argentina; ASIA's Computerworld Hong Kong, Computerworld Malaysia, Computerworld Southeast Asia, PC World Hong Kong, PC World Malaysia, PC World Singapore; AUSTRALIA's Australian Macworld, Australian PC World, Computerworld Australia, IDG Sources, Network World, Reseller; AUSTRIA's Computerwelt Osterreich, PC Test; BRAZIL's Computerworld, Mundo IBM, Mundo Unix, PC World, Publish; BULGARIA's Computerworld Bulgaria, Ediworld, PC & Mac World Bulgaria; CANADA's Direct Access, Graduate Computerworld, InfoCanada, Network World Canada; CHILE's Computerworld, Informática; COLOMBIA's Computerworld Colombia; CZECH REPUBLIC's Computerworld, Elektronika, PC World; DENMARK's CAD/CAM World, Communications World, Computerworld Denmark, Lotus World, Macintosh Produktkatalog, Macworld Denmark, PC World Denmark, PC World Produktguide, Windows World; ECUADOR's PC World; EGYPT's Computer World (CW) Middle East, PC World Middle East; FINLAND's MikroPC, Tietoverkko, Tietoviikko; FRANCE's Distributique, Golden Mac, InfoPC, Languages & Systems, Le Guide du Monde Informatique, Le Monde Informatique, Télécoms & Reseaux; GERMANY's Computerwoche, Computerwoche Extra, Computerwoche Focus, Computerwoche Karriere, Information Management, Macwelt, Netzzeit, PC Welt, PC Woche, Publish, Unit; HUNGARY's Alaplap, Computerworld SZT, PC World; INDIA's Computers & Communications; ISRAEL's Computerworld Israel, PC World Israel; ITALY's Computerworld Italia, Lotus Magazine, Macworld Italia, Networking Italia, PC World Italia; JAPAN's Computerworld Japan, Macworld Japan, SunWorld Japan, Windows World; KENYA's East African Computer News; KOREA's Computerworld Korea, Macworld Korea, PC World Korea; MEXICO's Compu Edicion, Compu Manufactura, Computacion/Punto de Venta, Computerworld Mexico, MacWorld, Mundo Unix, PC World, Windows; THE NETHERLANDS' Computerl Totaal, LAN Magazine, MacWorld; NEW ZEALAND's Computer Listings, Computerworld New Zealand, New Zealand PC World; NIGERIA's PC World Africa; NORWAY's Computerworld Norge, C/World, IDG Direct Response, Lotusworld Norge, Macworld Norge, Network, PC World Ekspress, PC World Norge, PC World's Product Guide, Publish World, Student Data, Unix World, Windowsworld; PANAMA's PC World; PEOPLE'S REPUBLIC OF CHINA's China Computerworld, China Network World, Electronics International, PC World China; IDG HIGH TECH BEIJING's New Product World; IDG SHENZHEN's Computer News Digest; PERU's Computerworld Peru, PC World; PHILIPPINES' Computerworld, PC World; POLAND's Computerworld Poland, PC World/Komputer; PORTUGAL's Cerebro/PC World, Correio Informativo/Computerworld, Mach; ROMANIA's PC World; RUSSIA's Computerworld-Moscow, Mir-PC, Sety; SLOVENIA's Monitor Magazine; SOUTH AFRICA's Computing S.A.; SPAIN's Amiga World, Computerworld España, Comunicaciones World, Macworld España, NeXtWorld, PC World España, Publish, Sunworld; SWEDEN's Attack, ComputerSweden, Corporate Computing, DataIngenjoren, Lokala Natverk/LAN, Lotus World, MAC&PC, Macworld, Maxi Data, Mikrodatorn, PC World, Publishing & Design (CAP), Windows World; SWITZERLAND's Computerworld Schweiz, Macworld Schweiz, PC & Workstation; TAIWAN's Computerworld Taiwan, Global Computer Express, PC World Taiwan; THAILAND's Thai Computerworld; TURKEY's Computerworld Monitor, Macworld Turkiye, PC World Turkiye; UKRAINE's Computer World; UNITED KINGDOM's Lotus Magazine, Macworld, Sunworld; UNITED STATES' AmigaWorld, Cable in the Classroom, CD Review, CIO, Computerworld, Desktop Video World, DOS Resource Guide, Electronic News, Federal Computer Week, Federal Integrator, GamePro, IDG Books, Infoworld, Infoworld Direct, Laser Event, Macworld, Multimedia World, Network World, NeXtWorld, PC Games, PC Letter, PC World, Publish, Sumena, SunWorld, SWATPro, Video Event; VENEZUELA's Computerworld Venezuela, MicroComputerworld Venezuela; VIETNAM's PC World Vietnam.

# Index

Reader Service Number	Page Number
— Gateway 2000	57-60
101 Globalink, Inc.	81
96 Goldstar U.S.A, Inc.	101
— Hewlett-Packard PC	208-209
— IBM	218
132 InFocus	245
116 Inset Systems	139
106 Intelligent Computers	258
235 Kensington Microware	249
121 KeyStone Learning Systems	274
— LA Trade	280
206 LearnKey, Inc.	298
178 Lexmark	199
241 Logitech	187
151 MAG InnoVision	216-217
186 MapLinx Corp.	299
147 Mega Haus Hard Drives	268
217 Micron Computer	162-163
— Microsoft	6,7
— Microsoft	30-31
— Microsoft	22-23
190 MPC	79
— NANA USA Corporation	124
201 NEC Laptops	24-25
203 NEC Monitors	C2-1
205 NEC Printers	70
169 NetCom	210
139 NetManage: Ecco Division	165
— NRI/Mc Graw Hill	275
— NRI/Mc Graw Hill	271
140 Okidata	93
195 PC America	274A
— PC Connection	158-159
155 PC World Connect	201
— PC World Connect	274D
— PC World Online	261-262
129 PCs Compleat	290B-290C
145 Pinnacle Micro	29
212 PK Ware	44
230 Plextor	241
227 Polywell	290A
— Prodigy	191-192
— QMS	109
— Quantex	225-288
225 Quarterdeck Office Systems	296
198 Samsung Electronics	13
213 Samtron Displays, Inc.	95
209 Seagate	182-183
158 Seiko Instruments	179
— Softblox	100A
— Software Publishing	251
250 Sony Corporation of America	194-195
3 Source Technology	270
253 SPSS, Inc.	253
210 STB Systems	204
167 Symantec Corporation	212
124 Tektronix	110-111
220 Texas Instruments	96-97
244 Texas Instruments	166-167
228 Toshiba	230-231
240 Twinhead Corp.	133
81 ULead Systems	250
148 USA Flex	272-273
218 ViewSonic	267
251 Villa Crespo Software	100B
— Visio	189
187 Visioneer	63
179 Western Digital	181
197 WinBook	16-17
— WordPerfect, Novell Applications Group	119-121
— WordPerfect, Novell Applications Group	122-123
238 Worldwide Technologies	281
257 Xerox Corporation	247
193 Zeos International, Ltd.	11
216 Zeos International, Ltd.	26
258 Zeos International, Ltd.	18
237 Zeos International, Ltd.	8,9

## Advertiser Index by Product Category

Get more information—circle the appropriate number on the reader service card.

