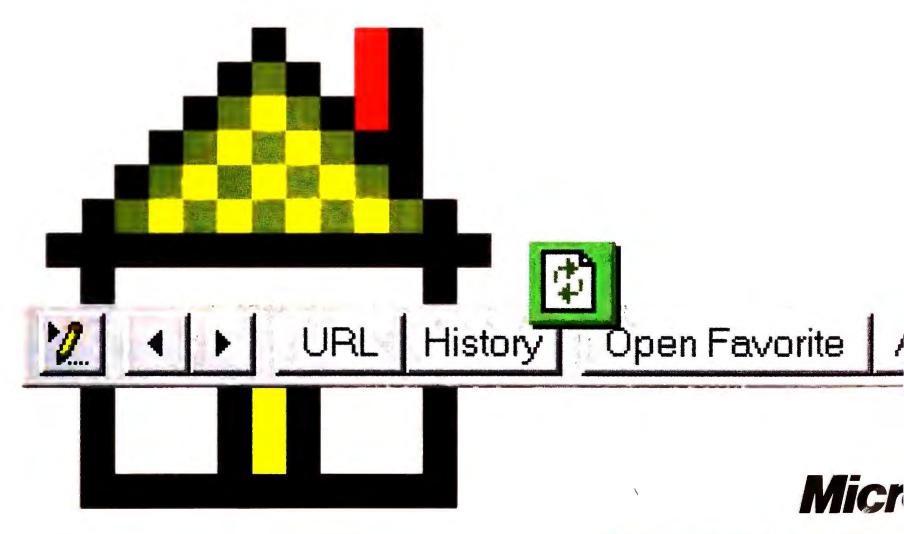


# and turn your cubicle into a publishing (Try not to abuse this



Where do you want to go today?™

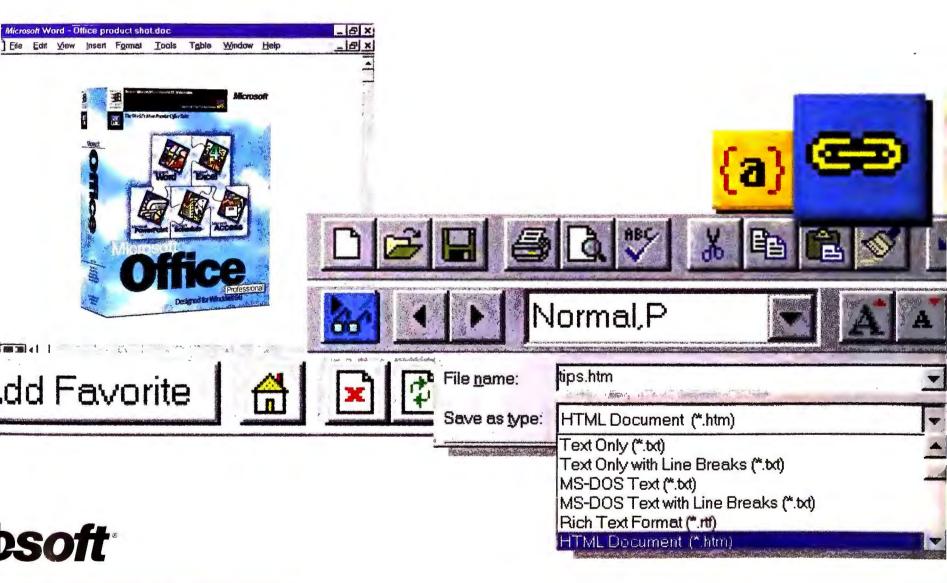
It's never been easier to publish on the Web because now you can take all the work you've done in any of the Microsoft® Office programs you know and put it online — be it the World Wide Web or your own internal web. With Office 95 and Internet Assistants,

it's as easy as writing a Microsoft Word document and saving it as HTML. There's no programming whatsoever, none of those mysterious symbols or arcane commands. Thanks to our free\* Internet Assistants, everything is transparent. And the same

# **Microsoft Office 95**

# empire.

# knowledge.)



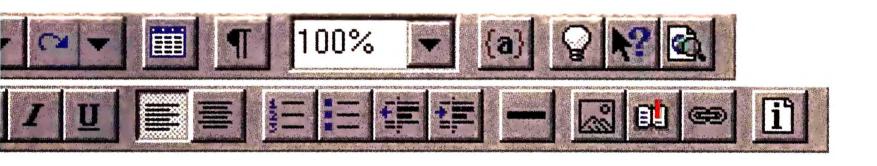
www.microsoft.com/office/internet/

Internet Assistants that let you post Word documents also work in Microsoft Excel, PowerPoint,® Schedule+, and Microsoft Access. No other productivity suite gives you this combination of best-of-breed applications and Web functionality. So give your work the attention it

deserves: upgrade to Office 95. Who knows? It might just be the start of something big. To start creating and publishing documents for the Web, download your free Internet Assistants — or any Office Internet tool — at www.microsoft.com/office/internet/

# Now you can give your work a WorldWide audience







Color Printing. Faxes. Copies. Scans.

The office can manage without you.

Looks like a good day to play hooky. After all, you'll probably get more work done at home with your new Canon Convertible™ Color Printer, the MultiPASS™ C2500. We're talking brilliant Color Bubble Jet™ printing,



plain paper faxing, copying and scanning. All in a single, dependable machine,
backed up by our 2-year, 24-hour InstantExchange warranty program. With its
exclusive Canon® Creative software, your whole family can be more creative.

To learn more, see our Web site, http://www.ccsi.canon.com or call
800-848-4123. Because you could get used to this telecommuting thing.



VOLUME 14 ♦ NUMBER 11 ♦ MULTIMEDIA EDITION

# COVER STORY

# 148 UPGRADES: THE BEST FOR THE BUCK

sense for 486s and low-end Pentiums? We tested performance for a wide range of upgrades and asked users if they noticed performance gains. The results: tips for getting the best boost for your money.



# 170 HACKED! ARE YOUR COMPANY FILES SAFE?

tronic data are on the rise. Is your company vulnerable, and can you do anything to prevent attacks?

# 190 FAST AND CHEAP: TOP MODEMS FOR TIGHT BUDGETS

R F V 1 F W Speedy 28.8-kbps internal modems for just over a hundred dollars? We've tested 14 top modems and pick two best buys with hassle-free performance.

# SPECIAL REPORT

THE WEB AND YOU

# 111 WEB PUBLISHING MADE EASIER

HOW-TO Still don't have a home page? We'll show you how to build a boffo Web site, from picking an ISP to keeping visitors coming.

# 125 WEB SOFTWARE FOR THE REST OF US

made simple? We created pages using Designer, FrontPage, HoTMetaL Pro, and Navigator Gold to find which works best.

Photography by Marc Simon
Digital Composition by Nick Fain



282-M1



148





# 282-M1 THE BEST SPEAKERS FOR \$200 OR LESS

If you're a serious gamer or audiophile, sound is a big part of your PC experience. We listened to ten audio systems to pick the best unit for you.

# 282-M7 TITLE REVIEWS

New this month: Civil War sims, sequels to Grand Prix and Indy Car, and more.

# 282-M10 HARDWARE REVIEWS

The latest Top 5 CD-ROM drives and the Top 5 sound boards.

# 282-M21 Q&A

Tips to solve your multimedia woes.

# TOP OF THE NEWS

# 50 A BETTER WAY TO PLUG AND PLAY?

New Universal Serial Bus products are touted as the easiest way to connect peripherals. Here's what to expect.

54 150-MHZ NOTEBOOKS ARE FAST Dell, Micron, and TI models surpass P-133 notes, but \$500 extra is a lot to pay for the small performance gains.

56 COMPAQ REDESIGNS THE HOME PC

The Presario 3000 packs heavy-duty multimedia into a portable entertainment center.

60 SETTING UP ISDN VIDEOCONFERENCING
New high-speed ISDN videoconferencing
packages proved painful to install.

64 IS WIRED TIRED?
Pick up NetChicks! Plant software in babies!
A parody one-ups the techno-hipster mag.

# NEW PRODUCTS

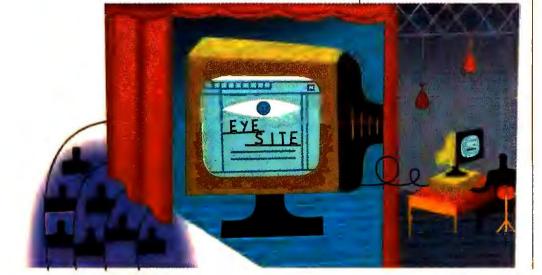
- 78 AST Advantage 9312 Communicator PC
- 79 Compro Digital Color Internet Camera
- 80 cc:Mail Release 7.0
- 80 Microsoft Outlook 97 scheduler
- 82 Exabyte Eagle Nest TR-3, Iomega Ditto 2GB
- 84 HP OmniBook 800
- 84 Olympus SYS.230 storage system
- 88 Ecco Pro 4.0, Janna Contact Personal PIMs
- 90 HP DeskJet 400 printer
- 92 HP LaserJet 5L Xtra printer
- 96 Fractal Design's Expression
- 96 TuneUp.com antivirus service
- 98 NeTpower workstations
- 98 Internet Utilities versus Web Buddy
- 100 More Like This, EchoSearch search engines
- 100 IBM AntiVirus 2.5
- 104 United Connection, Personal AAccess
- 104 Rand McNally StreetFinder 1997 Edition



209

170







# **209 THE NEW NOTEBOOKS:**

# MANY SHAPES, MANY SIZES

Pad 560, and other innovative entries shake up our Top 20 notebooks. Also notable this month: updated service and reliability ratings, a wave of new desktop PCs, and big price cuts for 20-inch monitors.

### 212 POWER DESKTOPS

TOP 20 New Pentium-200—level PCs from Compaq, Cyrix, and Gateway leap into the Top 20 and knock off what are probably the last P-133s we'll ever call power desktops.

# 226 BUDGET DESKTOPS

P200 Dell's \$1999 Dimension P200v premieres at number two with the best performance yet for a budget desktop.

# 242 NOTEBOOKS

the charts. Of note on the budget list, two new IBM ThinkPads; on the power list, the Compaq Armada, a modular marvel that runs on up to three batteries at a time.

# 260 WIN AN NMC PCW P100 PC

fied are you with your PC? Fax in this survey for a chance to win an NMC PCW P100, a PC in this month's Top 20 charts.

# **263 PERSONAL PRINTERS**

TOP 10 New printers in the Top 10: the upgraded Lexmark Optra R+ and IBM's first foray in color, the Network Color Printer.

# 267 20- AND 21-INCH MONITORS

TOP 10 This month's champ, the upgraded Samsung SyncMaster 20GLsi, has color and screen calibration for a low \$1285.

# **271 GRAPHICS BOARDS**

posts great numbers at number four using the same processor and DRAM as the topranked VideoLogic GrafixStar 600.

## 273 MODEMS

**TOP 10** Our best buys: the easy-to-install Motorola LifeStyle 28.8 and the voice-ready Cardinal MVP288IS.

# HERE'S HOW

284 REAL PROBLEM, REAL SOLUTION Weaving a business Web site that captures customers.

# 286 ANSWER LINE

Turning 2000, converting keyboards, stopping Windows 95 from whirring.

# 292 WINDOWS TIPS

Keep open windows small, filter files by extension, fake long file names in Windows 3.x.

# **301 APPLICATION TIPS**

Putting logos on envelopes, test driving Excel macros, tracking database work.

# **308 INTERNET TIPS**

Make your Web browser jump through hoops with Acrobat, don't trust Navigator with your cache.

# 312 HARDWARE TIPS

Standard alphabet soup: an intro to UltraSCSI, USB, and so on.

# 314 MULTIMEDIA TIPS

Play MPEG video files, create your own with ActiveMovie.

# 318 UPGRADE GUIDE

Tips for setting up your brand-new personal computer.

# @HOME

275 @HOME PRODUCTS Anatomy CD-ROMs with guts, multimedia golf to tee off on,

> and a Nixon disc that should be impeached.

276 KEEPING UP Useful World Wide Web sites and services for consumers.

# 278 TOP 5 HOME PCS

Three new systems crack the Top 5 chart, including the number one HP Pavilion 7130P, which comes with the easiest setup for a home computer we've seen yet.

282 HOME OFFICE A better Explorer and Taskbar, plue a ZIPpier utility for Windows 95.



284





# DEPARTMENTS

- 15 UP FRONT The best upgrades, the fastest modems, and more.
- 21 LETTERS Cyrix over Intel, no local dealers?
- 33 CONSUMER WATCH Tech support software?
- 41 PCW ADVOCATE HP printer warranty jams, watch out for credit card surcharges.
- 45 BUGS AND FIXES Insecure Internet Explorer, RAM problems with Toshiba's laptop.
- FULL DISCLOSURE README—bugs, up close and personal.

# RESOURCES

- 12 HOW TO CONTACT PC WORLD
- **COMING UP** 26
- 320 MAIL-ORDER SHOPPING GUIDE
- 353 READER SERVICE CARD
- 340 PC WORLD CATALOG
- 355 ADVERTISER INDEX
- 358 EDITORIAL PRODUCT INDEX

# PCW ONLINE



# **REVEALING TROUBLES**

CONSUMER ALERT Reveal, once the leader in low-end multimedia peripherals, has fallen on hard times, leaving customers without support and buyers waiting months for product rebates. Now consumers may have to get in line behind creditors.