### HARDWARE

#### Boards/Cards/Chips

75 Boca Research	255
60 Diamond Multimedia Systems	113
210 STB Systems	204
179 Western Digital	181

#### Computers

229 Acer America Corp.	65-69
66 Acma Computers	265
9 ALR	99
38 AMS	274A-B
4 AT & T Global Information	73-75
22 Austin Direct	45-48
47 Compaq Computer Corporation	141
83 Compaq Direct Plus	128-129
35 Compaq Direct Plus	240
— Dell	301-305
— Dell	C5-C8
84 DTK, Inc.	215
— Gateway 2000	33-41
— Gateway 2000	57-60
— Hewlett-Packard PC	208-209
217 Micron Computer	162-163
190 MPC	79
129 PCs Compleat	290B-290C
227 Polywell	290A
— Quantex	225-288
216 Zeos International, Ltd.	26
237 Zeos International, Ltd.	8,9
258 Zeos International, Ltd.	18

#### Desktop Publishing

87 AST Research	20-21
— NANA USA Corporation	124
— QMS	109

#### Input Devices

235 Kensington Microware	249
241 Logitech	187

#### Laptop/Notebook

22 Austin Direct	45-48
83 Compaq Direct Plus	128-129
— Dell	301-305
— Dell	C5-C8
107 Everex Systems	243
— Gateway 2000	33-41
— Gateway 2000	57-60
201 NEC Laptops	24-25
129 PCs Compleat	290B-290C
220 Texas Instruments	96-97
244 Texas Instruments	166-167
228 Toshiba	230-231
240 Twinhead Corp.	133
197 WinBook	16-17
193 Zeos International, Ltd.	11

#### Local Area Networks

— Digital Equipment	142-143
— IBM	218

#### Monitors/Displays

74 CTX Int'l	237
96 Goldstar U.S.A, Inc.	101
132 In Focus Systems Incorporated	245
151 MAG InnoVision	216-217
— NANA USA Corporation	124
203 NEC Monitors	C2-1
198 Samsung Electronics	13
213 Samtron Displays, Inc.	95
218 ViewSonic	267

#### Motherboards

3 Source Technology	270
---------------------	-----

#### Multimedia

75 Boca Research	255
7 Creative Labs	234-235
54 Creative Labs	42

Reader Service Number	Page Number
82 Extron Electronics	263
132 In Focus Systems Incorporated	245
230 Plextor	241
250 Sony Corporation of America	194-195

#### Other

47 Compaq Computer Corporation	141
--------------------------------	-----

#### Power/Protection

45 American Power Conversion	77
------------------------------	----

#### Printers/Plotters

42 Canon	197
— Canon Computer Systems	2,3
178 Lexmark	199
205 NEC Printers	70
140 Okidata	93
— QMS	109
158 Seiko Instruments	179
257 Xerox Corporation	247

#### Scanners/Digitizers

51 AGFA	154
153 Fujitsu	86-87
187 Visioneer	63

#### Storage/Backup Devices

147 Mega Haus Hard Drives	268
145 Pinnacle Micro	29
209 Seagate	182-183

#### Systems

20 Alaris	131
106 Intelligent Computers	258
217 Micron Computer	162-163
— NRI/Mc Graw Hill	275
— NRI/Mc Graw Hill	271

### MISCELLANEOUS

#### Mail Order

8 Arlington Computer Products	276
68 Computer Discount Warehouse	277-279
72 Future Micro	269
— LA Trade	280
147 Mega Haus Hard Drives	268
— PC Connection	158-159
148 USA Flex	272-273
238 Worldwide Technologies	281

#### Online Services

— America Online	261-262
33 CompuServe	85
49 Delphi Internet Services	221
— PC World Online	261-262
— Prodigy	191-192

#### Other

— Anthro Corporation	28
114 AT & T True Connections	117
— Computer Bowl 1995	257

#### Service/Support

122 Company Corp.	100C
— PC World Connect	201
— PC World Connect	274D

#### Training

121 Keystone Learning Systems	274
206 LearnKey, Inc.	298
— NRI/Mc Graw Hill	275

### SOFTWARE

#### Accounting/Financial

56 Cougar Mountain Software	290D
162 DacEasy, Inc.	259

#### CAD/CAM

— Autodesk	239
------------	-----

#### Communications

94 Datastorm Technologies	233
146 Delrina	90-91
169 NetCom	210
187 Visioneer	63

Reader Service Number	Page Number
-----------------------	-------------

#### Data Conversion

171 Dataviz	100D
-------------	------

#### Database Management

41 Alpha Software	171
186 MapLinx Corp.	299

#### Entertainment

111 Fusion Software	246
---------------------	-----

#### Graphics

93 Corel Corporation	203
116 Inset Systems	139
124 Tektronix	110-111
81 ULead Systems	250

#### Management

195 PC America	274A
----------------	------

#### Multimedia

93 Corel Corporation	203
81 ULead Systems	250

#### Optical Character Recognition

91 Caere	14
----------	----

#### Other

26 Clear Software	83
-------------------	----

#### Presentation Graphics

— Software Publishing	251
— Visio	189

#### Schedule Software

13 Berkeley Systems	206
139 NetManage: Ecco Division	165

#### Spreadsheets/Templates/Forms

92 Delrina	89
251 Villa Crespo Software	100B

#### Statistics

253 SPSS, Inc.	253
----------------	-----

#### Software Suites

— Microsoft	6,7
— Microsoft	30-31
— Microsoft	22-23
— WordPerfect, Novell Applications Group	119-121

#### Utilities

212 PK Ware	44
225 Quarterdeck Office Systems	296
— Softblox	100A
167 Symantec Corporation	212

#### Video

121 Keystone Learning Systems	274
206 LearnKey, Inc.	298

#### Windows

162 DacEasy, Inc.	259
94 Datastorm Technologies	233
92 Delrina	89
111 Fusion Software	246
186 MapLinx Corp.	299
251 Villa Crespo Software	100B
— WordPerfect, Novell Applications Group	119-121
— WordPerfect, Novell Applications Group	122-123
Word Processing	
101 Globalink, Inc.	81
— WordPerfect, Novell Applications Group	122-123

## Products Featured in Editorial

Get more information—circle the appropriate number on the reader service card.

#### Accounting

744 Great Plains Profit 2.0, Great Plains Software	78
--	----



# MORE DISK SPACE.

Uninstall

## FROM THE PEOPLE WHO BROUGHT YOU MORE MEMORY.

Have you ever tried to clean up your system? Then you know that removing all of the Windows™ apps, files and system components you don't want in order to make room for the things you *do* want is next to impossible.

Unless you have the right tool.

With Quarterdeck's new CleanSweep™ at your disposal, you can safely unclog your system and free up megabytes of precious disk space with the greatest of ease.

### **A DISK IS A TERRIBLE THING TO WASTE.**

So before you blow a bunch of money on a new drive, grab your mouse and ask CleanSweep to analyze a program for you.

The long list of system files, DLLs, VxDs, Help files, .ini files, add-ons and other stuff that pops up on your screen will give you a pretty good idea of how much disk space you've been wasting.

And since all those files are scattered all over

your system, they're *very* hard to find. Which is why CleanSweep comes equipped with exclusive Helper Technology that understands the bizarre installation habits of popular Windows programs.

### **TO DELETE. OR NOT TO DELETE.**

CleanSweep knows more than just where to look for the maximum number of files. It also knows what to do when it finds them.

And what not to do.

Since uninstalling the wrong file—say, a shared DLL—can disable other programs you use daily, CleanSweep uses SuperLinks to track files that are needed by multiple applications.

It also lets you view any file, confirm every action, undo anything you've done and even

perform trial runs to see how much disk space you're about to gain.

Which is just the sort of ingenious functionality you'd expect from Quarterdeck, the folks who brought memory management to millions with the legendary QEMM.®

### **LEAVE NO FILE UNTURNED.**

To really get the most out of CleanSweep, you'll want to use it to track down and delete duplicate, backup, archive, help and bitmap files.

Not to mention unneeded system components such as graphics drivers, fonts, wallpaper, system files and screen savers.

But before you can do any of this, you'll need to see your nearest reseller.

Or call us at **800-354-3222**.

Wherever you buy CleanSweep, if you're not thrilled, you can return it within

30 days for a full refund. No questions asked.

Don't worry. CleanSweep uninstalls itself.



 **Quarterdeck**®

## To Boldly Go to the Cities Below

A few years ago two senior staffers in the *Star Trek* art department, Rick Sternbach and Michael Okuda, wrote *Star Trek: The Next Generation Technical Manual*, a best-selling guidebook to the starship Enterprise. They included everything from technical matters like the Bussard ramscoop and warp field theory to essays on Lieutenant Worf's *d'k tahg* knife.

Now a Windows-based CD-ROM, *Star Trek: The Next Generation Interactive Technical Manual* combines the book's textual detail with interactive digital movies, animated diagrams, walk-throughs, flybys, and episode clips. It also includes a guided tour by Commander William Riker (narrated by actor Jonathan Frakes), fascinating production comments by Executive Producer Rick Berman, and an introduction by the late Gene Roddenberry, *Star Trek's* creator. You even get to peek behind the scenes: Did you know, for example, that one of the patient status indicators in sick bay is labeled 'Medical Insurance Remaining'?

Some of the coolest things about the digital manual are the sound effects. As you explore, you're accompanied by a series of familiar chirps, warbles, and beeps—not to mention the voice of Majel Barrett (Roddenberry's surviving spouse) as the ship's computer.

The Cardassians would love to get their hands on this stuff.

### Until the Real Thing Comes Along

For months now, serious *Next Generation* Trekkers (like your humble columnist) have been anticipating Spectrum HoloByte's release of *A Final Unity*, its interactive game based on *Star Trek: The Next Generation*. The game is still in final development as we

By Michael Goodwin

go to press, but a DOS-based demo disc has appeared in stores.

The demo has two modes—rotoscoped, computer-generated images of the crew for small-screen close-ups, and comic-book-style drawings for full-screen shots. There are also spectacular renderings of planetside vistas, deep-space combat sequences, and convincing sound-track performances by all the video actors.

However, the demo disc shows signs of being a rush release: In at least one dialog sequence, nobody's lips moved; and before I could get the sound working I had to hack into my CONFIG.SYS to reset the DMA channel. While the demo is cheap and not without its charms, I'd recommend waiting for the real game.

### Rules of the Games

*SportsWorks: The Inside Guide* is a DOS-based reference package with the rules for more than 120 sports—everything from rapid-fire pistol competition to softball to drag racing. *SportsWorks* covers a lot of ground, but in a world of flashy multimedia apps it seems a bit like a bush leaguer.

Still, I put it to the acid test: Cricket. I've never understood this complicated game, but many of my pals adore it so I need some idea of how it's played. After 30 seconds of mousing, I had the basic rules of play, and a few minutes of reading put me in the know.

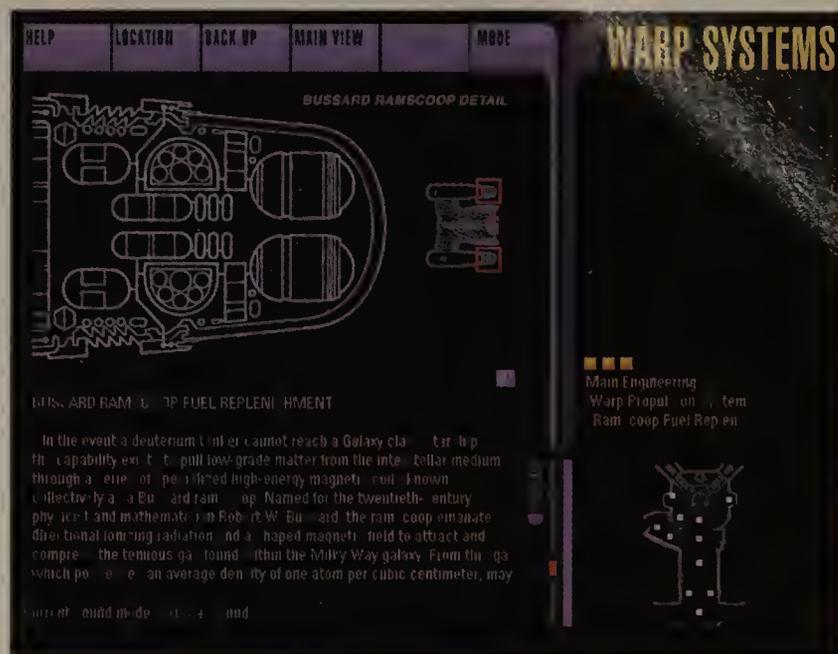
However, I ran into a couple of serious flaws. For one thing, text appears in a small box; since there's no way to enlarge the window, you end up doing a line-by-line scroll. And *SportsWorks*

suffers from a surprising lack of diagrams. Obviously, complete graphical coverage of some 120 sports would require a CD-ROM. But that's probably what this five-floppy program needs.

### Tearing Up the Pea Patch

Football fans who have a taste for history (and a CD-ROM drive) will go wild for NFL's *Greatest Plays*, a Windows-based package from Turner Interactive. It starts with the first nationally broadcast football game (Bears versus Redskins, 1940, featuring announcer Red Barber's famous "pea patch" quote) and goes through the 40-yard touchdown pass that decided the 1993 contest between the Packers and the Lions. This beautifully designed interactive disc lets you view the action from several angles, and in forward or reverse motion; the package even includes terrific animated diagrams.

Each play is fully annotated, so you can call up information on every player as well as see an analysis of what hap-



The next time your Bussard ramscoop malfunctions, you'll find this entry in *Star Trek: The Next Generation Interactive Technical Manual* extremely handy.



**EVER WONDER HOW NEW ORLEANS** got nicknamed Bend City? This aerial view from *The Cities Below* makes it clear.

pened. For instance, you can rerun Franco Harris's famous "Immaculate Reception" catch and touchdown romp from the 1972 game between the Steelers and the Raiders—and spot the moment when the ball dropped into his waiting hands. The technical stuff is flawless: Videos run smoothly in a quarter-screen window, the sound is great, and installation is painless.

and 40,000 feet, these infrared images show more detail than you might expect—but less than you want. A Looking Glass feature reveals a calibrated map with place names and street information "behind" the aerial images.

While the city maps are great, to reach its full potential this package needs to extend coverage to the entire country. And then

**Tomorrow's Atlas Today**

A few months back, I wondered when we'd see an atlas based on satellite photography. Small Blue Planet: The Cities Below—The Aerial Atlas of America, a Windows-based CD-ROM, is a step in this direction.

The Cities Below is a gallery of 180 images culled from the U.S. Geological Survey's National High Altitude Photography program. Shot from planes cruising at 20,000

the world. It also would be nice if the images delivered slightly higher detail. I have little doubt, though, that this is what atlases of the future will look like.