http://www.pcworld/news/reveal.html

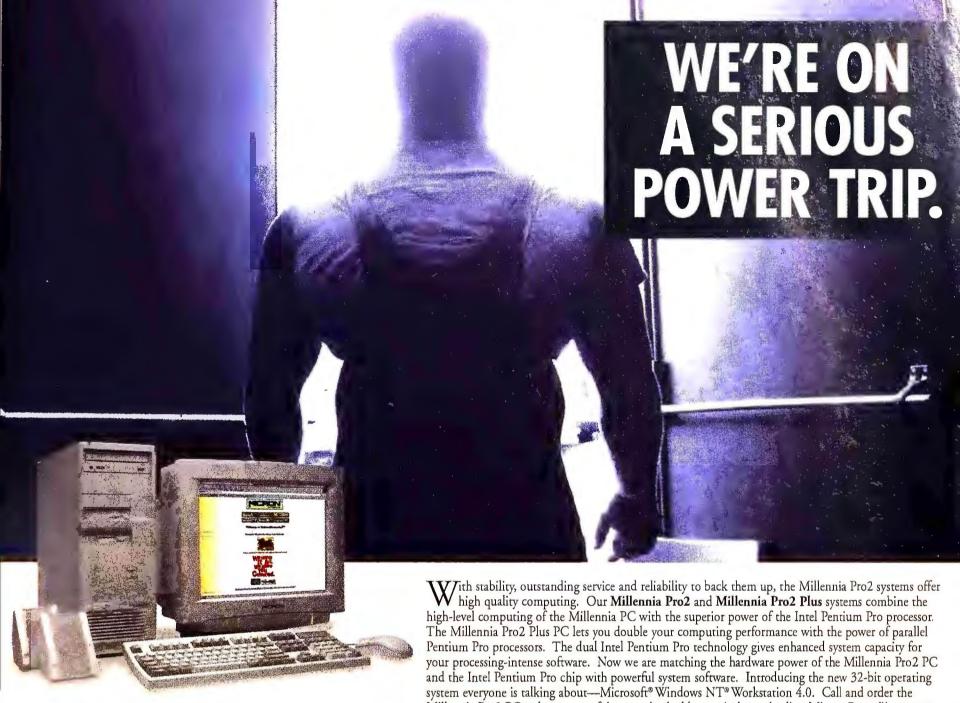
# **ONLINE SCAMS**

CONSUMER ALERT From miracle AIDS cures to pyramid schemes to fraudulent stock offerings, the Internet is attracting just about every flim-flam that's been used to part you from your money. Here's how to avoid being scammed.

http://www.pcworld/news/onlinescams.html

# **EVERY MONTH ON PC WORLD ONLINE** http://www.pcworld.com

- ◆ The latest news and daily audio reports on hardware, software, and technology.
- ◆ The best in hot new shareware and software demos.
- ◆ The exclusive Interactive Buying Guide to help find the PC that meets your needs.
- The Web's most comprehensive how-to database for tips, shortcuts, and advice to make computing productive and fun.



# Millennia<sup>™</sup> Pro 2 200

- Intel 200MHz Pentium® Pro processor
- Supports dual 200MHz Pentium Pro processors
- 256KB internal coche, flosh BIOS
- 12X EIDE CD-ROM drive, 3.5" floppy drive
- 16 bit stereo sound & speokers
  PCI 64-bit 3D video, MPEG, 4MB EDO
- Tool-free minitower or desktop
- Microsoft® Mouse, 104-key keyboord
- Microsoft Windows NT® Workstotion 4.0 CD
   5-year/3-yeor Micron Power™ worronty

  - 16MB EDO RAM
     1.2GB EIDE hord drive
  - 15" Micron 15FGx, .2Bdp (13.7" disploy)
    Microsoft Works 95 CD

  - 32MB EDO RAM
     2.1GB EIDE hord drive
  - 17" Micron 17FGx, .26dp (15.8" disploy)
  - Microsoft Office Pro 95 & Bookshelf
     95 CDs
  - With 2nd Intel 200MHz Pentium Pro processor .......odd 5699

99 Bus. lease 78/mo.

Millennia Pro2 PC today, a powerful system backed by our industry-leading Micron Power<sup>sM</sup> warranty.

- Dual Intel 200MHz Pentium Pro processors
- 256KB internol coche, flosh BIOS
- PCI 32-bit Ultro SCSI Fost-20 controller
   12X SCSI CD-ROM drive, 3.5" floppy drive
- 16 bit stereo sound & speokers
  PCI 64-bit 3D video, MPEG, 4MB EDO
- Tool-free minitower or desktop
- Microsoft Mouse, 104-key keyboord
- Microsoft Windows NT Workstotion 4.0 CD
- Microsoft Office Pro 95 & Bookshelf 95 CDs
- 5-yeor/3-yeor Micron Power worronty
- 32MB EDO RAM
   2GB Ultro SCSI hord drive
- 15" Micron 15FGx, .2Bdp (13.7" disploy)
- 64MB EDO RAM
   4GB Ultro SCSI hord drive
- 17" Micron 17FGx, .26dp (15.B" disploy)
- 12BMB EDO RAM
   9GB Fost SCSI-2 hord drive • 21" Micron 21FGx, .26dp (20.0" disploy)

Bus. lease \$226/mo.

Bus. lease \$168/mo.

Bus. lease \$136/mo

PENTIUM PRO



- 5-year limited warranty on microprocessor and main memory
- 3-year limited parts-only system warranty + 1-, 2- or 3-year optional on-site service agr
- 30 days of free Micron-supplied software support for Micron desktop systems
- 30-day money-back policy
   24-hour technical support



International Fax 208-893-7393



Tollfree from Puerto Rico 800-708-1756



800-708-1758



95-800-708-1755

- 900 E. Karcher Road, Nampa, ID 83687 . Mon-Fri 6am-10pm Sat 7am-5pm (MT)
- International Sales Hours: Mon-Fri 6am-7pm (MT)

   208-893-3434 Fax 208-893-3424 Purchase Order Fax 208-893-8992
- GSA Contract #GS35F4317D Technical Support Available 24 Hours A Day-7 Days A Week
- Technical Support E-mail: techsupport.meic@micron.com

800-776-4506 http://www.mei.micron.com

©1996 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible f cations mey be changed without notice; prices do not include shipping and handling. 30-de brand products and begins from date of shipment. All sales are subject to Micron Electron are registered trademarks of the Intel Corporation. Microsoft, Windows the Windows logo istered trademarks are the property of their respective companies. Electronics' current terms and conditions of sale. Lease prices besed on 36-month lease. Intel, Intel Inside end Pentium ws logo end Windows NT ere registered trademarks of Microsoft Corporetion. All other service merks, tredemerks and reg Circle 149 on reader service card

# DESKTOP POWER WITH NEW-FOUND FREEDOM.



# Take your work to new heights. With its exclusive FlexOpt™ dual bay modular design, the Millennia TransPort™

notebook system from Micron Electronics lets you mix and match devices for a variety of customized choices. Drop in a modular CD-ROM drive to enhance multimedia capability. Add a second intelligent modular lithium-ion battery for up to eight hours' use without recharging\*, or add a 2.1GB hard drive to more than double your storage capacity. And there's built-in flexibility, with features like the innovative Pick-a-Point™ system offering touchpad or pointingstick operation and an infrared port for wireless printing from compatible printers. Top it off with our industry-leading Micron Power™ warranty, and you have the ideal





portable computing solution.







8X CD-ROM

3.5" floppy drive

Second lithium-

With up to eight hours' battery life\* and full multimedia desktop performance, the Millennia TransPort™ puts compact, nocompromise computing where you need it.

# Micron Power



- 5-year limited warranty on microprocessor and main memory
- · 3-year limited parts-only system warranty
- 1-.2- or 3-year optional on-site service agreement for Micron desktop systems
- 30 days of free Micron-supplied software support for Micron desktop systems
- 30-day money-back policy
- · 24-hour technical support

\*Actual battery performance will vory depending an applications and configurations. Based on twa 4-hour batteries.



# Millennia TransPort™

- 133MHz Mobile Intel Pentium<sup>®</sup> processor
- 16MB EDO memory (48MB max.)
- 12.1" active matrix color display, 800 x 600
- 1.2GB removable hard drive
- 133MHz Mobile Intel Pentium processor
- 32MB EDO memory (48MB max.)
- Motorola® Montana 28.8 fax/modem
- 12.1" active matrix color display, 800 x 600
- 1.2GB removable hard drive
- 2nd intelligent modular lithium-ion battery
- 150MHz Mobile Intel Pentium processor
- 32MB EDO memory (48MB max.)
- 12.1" active matrix color display, 800 x 600
- 2.1GB removable hard drive
- Motorola® Montana 28.8 fax/modem
- 2nd intelligent modular lithium-ion battery
- Samsonite leather carrying case







NEW





800-708-1758





208-893-8970



Business lease \$150/month

Business lease \$163/month

Business lease \$189/month

900 E. Karcher Raad, Nampa, 1D 83687 • Mon-Fri 6am-10pm Sat 7am-5pm (MT) International Soles Haurs: Mon-Fri 6am-7pm (MT) 208-893-3434 • Fax 208-893-3424 • Purchase Order Fax 208-893-8992 • Technical Support Available 24 Haurs / 7 Days Technical Support E-mail: techsuppart\_meic@micran.com

996 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible for omissions or errors in typog ices do not include shipping and handling. 30-day money-back policy does not include return freight and original shipg/handling charges, applies only to Micron brand products and begins from date of shipment. All sales are ron Electronics' current terms and conditions of sale. Lease prices based on 36-month lease. Intel, Intel Inside and entium are registered trademarks of the Intel Corporation. Microsoft, Windows the Windows loop and Windows NT are

Circle 149 on reader service card

# Standard Features

- Mobile Intel Pentium processor
- Intel 430MX PCI chipset
- 256KB L2 pipeline burst cache
- 16MB EDO memory (48MB max.)
- 8X modular CD-ROM drive
- PCI graphics accelerator, 1MB EDO memory
- Pick-a-Point™ dual pointing devices integrate both pointing stick and touchpad
- Removable EIDE hard drive
- 3.5" modular floppy drive
- Intelligent modular lithium-ion battery
- 16-bit stereo sound
- Built-in stereo speakers and microphone

- 2 Type II or one Type III PCMCIA slots
- S-video and NTSC-video outputs
- Headphone, microphone and line-in jacks
- 2 infrared ports: one front, one back
- Parallel, serial, VGA and 2 PS/2 ports
- Dimensions: 11.7" x 9.4" x 2.0", Weight: 6.9 lbs.†
- Nvlon carrying case
- Microsoft® Windows® 95 and MS® Plus! CD
- Microsoft Office Pro 95 and Bookshelf® 95 CDs
- Kensington™ security lock ready‡
- 5-year/3-year Micron Power™ limited warranty\* † 6.9 lbs. includes 3.5" floppy and one bottery Lock secures both Millennio TronsPort and MicronDock\*

**Options:** 

• With 2nd removable hard drive (1.2GB) . . . . . . . . . . . . add \$599 • With 32MB DIMM module upgrade ......add \$749 With Motorola® Montana 28.8 PCMCIA fax/modem . . . . . . . . . add \$259 With MicronExec™



http://www.mei.micron.com

# LOOKING FOR THE BEST PCs ON THE MARKET?

# What a coincidence, we happen to make them.

To get an idea of how Micron Electronics™ products have achieved leadership status in reliability, you really have to look inside. We focus on superior engineering, from picking the best components available to rigorous performance and reliability tests. The result is outstanding performance you can count on. Our first-tier reliability status proves it.



200MHz PENTIUM® PROCESSOR -----

32MB ULTRA-FAST EDO RAM UPGRADEABLE **TO 128MB** 

**HIGH-SPEED 512KB PIPELINE BURST** CACHE

**ACCESSIBLE FULL-LENGTH SLOTS** 

**EIDE OR ULTRA SCSI** HARD DRIVE

**EDITORS' CHOICE** MILLENNIA™ P166

MASSIVE EXPANSION BAYS

..... MS WINDOWS®

95 & MS OFFICE

INSTALLED

AWARDS-

& P133

 TOOL-FREE CHASSIS W/SECURITY FEATURES

**ADVANCED INTEL 82430HX CHIPSET** 

**16-BIT STEREO** SOUND AND SPEAKERS

**4MB EDO HIGH-RESOLUTION** 3D VIDEO ADAPTER W/MPEG



























# MILLENNIA™ P166

- Intel 166MHz Pentium® pracessar
- 512KB pipeline burst cache, flash BIOS
- 12X EIDE CD-ROM drive, 3.5" flappy drive
- 16-bit stereo saund & speakers

# • PCI 64-bit 3D video, MPEG, 4MB EDO

- Tool-free minitawer or desktop
- Microsoft® Mause, 104-key keybaord
- Microsoft Windaws® 95 & MS® Plus! CD
- - 16MB EDO RAM 1.2GB EIDE hord drive
  - 15" Micron 15FGx, .28dp (13.7" display)
  - Micrasaft Works 95 CD

Business leose \$6B/month

- 32MB EDO RAM 2.1GB EIDE hard drive
- 15" Micran 15FGx, .2Bdp (13.7" disploy)
- Microsoft Office Pro 95 & 8ookshelf® 95 CDs

Business leose \$71/month

- 64MB EDO RAM 3.1GB EIDE hord drive
- 17" Micron 17FGx, .26dp (15.8" display)
- Micrasoft Office Pra 95 & Baokshelf 95 CDs

**\$2,949** 

Business leose \$100/month

- With 133MHz Pentium processor......subtroct \$200
- With 200MHz Pentium processor......odd \$100

# MILLENNIA™ P200 PLUS

- Intel 200MHz Pentium processar
- 51 2KB pipeline burst coche, flosh BIOS
- PCI 32-bit Ultro SCSI Fast-20 cantraller
- 12X SCSI CD-ROM drive, 3.5" flappy drive
- 16-bit sterea saund & speokers
- PCI 64-bit 3D video, MPEG, 4MB EDO
- Taal-free minitawer or desktap
- Microsoft Mouse, 104-key keybaard
- Micrasaft Windows 95 & MS Plus! CD
- 5-yeor/3-year Micron Power warranty
  - 16MB EDO RAM 2GB Ultro SCSI hard drive
  - 15" Micran 15FGx, .28dp (13.7" disploy)
  - Microsoft Warks 95 CD

Business lease \$99/month

- 32MB EDO RAM 2GB Ultro SCSI hard drive
- 15" Micran 15FGx, .28dp (13.7" disploy)
- Microsoft Office Pro 95 & Boakshelf 95 CDs

Business lease \$105/month

- 64MB EDO RAM 4GB Ultro SCSI hord drive
- 17" Micron 17FGx, .26dp (15.8" display)
- Microsoft Office Pra 95 & Baokshelf 95 CDs

.049

Business lease \$138/month

With 166MHz Pentium processor.....subtract \$100

# HOME MPC™ P133

- Intel 133MHz Pentium® processor
   256KB pipeline burst coche, flash BIOS
   16MB EDO RAM 1.2GB EIDE hord drive
   12X EIDE CD-ROM drive, 3.5" floppy drive
- 16-bit sterea saund & speakers
- 28.8 fax/modem, speakerphane, vaice mail
   Micrasaft® Phane telephony softwore
- Internet ready: Internet in o Box from CampuServe®/Spry Micrasaft Internet Explarer
- Pradigy<sup>®</sup>, Americo Online<sup>®</sup> & CampuServe triol memberships