- **NFL's Greatest Plays** \$30; Turner Interactive; 800/294-0022  
Reader service no. 754
- **Small Blue Planet: The Cities Below—The Aerial Atlas of America** \$49.95; Now What Software; 800/322-1954  
Reader service no. 755
- **SportsWorks: The Inside Guide** \$49.95; SoftKey Int'l; 800/227-5609  
Reader service no. 756
- **Star Trek: The Next Generation, A Final Unity** \$4 to \$5 (demo disk); Spectrum HoloByte; 800/695-4263  
Reader service no. 757
- **Star Trek: The Next Generation Interactive Technical Manual** \$69.95; Simon & Schuster Interactive; 800/223-2336  
Reader service no. 758

*Michael Goodwin is a contributing editor for PC World. He can be reached on PC World Online (see page 12 for contact information).* ■

**COMPUTER TRAINING VIDEOS & CD-ROMS**  
*Learn From The Experts*



**KAREN ACERSON**  
Best-Selling WordPerfect Author



**REED JACOBSON**  
Microsoft "Partner" and Excel Author



**TOM MADGETT**  
Word Expert and Master Teacher



**JUDD ROBBINS**  
Nationally recognized Lotus 123 Author



**DANIEL WILL-HARRIS**  
Best-Selling Windows Author & Comedian



**INTERACTIVE CD-ROMS**

Intro to Windows	\$49.95
Beginning Excel 5.0	\$49.95
Beginning Word 6.0	\$49.95
Beginning Access 2.0	\$49.95
Beginning WordPerfect Win. 6.0	\$49.95
Beginning Lotus 4.0	\$49.95
Choose Any 3 CD-ROMs	\$129.95

**Build your own "Sweet" Deal**

Any 5 Videos or CD-ROMs	\$195.00
Any 10 Videos	\$375.00
Any 15 Videos	\$525.00

*Pick the training you need at a great price!*

**30 Day Money-Back Guarantee**

Mail or Fax orders to:

LearnKey, Inc.  
93 So. Mountain Way Dr.  
Rm. #25  
Orem, UT 84058  
Fax 801-224-8211  
1-800-937-3279



1-800-937-3279

**WINDOWS® 3.1**

Beginning Windows	\$49.95
Windows Adv Tips & Tricks	\$49.95
Windows Applications	\$49.95
Optimizing Windows	\$49.95
Combo Special - 4 Tapes	\$159.95

**WORD® 6.0**

Beg/Ini/Adv each	\$49.95
Combo Special - 3 Tapes	\$129.95

**ACCESS® 2.0**

Beg/Ini/Adv each	\$49.95
Combo Special - 3 Tapes	\$129.95

**EXCEL® 5.0**

Beg/Ini/Adv each	\$49.95
Combo Special - 3 Tapes	\$129.95
Macros/Using Visual Basic Tip & Tricks	\$49.95

**Info Highway**

Intro to CampusServe	\$29.95
Intro to Internet	\$29.95

**LOTUS 123® 4.0**

Beg/Ini/Adv each	\$49.95
Combo Special - 2 Tapes	\$89.95

ALSO AVAILABLE IN 2.4 DOS

**APPROACH® 3.0**

Beg/Adv each	\$49.95
Combo Special - 2 Tapes	\$89.95

**Ami Pro® 3.0**

Beg/Ini/Adv each	\$49.95
Combo Special - 3 Tapes	\$129.95

**Windows and Mac**

**PAGEMAKER® 5.0**

Essentials of PageMaker	\$49.95
Moslering PageMaker's Styles	\$49.95
Combination Special - 2 Tapes	\$89.95

**Photoshop® 3.0**

Essentials of Photoshop	\$49.95
-------------------------	---------

**FileMaker Pro® 2.1**

FileMaker Essentials	\$49.95
----------------------	---------

**WordPerfect® 6.0** for DOS/WINDOWS

Beg/Ini/Adv1/Adv2 (each)	\$49.95
Combo Special - 4 Tapes	\$159.95
DTP/Macros/Office Tips (each)	\$49.95
Combo Special - All 7 WP Tapes	\$280.00

ALSO AVAILABLE IN 5.1 VERSION

**Quattro Pro® 5.0**

Beg/Ini/Adv each	\$49.95
Combo Special - 3 Tapes	\$129.95

**Paradox® 5.0**

Beg/Ini/Adv each	\$49.95
Paradox 3 Tape Combo	\$129.95

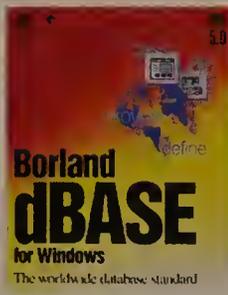
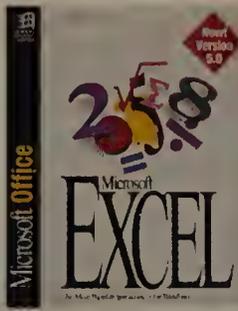
**Other Expert Videos**

**NOVELL NETWORK 3X/4X**  
CNA TRAINING SERIES

- AutoCAD Series**
- Fox Pro Series**
- OS2 Series**
- DOS Series**

**PowerPoint, Freelance, Mail ProComm Plus**

# Use any of these?



## Here's why you need this.

MapLinx™ for Windows *maps* your data – for eye-opening analysis and accurate decision-making!

Your contact manager, spreadsheet or database is *loaded* with information that can help you make business-building, career-boosting decisions.



But imagine the power you'll have when you can actually *see* this data come to life before your eyes!

That's the whole idea behind MapLinx 3.0. Using 5-digit ZIP Codes, MapLinx displays your data on customizable U.S. maps built right into the product. So you can *visualize* your business: something you *can't* do with your database product or spreadsheet alone.

MapLinx incorporates over 27,000 cities, all U.S. and state highways and interstates, and every county, area code and ZIP Code in the country.