  PCI 64-bit 3D video, MPEG, 2MB EDO

  15" Micron 15FGx, .2Bdp (13.7" display)

  Toal-free minitawer ar desktop

- Micrasoft Mause, 104-key keybaard
   Micrasoft Windaws® 95 & MS® Plus! CD
- Quicken® Financial Pok includes: Quicken Deluxe
  5.0; Quicken Financial Plonner™; Quicken Parents'
  Guide ta Maney™; Quicken Formily Lawyer™
  Formily Pok includes: ABC by Dr. Seuss; Thinkin'
  Things™ Collection 1: Forthween I'm™; and
- Things™ Collection 1; Eorthworm Jim™; ond Mechwarrior® 2
- Micrasoft Home Pok includes: Warks 4.0 for Windows 95; Publisher Delwe for Windows 95; Encarte 96; En Centrol™ 96; Wine Guide; Arcade 1.0; Scenes-Sparts Extremes Callection; Cinemonio® 96; Julio Child Hame Cooking; Best af Windaws Entertoinment Pack; CD Sampler (including Fury<sup>3</sup> gome dema)

1,899

With 166MHz Pentium pracessar......

# Home MPC™ P200

- Intel 200MHz Pentium pracessar
   256KB pipeline burst cache, flosh BIOS
   32MB EDO RAM 2.1GB EIDE hard drive
   12X EIDE CD-ROM drive, 3.5" floppy drive
   16-bit 3D Weyetable steree saund card
   Advent AV270 2x25 watt stereo speekers
- 2B.8 fax/modem, speakerphone, vaice mail
   Microsaft Phone telephany softwore
- Internet ready:
   Internet in a Box fram CampuServe®/Spry
   Microsaft Internet Explorer
   Pradigy, America Online & CampuServe
   \*\*Tol memberships\*\*

- Pradigy, America Online & CampuServe triol memberships
  PCI 64-bit 3D video, MPEG, 2MB EDO
  17" Micran 17FGx, .26dp (15.8" disploy)
  Iaal-free minitower ar desktap
  Microsaft Mause, 104-key keybaard
  Microsaft Windows 95 & MS Plus! CD
  Microsoft Office Pra 95 & Boakshelf® 95 CDs
  Quicken Financial Pak includes: Quicken Deluxe 5.0; Quicken Financial Plonner; Quicken Porents' Guide ta Money; Quicken Family Lawyer
  Family Pak includes: ABC by Dr. Seuss; Thinkin' Things" Collection 1; Eorthworm Jim"; ond Mechwarrior® 2
- Mechwarrior® 2

  Microsoft Home Pak includes: Warks 4.0 for Windaws 95; Publisher Deluxe far Windaws 95; Encorto 96; Encorto 96 World Atlas; Music Central 96; Wine Guide; Arcode 1.0; Scenes—Sparts Extremes Callectian; Cinemania 96; Julio Child Home Cooking; Best af Windaws Entertoinment Pack; CD Sampler (including Eury³ game demot)
- Fury³ game demo)
  5-year/3-year Micran Pawer warronty

\$2,899

With 166MHz Pentium processar.....subtroct \$100

# Millennia TransPort™

- Mobile Intel Pentium® processor
   Intel 430MX PCI chipset
   256KB L2 pipeline burst coche
   BX modulor CD-ROM drive
   PCI graphics occelerotor, 1MB EDO memary
   Pick-a-Point" duol pointing devices integrate
  both pointing stick ond touchpad
   Removable EIDE hard drive
   3.5" modular floppy drive
   Intelligent madular lithium-ian battery
   16-bit stereo saund

- 6-bit stereo saund

- Built-in stereo speakers ond microphone 2 Type II or ane Type III PCMCIA slots S-video ond NTSC-video outputs Headphone, micraphone ond line-in jocks

- Pleagprone, micraphone and line-in jocks
  2 infrared parts, one front, one bock
  Porallel, serial, VGA and 2 PS/2 ports
  Dimensions: 11.7" x 9.4" x 2.0", Weight: 6.9 lbs.†
  Nylan carrying case
  Microsoft® Windows® 95 and MS® Plus! CD
  Microsoft Office Pro 95 and Bookshelf® 95 CDs
  Kensington® security lock ready\*\*
  S-yeor/3-yeor Micran Power\* worranty † 6.9 lbs. includes 3.5" flappy and one battery tt Lock secures both Millennia TronsPort and MicronDock™

# OPTIONS

| With 150MHz Pentium processaradd  |       |
|---|-------|
| <ul> <li>With Matarala Montana 2B.8 fox/modemadd</li> </ul>                   |       |
| <ul> <li>With 3Com® Ethernet 10BT PCMCIAodd</li> </ul>                        |       |
| <ul> <li>With Samsanite® leother corrying coseadd</li> </ul>                  | \$99  |
| With 2nd madular lithium-ian batteryadd                                       | \$199 |
| With primary 2.1GB removable hord driveodd     With 2nd hord drive (1.2GB)add | \$100 |
| With 2nd hord drive (1,2GB)add  | \$599 |
| <ul> <li>With 2nd hard drive (2.1GB)odd</li> </ul>                            | \$699 |
| With 16MB DIMM module upgrodeadd  | \$349 |
| With 32MB DIMM module upgradeadd  | \$749 |
| <ul> <li>MicronDack™ multimedia port replicatorodd</li> </ul>                 | \$299 |
| MicranExec™ desktap packageadd  | \$799 |
|   |       |

- 133MHz Intel Mobile Pentium pracessor
- 16MB EDO memory (4BMB mox.)
- 12.1" octive motrix disploy, 800 x 600
- 1.2GB remavable hard drive

1,399 Business lease \$150/month

- 133MHz Intel Mabile Pentium processor
- 32MB EDO memory (48MB max.)
- Matorola® Mantana 2B.8 fax/madem
- 12.1" octive motrix color display, BOO x 600 • 1.2GB removable hard drive
- 2nd lithium-ion bottery

Business lease \$163/month

- 150MHz Intel Mobile Pentium processar • 32MB EDO memary (4BMB max.)
- 12.1" octive motrix color display, 800 x 600
- 2.1GB removable hard drive Matorola® Mantana 28.8 fax/modem
- 2nd lithium-ian battery

Samsonite® leather corrying cose

Business lease \$174/month



# MILLENNIA™ PRO2 200

- Intel 200MHz Pentium® Pra pracessar
- Supports duol 200Mhz Pentium Pra processars
- 256KB internal cache, flosh BIOS • 12X EIDE CD-ROM drive, 3.5" flappy drive
- 16-bit stereo sound & speakers
- PCI 64-bit 3D video, MPEG, 4MB EDO
- Toal-free minitawer or desktop • Microsoft® Mause, 104-key keybaord
- Microsoft Windows NT® Warkstotion 4.0 CD
- 5-yeor/3-yeor Micron Pawer™ worronty
- 16MB EDO RAM 1.2G8 EIDE hard drive
- 15" Micran 15FGx, .28dp (13.7" disploy) Micrasoft Warks 95 CD

Business lease \$78/month

- 32MB EDO RAM 2.1GB EIDE hard drive
- 17" Micran 17FGx, .26dp (15.8" display)