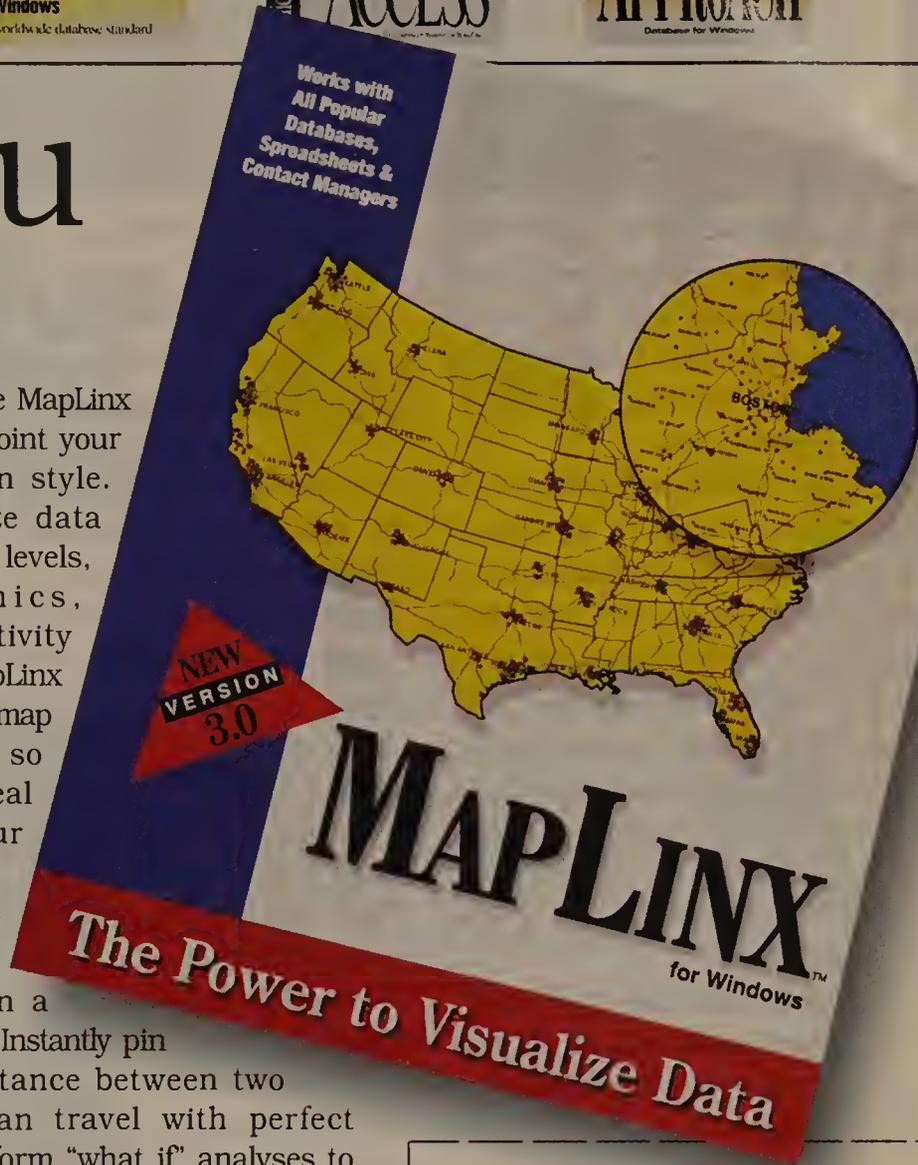
You can use MapLinx to simply pinpoint your data push-pin style. Or, to analyze data such as sales levels, demographics, business activity and more: MapLinx color-codes the map accordingly – so you get a real *picture* of your data.

Choose a city and pinpoint all contacts within a 20-mile radius. Instantly pin down the distance between two locations. Plan travel with perfect efficiency. Perform "what if" analyses to weigh alternatives in business planning. *With MapLinx, the possibilities are limitless!*

You'll also be able to communicate far more clearly with professional-looking maps that get right to the point – unlike rows and columns of names and numbers. And the maps are *customizable*, so you can illustrate your data anyway you wish.

Simply print your MapLinx maps, or paste them into other Windows applications. Put together a dazzling presentation that shows your business in a whole new light – and makes *you* look like a genius.

You already have the data. Now make it *work* for you – with MapLinx. Take advantage of our special limited-time offer and call today!



## Limited-Time Offer!

Call now and get MapLinx 3.0 at a special limited-time price of only \$99.95 (reg. \$149.95) – plus *we'll* pay the shipping and handling. You save \$60 total! Or see your nearest CompUSA, Computer City, Egghead or other fine retailer.\*

# MAPLINX™

for Windows

## 1-800-365-5492

\*Prices may vary at retailers. International shipping extra. © Copyright 1995, MapLinx Corporation, 5068 W. Plano Pkwy., Plano, TX 75093, 214-231-1400, Fax 214-248-2690. All rights reserved. All other brands are the property of their respective owners. MapLinx also available at Best Buy, Electronics Boutique, Elek-Tek, Fry's Electronics, Lechmere, Micro Center. Prices listed in U.S. Dollars.

Circle 186 on reader service card



## Ancient Secrets of the Fonts

In the fifteenth century, Nostradamus predicted, "They will materialize, multiply, and gum up the works." I think he was talking about my fonts. When I first installed Windows, I had only about a dozen TrueType fonts to choose from. Then vast herds appeared mysteriously, as if summoned from the netherworld. At last count, I had over 300 TrueType fonts haunting my system.

Excessive fonts slow me down. The more I have installed, the longer Windows takes to load. And, no surprise, every font that's installed grabs another chunk of my precious Windows resources. (Uninstalled fonts are more benign—they just waste hard disk space.) What's more, I spend way too much time futzing around with fonts, trying to go for that certain something in my documents. My wife kindly calls it creativity; others accuse me of writing ransom notes.

Most fonts arrived on my system—without my permission—from new programs I've installed. The most notorious offenders are desktop publishing and design applications, and a few multimedia programs. Some fonts I actually added on purpose myself.

### Making the Move

As things got out of hand, I figured I needed a free and easy way to catch new fonts as they snuck onto my system. I could identify the TrueType fonts by their TTF extension in Windows' File Manager. A font maven at my user group suggested that I move all the fonts to a dedicated fonts directory. Because most applications install their fonts in \WINDOWS\SYSTEM, any TTF files you find there after you move your existing ones are uninvited newcomers.

By Steve Bass

Moving fonts is pretty simple. Create a new directory called \WINDOWS\FONTS. Then launch Control Panel from Program Manager's Main window, and double-click the *Fonts* icon. In the resulting dialog box, click the top font on the list, then press <Ctrl>-<Shift>-<End> to select them all. Since you only want to uninstall TrueType fonts, scroll through the list while holding down <Ctrl>, clicking to deselect the fonts that do *not* have the label '(TrueType)' next to them. Be careful not to click a font while you're not holding down <Ctrl>; you'll deselect all of them. Once you have just the TrueType fonts selected, click *Remove* and make sure the 'Delete Font File From Disk?' box is *not* checked. Click *Yes to All* and Windows uninstalls the fonts.

From File Manager, move every file that has a TTF extension from the \WINDOWS\SYSTEM directory to \WINDOWS\FONTS. Then, back in Control Panel's Font Installer, click *Add*, tell the program where the new font directory is, and wait for your alphabetized list of TrueType fonts. Make sure the 'Copy Fonts to Windows Directory' option is *not* marked.

Okay, now take a deep breath, because it's time to make some decisions. Take a look at your fonts and decide which you want to keep installed for everyday use, which you want handy for a rainy day, and which should go to the great foundry in the sky. The only way to actually *see* a font is to install it first, so you may want to install everything, then go through them and make your choices. Remember, when you remove an installed font, the 'Delete Font From Disk' option controls how serious a removal it is.



### Getting It Together

If you're willing to spend a few bucks, some programs take the pain out of previewing, installing, uninstalling, and deleting fonts. I use Ares's FontMinder, which gives me an added font management edge: I can organize my fonts into groups, loading only those I'll use for a specific session. For instance, I've got a group of great-looking fonts for my monthly user group newsletter, and another group of bizarre ones for responding to the Internal Revenue Service.

Nostradamus was sure right about my fonts. If only he said something to help me with my creativity.

- **FontMinder** list price \$79; Ares Software Corp.; 800/783-2737, 415/578-9090  
Reader service no. 752
- **Font Control** registration fee \$25; Leaping Lizards; stevefox@c2.hinet.net (Internet), 886-2-759-1035 (fax, Taipei)  
Reader service no. 753

Contributing Editor Steve Bass is president of the Pasadena IBM Users Group. He can be reached on PC World Online. See page 12 for more information.

**DELL LATITUDE.  
THE BEST  
VALUE YOU  
CAN GET IN A  
PORTABLE.**

**NOW ONLY  
\$1999**

**Dell® Latitude™  
Intel® DX2™  
50MHz System**

Business Lease: \$74/Mo.

- 9.5" Dual Scan Color
- 4MB RAM (20MB Max RAM)
- 260MB Upgradeable Hard Drive (524MB Max)
- \$99 More for 2nd NiMH Battery (Slides into floppy drive to achieve extended battery life)
- 32-bit Local Bus Video, 1MB Video RAM

- 2 Type II/1 Type III PCMCIA Expansion Slots
  - Preloaded Communications Software
  - 6 Pounds
  - 1-year Warranty†
  - 30-day Money-back Guarantee\*
- ★ Double your RAM for only \$200 more.  
Order Code #600022



# FIRST WE PICKED UP THE BEST VALUE AWARD. THEN WE DROPPED THE PRICE.

The jury is in. After testing 68 notebooks, *PC Magazine* has given its Editors' Choice Award for Best Value to our Dell Latitude notebook.

And it's no wonder.

The Dell Latitude delivers all the features and power you want in a performance notebook. A powerful 50MHz processor. A removable floppy drive that accommodates a second battery. A brilliant 9.5" dual scan color display. Everything except a whopping price tag.

And now we've done something to make our Dell Latitude notebook an even greater value. We've reduced the price.

So you can get a lot more in a notebook. Without making a big dent in your checkbook.



January 24, 1995  
Dell Latitude 450C

**TO ORDER, CALL NOW.**

**800-348-6152**

Mon-Fri 7am-9pm CT • Sat 10am-6pm CT • Sun 12pm-5pm CT

In Canada, Call 800-668-3021

<http://www.us.dell.com/>

Keycode #03016



Dell's featured computer artist is Diane Fenster of Pacifica, CA.

**OUR DAY IN HELL  
BEGAN WITH A HOT  
CUP OF COFFEE,**



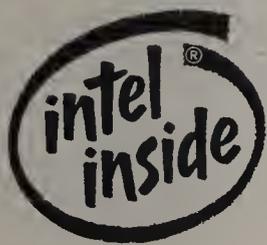
# AND ENDED WITH A TOAST.



“★★★★★”

**Best Overall**  
PC Computing  
Torture Test

Here's to our indestructible Dell® Latitude XP™ notebook. Back from *PC Computing's* Notebook Hell and winner of the Best Overall Award in their Annual Notebook Torture Test.



For ten weeks they baked, froze, dropped, even spilled coffee on thirteen notebooks.

They analyzed usability and measured battery life. All to separate the wheat from the chaff as

it were. And early on, when Toshiba and Compaq were begging for mercy, we were begging for more.

In fact, the Dell Latitude XP was the only notebook to receive five stars. As the magazine remarked, “the Latitude XP braved our durability tests with nary a scratch – surviving in better shape than any notebook we tested.” Then they pronounced it “the best traveling six-pound machine you’ll find.”

Call today to order the Dell Latitude XP. Because if you're the type to put your notebook through hell, you should get one that's already been there.

**TO ORDER, CALL NOW.**

**800-879-3300**

Mon-Fri 7am-9pm CT • Sat 10am-6pm CT • Sun 12pm-5pm CT

In Canada, Call 800-668-3021

<http://www.us.dell.com/>

Keycode #03014



**DELL LATITUDE XP  
INTELDX4™ 100MHz SYSTEM**

**\$3299**

Business Lease: \$122/Mo.

- 9.5" Dual Scan Color
- 8MB RAM (36MB Max RAM)
- 340MB Removable Hard Drive (810MB Max)
- Smart Lithium Ion Battery with Advanced Power Management
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- 5.9 Pounds
- 3-year Warranty†
- 30-day Money-back Guarantee\*
- Expansion Options Available

★Upgrade to 12MB RAM for only \$249 more.

Order Code #600025

**DELL LATITUDE XP  
INTELDX4 100MHz SYSTEM**

**\$3799**

Business Lease: \$137/Mo.

- 9.5" Dual Scan Color
- 8MB RAM (36MB Max RAM)
- 810MB Removable Hard Drive
- Smart Lithium Ion Battery with Advanced Power Management
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- 5.9 Pounds
- 3-year Warranty
- 30-day Money-back Guarantee

★Add an Advanced Port Replicator with SCSI-2 and Ethernet 10Base-T for only \$199 more.

Order Code #600026

**DELL LATITUDE XP  
INTELDX4 100MHz SYSTEM**

**\$4199**

Business Lease: \$151/Mo.

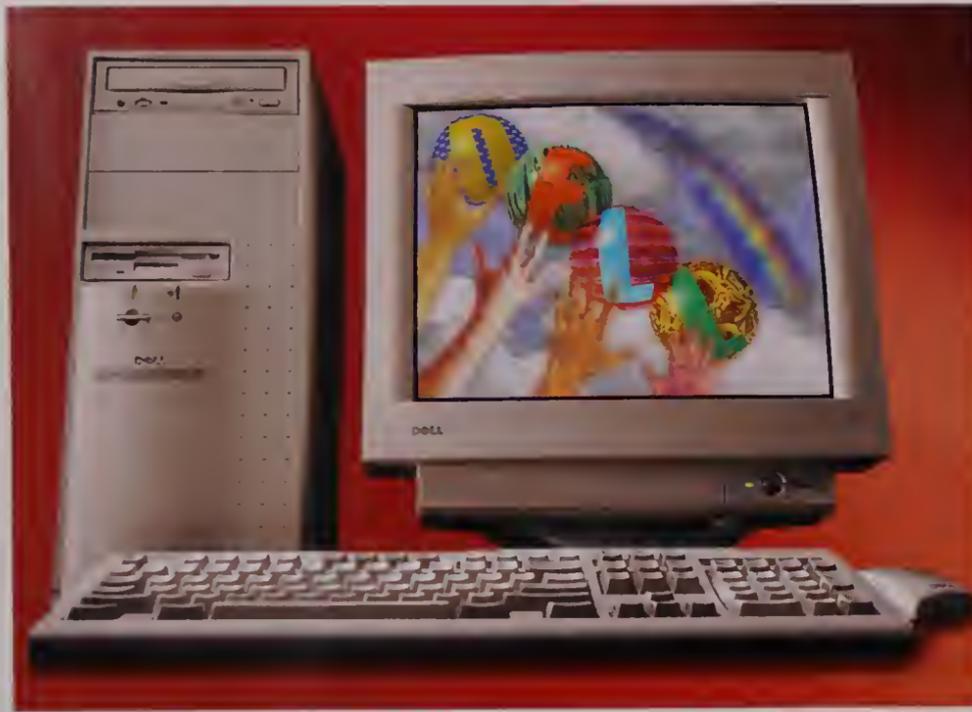
- 9.5" Active Matrix Color
- 8MB RAM (36MB Max RAM)
- 340MB Removable Hard Drive (810MB Max)
- Smart Lithium Ion Battery with Advanced Power Management
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- 6.1 Pounds
- 3-year Warranty
- 30-day Money-back Guarantee
- Expansion Options Available

★Order an extra smart lithium ion battery for \$199 more.