Microsoft Office Pro 95 & Bookshelf® 95 CDs

2,849 Business lease \$97/month

With 2nd 200MHz Pentium Pro pracessar...add \$699

# MILLENNIA™ Pro2 400 Plus • Dual Intel 200MHz Pentium Pro processors

- 256KB internol coche, flosh BIOS
- PCI 32-bit Ultro SCSI Fost-20 controller
- 12X SCSI CD-ROM drive, 3.5" floppy drive • 16-bit sterea sound & speokers
- PCI 64-bit 3D video, MPEG, 4MB EDO
- Taal-free mini-tower ar desktop Microsaft Mouse, 104-key keybaard
- Microsoft Windaws NT Warkstation 4.0 CD
- Micrasaft Office Pra 95 & Baakshelf 95 CDs
- 5-year/3-year Micran Power worronty
  - 32MB EDO RAM 2GB Ultra SCSI hard drive • 15" Micran 15FGx, .2Bdp (13.7" display)

Business lease \$136/month

- 64MB EDO RAM 4GB Ultra SCSI hord drive
- 17" Micran 17FGx, .26dp (15.8" disploy)

\$**4,949** Business lease \$16B/month

• 12BMB EDO RAM • 9GB Fast SCSI-2 hard drive • 21" Micran 21FGx, .26dp (20.0" disploy)

**57,199** Business lease \$226/month

pentium





International Sales 208-893-8970 International Fax 208-893-7393



Tollfree from Puerto Rico 800-708-1756

800-708-1758



95-800-708-1755

800-421-8942 http://www.mei.micron.com

©1996 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible for omissions or errors in typography or photography. All purchases ere subject to availability. Prices and specifications may be changed without notice; prices do not include shipping end hendling. 30-day money-beck policy does not include return freight and original shipping handling charges, applies only to Micron brand products and begins from date of shipment. All sales are subject to Micron Electronics' current terms and conditions of sale. Lease prices based on 36-month lease. Intel, Intel Inside and Pentium are registered trademarks of the Intel Corporation. Microsoft, Windows the Windows logo and Windows NT are registered trademarks of Microsoft Corporation. All other service marks, trademarks and registered trademarks ere the property of their respective compenies. Circle 149 on reader service card

**EOITORIAL OIRECTOR** Philip Lemmons

EOITOR IN CHIEF Cathryn Baskin

EOITOR IN CHIEF, PC WORLD ONLINE Russell Glitman

EXECUTIVE EDITORS Eric Bender, Tracey Capen, Daniel Tynan

MANAGING EOITOR Luis Camus

ART OIRECTOR Robert Kanes

SENIOR NEWS EDITOR Michael Desmond SENIOR ONLINE EDITOR Yael Li-Ron SENIOR REVIEWS EDITOR Carla Thornton SENIOR TECHNICAL EOITOR Karl Koessel SENIOR @HOME EDITOR Christina Wood EAST COAST EDITOR Randy Ross

ASSISTANT MANAGING EDITOR Anne Kandra

SENIOR ASSOCIATE EDITORS Rex Farrance, Bryan Hastings, Ann Kremers, Michael S. Lasky, Harry McCracken, Gabrielle Mitchell, Lincoln Spector

ASSOCIATE EDITORS Brad Grimes, Laurianne McLaughlin, Melissa Riofrio, Carol White TECHNICAL EDITOR Shane Rau STAFF EOITOR John Goddard NEW MEDIA EDITOR Tracy Swedlow ONLINE STAFF EOITORS Richard Overton, Samantha Parent ASSISTANT EDITORS Angela Freeman, Eric Hellweg, Aoife M. McEvoy EOITORIAL RESEARCHER Julie Campagna **EDITORIAL ASSISTANT Allyson Bates** 

Marla Miyashiro COPY EDITORS Stephen Compton, Kim Saccio, Hon Walker EDITORIAL PRODUCTION ASSOCIATE Henry Pham ASSISTANT TO THE EDITOR IN CHIEF Linda L. Grubbs

COPY CHIEF Richard Johnson

SENIOR COPY EOITORS Barbara Lewis,

ADMINISTRATIVE ASSISTANTS Tina Hannah, Heidi Z. A. Wolff BUSINESS MANAGER Heidi Anderson LIBRARIAN Stella Chan FLUEGELMAN INTERN Glenn McDonald

FOUNDER David Bunnell FOUNDING EDITOR Andrew Fluegelman

# ART AND DESIGN

ASSOCIATE ART DIRECTOR Greg Silva ASSISTANT ART DIRECTOR Tim I Luddy SENIOR OESIGNERS Barbara Adamson, Kate Godfrey, Carolyn Perot SENIOR OESIGNER, INFOGRAPHICS Sandra Kelch ASSISTANT OESIGNER, INFOGRAPHICS Robin Briskin PRODUCTION ARTIST Marlene Tobias

# MULTIMEDIA EDITION

SENIOR ASSOCIATE EDITOR Kimberly Stein ASSOCIATE EOITOR Diane Mehta ART DIRECTOR Adrian Morgan COPY EDITOR Steven Gray

# CONTRIBUTING EDITORS

Steve Bass, George Campbell, Scott Dunn, Bronwyn Fryer, Roberta Furger, Judy Heim, Stephen Manes, James A. Martin, Brian McWilliams, Stan Miastkowski, Celeste Robinson, Richard Scoville, Scott Spanbauer, Kirk Steers

# PC WORLD TEST CENTER

TEST CENTER OIRECTOR Julian Milenbach MANAGER, PERFORMANCE TESTING Ulrike Diehlmann MANAGER, USABILITY TESTING Susan Silvius PERFORMANCE ANALYSTS Dave Casini, Jeffrey Kuta, Kevin Mitchell, Mike Salayko TEST CENTER COORDINATORS Andrew Hawn, Julian Weatherby

NETWORK WORLO-PC WORLO TEST CENTER OIRECTOR William L. Rinko-Gay

# ONLINE SERVICES GROUP

PUBLISHER Thomas Gewecke OIRECTOR, BUSINESS OEVELOPMENT Sara Frankel DIRECTOR, MARKETING Scott Danish DIRECTOR, OPERATIONS Nancy H. Miller OIRECTOR, INTERACTIVE SERVICES Dennis Sheridan MANAGER, PRODUCT DEVELOPMENT Adam Block MANAGER, ONLINE OESIGN Jonas Höglund ONLINE PRODUCERS Carla Lieberman, Licia Slimon AUDIENCE DEVELOPMENT MANAGER Declan Fox CONTENT ENGINEER Nick Van Cleve PRODUCTION COORDINATOR Paul O'Neil PRODUCERS, PRODUCT DEVELOPMENT Spencer Ante, Shoshana Berger, Greg Weinger ASSISTANT TO THE PUBLISHER AND SPECIAL PROJECTS MANAGER Martyne Pagé FLUEGELMAN INTERN Amy Ng

### USER GROUP 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; Mary Dolce, Chicago Computer Society; Sandy Frunzi, Las Vegas PC User Group (LVPCUG); Al Harrison, Houston Area League PC Users; David Hoffman, NYPC; Joseph Rigo, NYPC; Robert Rodrigue, MicroLink PC User Group; Kenny Wynn, LVPCUG

# PCW COMMUNICATIONS

CHIEF EXECUTIVE OFFICER Patrick Kenealy PRESIDENT AND CHIEF OPERATING OFFICER Richard J. Marino PUBLISHER J. Samuel Huey VP ANO ASSOCIATE PUBLISHER Jeff Edman VP AND CHIEF FINANCIAL OFFICER Vicki Peilen VP, CIRCULATION Shawne Burke Pecar VP, HUMAN RESOURCES Richard Willoughby VP, MANUFACTURING Linda Manes Goodwin VP, RESEARCH Cheryl Brink

### HOW CONTACT WORLD

## SUBSCRIPTION SERVICES

Subscriber Services, P.O. Box 55029, Boulder, CO 80322-5029. **PHONE:** 800/234-3498 (303/604-1465 in Colorado and Canada). To place new orders: 800/825-7595. INTERNET: customer\_service@pcworld.com

# MAIL AND PC WORLD ONLINE

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 pcworld

MICROSOFT NETWORK: go poworld PROOIGY: jump pc world

WORLD WIOE WEB: http://www.pcworld.com

INTERNET: letters@pcworld.com

# QUESTIONS AND SUBMISSIONS

Send material electronically to the appropriate forum on PC World Online (for example, send Answer Line submissions to the Answer Line forum); to the online address listed below, or mail them to PC World. Include your name, city, and state in all correspondence. We reserve the right to edit letters.

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

LETTERS: letters@pcworld.com

CONSUMER WATCH: consumerwatch@pcworld.com PCW AOVOCATE: advocate@pcworld.com BUGS ANO FIXES: bugsandfixes@pcworld.com REAL PROBLEM: CompuServe, 72614,1534;

415/978-3212 (phone), 408/338-0945 (fax). PC World pays \$300 per published column. ANSWER LINE: scott\_spanbauer@pcworld.com WINDOWS TIPS: pcwsdunn@aol.com SPREADSHEET TIPS: richard\_scoville@pcworld.com WORO PROCESSING TIPS: george\_campbell@pcworld.com DATABASE TIPS: celeste\_robinson@pcworld.com INTERNET TIPS: judy\_heim@pcworld.com HAROWARE TIPS: kirk\_steers@pcworld.com MULTIMEDIA TIPS: scott\_spanbauer@pcworld.com UPGRADE GUIOE: stan\_miastkowski@pcworld.com FULL OISCLOSURE: smanes@ix.netcom.com MULTIMEOIA EOITION: kimberly\_stein@pcworld.com

## 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. Write to PC World, Reprints and Permissions, 501 Second St. #600, San Francisco, CA 94107; include a phone number. To order reprints of your company's editorial coverage in PC World, call 612/582-3810.

### BACK ISSUES

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

### MAILING LISTS

Occasionally we make our subscribers' names available to other companies whose products may interest you. If you want your name excluded from these mailings, send a request with your mailing label to Subscriber Services, P.O. Box 55029, Boulder, CO 80322.

New 17" (15.75" viewable) VisionMaster: FST, 0.26MM DP and VisionMaster Pro: Diamondtron, 0.25mm AG tubes.

Anti-Reflect, Anti-Static coating for clear, crisp display

Up to 1600x1200 at 75Hz flicker-free refresh

High resolution On-Screen Display menus with clear symbols and text. Full geometry, color convergence and moiré control

24.8-94KHz, 50-160Hz scanning rates on 21" models Recessed D-Sub and BNC inputs and power connection in back allows monitor to be placed against a wall

VESA-DPMS, Energy Star and NUTEK power saving

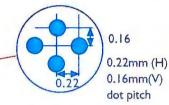






New 21" (19.50" viewable) VisionMaster: FST, 0.27mm EDP and VisionMaster Pro: Diamondtron, 0.30mm AG tubes

New Enhanced Dot Pitch shadow mask flat square tube on Vision Master 21" gives improved vertical resolution and greater brightness



Simplified PCB construction and surface mount technology to reduce cost and improve reliability

CE mark

Windows 95 Plug-and-Play (DDC) compatible

3 button user panel for ease of set-up and adjustment via On Screen Display

> Easy to operate tilt and turn base



**iiyama**, the number one manufacturer of color monitors in Japan, continues its innovative contributions to display technology with its new line of VisionMaster 15", 17" and 21" color monitors. It's no wonder that, for years, high-end systems integrators and resellers have relied on VisionMaster monitors

Our monitors save valuable desk space with a smaller footprint than other brands.

to deliver a premium solution at an affordable cost to their customer base. Building on this success, the engineers at *iiyama* have redesigned the entire product family and added many advanced features—such as on-screen display, convergence and moiré control—making them perfect for today's ultra high resolution CAD, DTP and Internet applications. All backed with an excellent Three Year Warranty\*, free technical support from *iiyama* direct and optional VisionCare coverage. If you ever have a problem, VisionCare ensures 48 hour delivery of a replacement monitor! Call *iiyama* today for details!

\*Three year warranty applies to 17" and 21" monitors. Two year warranty applies to 15" monitors. 15" cabinet and specifications are not shown. †PC World Magazine picks iiyama VisionMaster Pro 17 Monitor the Number One Best Buy.

For More Information Call:

1-800-394-4335 • 1-800-594-7480











iiyama, 575 Anton Boulevard, Suite 590 Costa Mesa, CA 92626, (714) 437-5111. Fax (714) 437-5982. 650 Louis Drive, Warminster, PA 18974, (215) 957-6543. Fax (215) 957-6551. In Canada, call A. Crawford Assoc., (905) 890-2010. Diamondtron is a registered trademark of Mitsubishi Electric. All other products mentioned are trademarks of their respective companies. ©1996 iiyama North America. www.iiyama.com Circle 108 on reader service card

# It's your business. Who would you trust to back you up?





Introducing the new HP Colorado T3000 Tape Drive.

- Up to 3.2 GB\* capacity at an affordable price
- Industry-leading reliability for complete confidence
- One-Button Backup makes it quick and easy



If you were to take stock of all the information stored on your PC, you'd soon realize how vital it is to your business. What if one day all that information vanished? Accidents happen. Theft, fire, floods, computer failure or human error can result in a devastating loss of data. The cost of rebuilding

that data can be massive and often impossible. Few businesses survive it.

Regular backups using a reliable HP Colorado tape backup system are your best insurance that, should disaster strike, you're back up and running in minutes.

With award-winning Colorado Backup for Windows 95 software included in every HP Colorado drive, data protection simply doesn't get any easier. And nothing is more reliable. What could be more important than that?

Your business depends on your data. You can depend on HP Colorado to look after your data. Visit your dealer or call **1-800-826-4111 ext. 2011** for more information. HP Colorado Tape Storage. A store you can trust.

Designed for

Microsoft Windows 95

# Upgrades That Make a Difference

AT A RECENT CONFERENCE on Internet and multimedia applications, an Intel spokesperson drew a dramatic analogy to illustrate the rate at which PC technology has evolved since its inception. If cars had improved at the same rate as PCs, he said, they'd now get half a million miles to the gallon, and it would be cheaper to buy

a new car than to park the old one.

Granted, it's in Intel's best interest to emphasize great strides in PC performance. But no other consumer product consistently shows more stunning performance gains, adds more capabilities and functions, and yet costs less from year to year than PCs.