Order Code #600012



# WE'VE GONE TO GREAT LENGTHS TO SAVE YOU MONEY.



### Dell Dimension XPS P100

A Pentium™ Processor-based 100MHz System

- Updated Pentium Chip
- Mini Tower Model
- 16MB RAM
- 1GB Enhanced IDE Hard Drive (10ms)
- VS17 Monitor (17" CRT, NJ)
- Imagine 128 Graphics Accelerator with 4MB VRAM
- 4x Multi-session EIDE CD-ROM Drive
- Sound Blaster 16 Sound Card
- Altec Lansing ACS-31 Speakers
- 256KB Writeback Cache

**\$3899**

Business Lease: \$140/Mo.  
Order Code #500049

- MS® Office 4.3, MS Bookshelf, Visio Express for MS Office
- 3.5" Diskette Drive
- Spacesaver Keyboard
- MS-DOS 6.2/Microsoft Windows 3.1/Mouse

★ Upgrade to 32MB of RAM for your most demanding applications for only \$600 more.

Dell's featured computer artist is Diane Fenster of Pacific, CA

### XPS P100 WORKSTATION

#### Dell Dimension XPS P100

A Pentium Processor-based 100MHz System

- Updated Pentium Chip
- Mini Tower Model
- 16MB RAM
- 1GB Enhanced IDE Hard Drive (10ms)
- VS17 Monitor (17" CRT, NJ)
- Imagine 128 Graphics Accelerator with 4MB VRAM
- 4x Multi-session EIDE CD-ROM Drive
- 256KB Writeback Cache
- 3.5" Diskette Drive
- Spacesaver Keyboard
- MS-DOS 6.2/Microsoft Windows 3.1/Mouse

★ Upgrade to 32MB of RAM for your most demanding applications for only \$600 more.

**\$3549**

Business Lease: \$128/Mo.  
Order Code #500048

### AWARD WINNING XPS P90

#### Dell Dimension XPS P90

A Pentium Processor-based 90MHz System

- Updated Pentium Chip
- Mini Tower Model
- 16MB RAM
- 1GB Enhanced IDE Hard Drive (10ms)
- VS17 Monitor (17" CRT, NJ)
- Imagine 128 Graphics Accelerator with 4MB VRAM
- 256KB Writeback Cache
- 3.5" Diskette Drive
- Spacesaver Keyboard
- MS-DOS 6.2/Microsoft Windows 3.1/Mouse

★ Add a 14.4 fax modem for just \$99 more.

**\$3349**

Business Lease: \$124/Mo.  
Order Code: 500051

### XPS P90 WORKSTATION

#### Dell Dimension XPS P90

A Pentium Processor-based 90MHz System

- Updated Pentium Chip
- Mini Tower Model
- 16MB RAM
- 1GB Enhanced IDE Hard Drive (10ms)
- VS15 Monitor (15" CRT, NJ)
- 64-bit PCI 2MB DRAM Video Card
- 4x Multi-session EIDE CD-ROM Drive
- Sound Blaster 16 Sound Card
- Altec Lansing ACS-5 Speakers
- 256KB Writeback Cache
- 3.5" Diskette Drive
- Spacesaver Keyboard
- MS-DOS 6.2/Microsoft Windows 3.1/Mouse

★ Add up a Conner 200/400MB tape backup unit for \$199 more.

**\$2899**

Business Lease: \$107/Mo.  
Order Code #500047

### P75 OFFICE WORKSTATION

#### Dell Dimension XPS P75

A Pentium Processor-based 75MHz System

- Updated Pentium Chip
- Mini Tower Model
- 8MB RAM
- 1GB Enhanced IDE Hard Drive (10ms)
- VS15 Monitor (15" CRT, NJ)
- 64-bit PCI 1MB DRAM Video Card
- 4x Multi-session EIDE CD-ROM Drive
- Sound Blaster 16 Sound Card
- Altec Lansing ACS-31 Speakers
- MS Office 4.3, MS Bookshelf, Visio Express for MS Office
- 256KB Writeback Cache
- 3.5" Diskette Drive
- Spacesaver Keyboard
- MS-DOS 6.2/Microsoft Windows 3.1/Mouse

**\$2399**

Business Lease: \$89/Mo.  
Order Code #500042

### P90 VALUE SYSTEM

#### Dell Dimension XPS P90

A Pentium Processor-based 90MHz System

- Updated Pentium Chip
- Mini Tower Model
- 8MB RAM
- 540MB Hard Drive (12ms)
- VS15 Monitor (15" CRT, NJ)
- 64-bit PCI 1MB DRAM Video Card
- 4x Multi-session EIDE CD-ROM Drive
- 256KB Writeback Cache
- 3.5" Diskette Drive
- Spacesaver Keyboard
- MS-DOS 6.2/Microsoft Windows 3.1/Mouse

★ Increase your available resolution - upgrade to 2MB DRAM for \$59 more.

**\$2199**

Business Lease: \$81/Mo.  
Order Code #500043

### P75 UNDER \$2000

#### Dell Dimension XPS P75

A Pentium Processor-based 75MHz System

- Updated Pentium Chip
- Mini Tower Model
- 8MB RAM
- 540MB Hard Drive (12ms)
- VS15 Monitor (15" CRT, NJ)
- 64-bit PCI 2MB DRAM Video Card
- 4x Multi-session EIDE CD-ROM Drive
- 256KB Writeback Cache
- 3.5" Diskette Drive
- Spacesaver Keyboard
- MS-DOS 6.2/Microsoft Windows 3.1/Mouse

★ Add a 3COM EULINK III Network Interface Card for \$124 more.

**\$1949**

Business Lease: \$72/Mo.  
Order Code #500046

### 466D POWER SYSTEM

#### Dell Dimension 466D

IntelDX2™ 66MHz System

- 8MB RAM
- 365MB Hard Drive (12ms)
- VS15 Monitor (15" CRT, NJ)
- Accelerated Local Bus Video with 1MB DRAM
- 128KB Cache
- 3.5" Diskette Drive
- Spacesaver Keyboard
- MS-DOS 6.2/Microsoft Windows 3.1/Mouse

★ Add a 14.4 fax modem for just \$99 more.

**\$1499**

Business Lease: \$55/Mo.  
Order Code #400041

### 466D WORKSTATION

#### Dell Dimension 466D

IntelDX2 66MHz System

- 4MB RAM
- 270MB Hard Drive (13ms)
- VS15 Monitor (15" CRT, NJ)
- Accelerated Local Bus Video with 1MB DRAM
- 128KB Cache
- 3.5" Diskette Drive
- Spacesaver Keyboard
- MS-DOS 6.2/Microsoft Windows 3.1/Mouse

★ Double your RAM for just \$150 more.

**\$1299**

Business Lease: \$48/Mo.  
Order Code #400043

### ACTIVE MATRIX 100MHz



#### Dell Latitude XP

##### IntelDX2 100MHz System

- 9.5" Active Matrix Color
- 8MB RAM (36MB Max RAM)
- 340MB Removable Hard Drive (810MB Max)
- Smart Lithium Ion Battery with Advanced Power Management (Slides into floppy drive to achieve extended battery life)
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- Preloaded Communications Software
- 6.1 Pounds
- 3-year Warranty
- 30-day Money-back Guarantee\*
- Expansion Options Available

**\$4199**

Business Lease: \$151/Mo.  
Order Code #600012

### INTRODUCING 75MHz POWER



#### Dell Latitude

##### IntelDX2 75MHz System

- 9.5" Dual Scan Color
- 8MB RAM (20MB Max RAM)
- 524MB Upgradeable Hard Drive (524MB Max)
- \$99 More For 2nd NiMH Battery (Slides into floppy drive to achieve extended battery life)
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- Preloaded Communications Software
- 6 Pounds
- 1-year Warranty
- 30-day Money-back Guarantee

**\$2799**

Business Lease: \$104/Mo.  
Order Code #600042

### 810MB HARD DRIVE

#### Dell Latitude XP

##### IntelDX4 100MHz System

- 9.5" Dual Scan Color
- 8MB RAM (36MB Max RAM)
- 810MB Removable Hard Drive
- Smart Lithium Ion Battery with Advanced Power Management
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- Preloaded Communications Software
- 5.9 Pounds
- 3-year Warranty
- 30-day Money-back Guarantee
- Expansion Options Available

**\$3799**

Business Lease: \$137/Mo.  
Order Code #600026

### 100MHz ONLY \$3299

#### Dell Latitude XP

##### IntelDX4 100MHz System

- 9.5" Dual Scan Color
- 8MB RAM (36MB Max RAM)
- 340MB Removable Hard Drive (810MB Max)
- Smart Lithium Ion Battery with Advanced Power Management
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- Preloaded Communications Software
- 5.9 Pounds
- 3-year Warranty
- 30-day Money-back Guarantee
- Expansion Options Available

**\$3299**

Business Lease: \$122/Mo.  
Order Code #600025

### SMART LITHIUM ION

#### Dell Latitude XP

##### IntelDX2 75MHz System

- 9.5" Dual Scan Color
- 9MB RAM (36MB Max RAM)
- 340MB Removable Hard Drive (810MB Max)
- Smart Lithium Ion Battery with Advanced Power Management
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- Preloaded Communications Software
- 5.9 Pounds
- 3-year Warranty
- 30-day Money-back Guarantee
- Expansion Options Available

**\$2999**

Business Lease: \$111/Mo.  
Order Code #600011

### ACTIVE MATRIX COLOR

#### Dell Latitude

##### IntelDX2 50MHz System

- 9.5" Active Matrix Color
- 4MB RAM (20MB Max RAM)
- 260MB Upgradeable Hard Drive (524MB Max)
- \$99 More For 2nd NiMH Battery (Slides into floppy drive to achieve extended battery life)
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- Preloaded Communications Software
- 6.3 Pounds
- 1-year Warranty
- 30-day Money-back Guarantee

**\$2599**

Business Lease: \$96/Mo.  
Order Code #600019

### INTELDX4 ONLY \$2299

#### Dell Latitude

##### IntelDX4 75MHz System

- 9.5" Dual Scan Color
- 4MB RAM (20MB Max RAM)
- 260MB Upgradeable Hard Drive (524MB Max)
- \$99 More For 2nd NiMH Battery (Slides into floppy drive to achieve extended battery life)
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- Preloaded Communications Software
- 6 Pounds
- 1-year Warranty
- 30-day Money-back Guarantee

**\$2299**

Business Lease: \$85/Mo.  
Order Code #600035

### 50MHz NEW LOW PRICE

#### Dell Latitude

##### IntelDX2 50MHz System

- 9.5" Dual Scan Color
- 4MB RAM (20MB Max RAM)
- 260MB Upgradeable Hard Drive (524MB Max)
- \$99 More For 2nd NiMH Battery (Slides into floppy drive to achieve extended battery life)
- 32-bit Local Bus Video, 1MB Video RAM
- 2 Type II/1 Type III PCMCIA Expansion Slots
- Preloaded Communications Software
- 6 Pounds
- 1-year Warranty
- 30-day Money-back Guarantee

**\$1999**

Business Lease: \$74/Mo.  
Order Code #600022

### DELL SPECS

All of Dell's systems with the new processor ship with the all new and updated Pentium chip.

Dell's SelectCare program gives you a 3-year, on-site, parts-and-labor warranty (monitor included) on all Dell Dimension desktops for \$199. A reassuring benefit that's not offered by our competitors.

Superior 7-day-a-week, 24-hour-a-day customer service including the convenience of guaranteed, next-business-day, on-site service\*

100% money back guarantee. If you are not fully satisfied, return within 30 days for a full refund of purchase price.

Dell Computer Corporation, a \$3 billion company, is a member of the FORTUNE GLOBAL 500®.

**TO ORDER, CALL NOW.**

**800-937-1280**

Mon-Fri 9am-9pm CT • Sat 10am-6pm CT  
Sun 12pm-5pm CT

In Canada? Call 800-668-3021  
In Puerto Rico? Call 800-805-8030  
(In Spanish and English)  
<http://www.us.dell.com/>

Keycode #030015



\*Guarantees available in the U.S. only for registered owners of Dell Dimension systems purchased after 8/1/93 and Dell Latitude systems purchased after 8/1/94. For a complete copy of our Guarantees or Limited Warranties, please write Dell Computer Corp., 2214 W. Braker Lane, Building 3, Austin, TX 78758. On-site service provided by BancTec Service Corp. On-site service may not be available in certain remote locations. Business leasing arranged by Leasing Group, Inc. Prices and specifications valid in the U.S. only and subject to change without notice. The Intel Inside logo is a registered trademark and Pentium, IntelDX2 and IntelDX4 are trademarks of Intel Corporation. MS-DOS, MS, Windows and Microsoft are registered trademarks of Microsoft Corporation. FORTUNE GLOBAL 500 is a trademark of the Time Inc. Magazine Corp. HawkEye is a registered trademark of Number Nine Corp. Dell disclaims proprietary interest in the marks and names of others. ©1995 Dell Computer Corporation. All rights reserved.

**THE FASTEST  
VIDEO MONEY  
CAN BUY.**

**NOW ONLY  
\$3349**

**Dell Dimension™  
XPS P90 Mini  
Tower Model**

A Pentium™ Processor-  
based 90MHz System

Business Lease<sup>®</sup>: \$124/Mo.

- Mini Tower Model
- 16MB RAM
- 1GB Enhanced IDE Hard Drive (10ms)
- VS17 Monitor (17" CRT, NI)
- NEW, 128-bit #9 PCI 4MB VRAM Video Card

- 256KB Writeback Cache
  - One Diskette Drive (3.5")
  - Spacesaver Keyboard
  - #9 HawkEye® Video Software
  - MS-DOS® 6.2/Microsoft® Windows® 3.1/Mouse
- Order Code #500051

**NEW  
UPDATED  
PENTIUM  
CHIP**

PCComputing™  
**MVP** 94  
WINNER  
December 1994

intel  
inside  
pentium  
PROCESSOR

# IMAGINE 128-BIT VIDEO.

Now you don't have to because the Dell Dimension XPS P90 system comes with the Imagine 128 Graphics Accelerator. With features such as an awe-inspiring 128-bit graphics engine. And scorchingly fast PCI local bus video.

The result, states *PC Computing*, is "the fastest graphics ever." The Imagine 128 card provides a 128-bit data path between the graphics controller and the 4MB of high-performance VRAM. Which ensures that graphics performance remains as constant as possible across all color modes, even true color. (16.8 million colors).

And who else but Dell would be the first to put this technology in a personal computer. To order the fastest video money can buy, call us today. You'll like what you see.



**TO ORDER, CALL NOW.**

**800-876-1490**

Mon-Fri 7am-9pm CT • Sat 10am-6pm CT  
Sun 12pm-5pm CT

In Canada, Call 800-668-3021  
<http://www.us.dell.com/>

Keycode #03013

**DELL®**

Dell's featured computer artist  
is Diane Fenster of Pacifica, CA.