Who could possibly complain about this state of affairs? Only the millions of businesses and consumers who bought a PC six months, a year, or two years ago and now see prices \$500, \$1000, or even \$1500 less than what they originally paid.

If you are one of these people, grousing about how much you could have saved if you had only postponed your purchase, chances are that before you buy your next computer, you will upgrade your current system to make it last as long as possible. This month's cover story, "Upgrades: The Best for the Buck," will tell you whether an upgrade makes sense for your par-

ticular computer and, if so, which upgrades are the best deals.

# IF YOU UPGRADE, CAN YOU TELL?

FOR THIS YEAR'S annual upgrade story, PC World editors and Test Center staff took "vintage" 486-66, Pentium-75, and Pentium-100 PCs, beefed up RAM to 16MB and 32MB, and installed a variety of processor upgrades. The results of their tests show that in many cases the best upgrade is the simplest and cheapest: more RAM. But in some cases, adding the right amount of RAM and a faster processor can boost the performance of your PC by up to 48 percent—for a fraction of the cost of a new system.

In a twist on the usual performance tests, our staff went a step further and invited typical PC users into the lab to see if and when they could actually perceive performance differences on Pentium-75 PCs, pre- and postupgrade. The results: Half the



Adding the right amount of RAM and a faster processor can speed a PC up to 48 percent-for a fraction of the cost of a new system.

testers did not notice a performance increase of 11 percent on the upgraded PC. Our advice: If an upgrade will bring you only a marginal improvement in performance, save your money. You're better off putting the several hundred dollars toward the purchase of your next PC.

# **FASTER ACCESS TO THE NET**

ALTHOUGH THE RIGHT upgrades can make a significant difference in your PC's performance, they'll do little to alleviate the tedium most of us have come to expect when connecting to the Web, online services, or an office network. If you're currently using a PC with a 9.6-kilobitsper-second or 14.4-kbps modem, upgrading to a 28.8-kbps modem can cut the time you'll spend downloading files in half. This month we tested 14 leading internal 28.8-kbps modems, including three that also support the higher throughput rate of 33.6 kbps. Our tests here turned up some surprises: The fastest 33.6-kbps modem was still slower than six of the 28.8kbps models, and only one 33.6-kbps modem qualified for our Top 10 chart. Read "Fast and Cheap: Top Modems for Tight Budgets" for recommendations about specific models.

Our tests also revealed huge differences in how easy it is to get particular modems installed and running properly. If you think that Plug and Play certification guarantees quick installation, think again. Only three of the seven Plug and Play modems we tested—from Motorola and Hayes-installed easily. With some socalled Plug and Play modems, our editors had to go through such old-fashioned installation hassles as assigning COM ports and IRQs, upgrading BIOSes, and manually configuring the modems in Windows, sometimes to no avail. That's not to say that legacy—or non-Plug

and Play-modems were necessarily easier, but it's one more reminder that specs alone don't tell the whole story.

## AN AUDIBLE DIFFERENCE

TO HEAR THE DIFFERENCE an upgrade can make, consider a new pair of speakers. For "Sound Advice: The Best Speakers for \$200 or Less," our editors hooked up ten speaker systems in succession to a Gateway multimedia PC, loaded a mix of games and audio CDs, and listened. The best sound came from some of the more expensive three-piece systems with separate subwoofers for producing big bass effects. But even with speakers that cost as little as \$99, you'll get improvements that will please you as much as—if not more than—another 8MB of RAM.

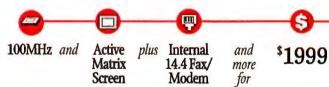
Cathryn Baskin is editor in chief of PC World.

# Always look for the



The 30-Award-Winning
WinBook XP5





# WinBook XP5

- 100MHz Intel® Pentium® Processor
- 10.4" Active Matrix Color Display
- 810MB removable Hard Drive
- 8MB RAM expandable to 32MB
- 256K L2 Cache
- 3.5" 1.44MB Diskette Drive ■ 6.1 lbs
- 14.4 Internal Fax/Modem
- **NiMH Battery**
- 1MB Video RAM
- Two Type II or one Type III PCMCIA Slot
- Integrated dual-button pointing stick, optional dual-button trackball or dual-button touchpad
- Parallel, Serial and PS/2 ports
- One-year extendable warranty

Add an 8X CD-ROM docking station with expansion bay and 2 expansion slots for \$399

CALL FOR OTHER MODELS AVAILABLE

- 133MHz Intel® Pentium® Processor
- 10.4" Active Matrix Color Display
- 1.3MB removable Hard Drive
- 16MB RAM expandable to 32MB
- 256K12 Cache
- 3.5" 1.44MB Diskette Drive ■ 6.1 lbs
- 28.8 PCMCIA Fax/Modem
- Lithium Ion Battery
- 1MB Video RAM ■ Two Type II or one Type III PCMCIA Slot
- Integrated dual-button pointing stick, optional dual-button trackball or dual-button touchpad
- Parallel, Serial and PS/2 ports
- One-vear extendable warranty

Add an 8X CD-RDM docking station with expansion bay and 2 expansion slots for \$399

**CALL FOR OTHER MODELS AVAILABLE** 

ith over 30 awards and counting, the WinBook® has made its mark as a winner. WinBook has built a reputation for having the highest quality, best-designed notebooks at the lowest prices available.

For the impossible price of \$1999 the XP5 offers you the performance of the powersaving Intel® Pentium® notebook

processor with a brilliant active matrix screen plus an internal 14.4 fax/modem! If you're looking for a feature-loaded multimedia model, the FX delivers — from the swappable CD-ROM/3.5" disk drive modules and long-lasting 12-cell lithium ion battery to the giant 12.1-inch active matrix screen.

WinBook keeps winning...and wi











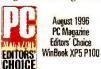
October 1996











# mark of a Winner



The Award-Winning Multimedia WinBook FX

OPTIONAL TOUCHPAO SHOWN

edgeable reps a call today to

that's right for you and for

additional information on

help you choose the WinBook











plus 133MHz and 12.1" SVGA Color **Active Matrix** Display

6X CD-ROM Standard

Floppy Drive Standard

or Lithium Ion (Option)

# WinBook FX

So check out our winning 133MHz Intel® Pentium® Processor 12.1" SVGA Active Matrix Color Display marks. Give one of our knowl-256K Syncburst L2 Cache

the models

featured here

or the many

models avail-

able to you.

- Options Bay accepts 6X CD-ROM, 3.5" Floppy Drive (both included) or Optional 2nd Lithium Ion Battery
- 59 Watt Smart Lithium Ion Battery Integrated dual-button pointing stick, optional
- touchpad (shown) Integrated Soundblaster Pro 16-bit Stereo Audio
- One Type II and one Type III PCMCIA Slot
  PCI Local-bus PCMCIA Controller with Graphics Accelerator
- 810MB removable Hard Drive
- 8MB EDO RAM expandable to 40MB
- Parallel, Serial, PS/2, Game port, and one 2-way Infrared port
- One-year extendable warranty

Upgrade to 1GB HDD, 16MB RAM, 28.8 interna

**CALL FOR OTHER MODELS AVAILABLE** 

# NEW 150MHz MODEL!

- 150MHz Intel® Pentium® Processor
- 12.1" SVGA Active Matrix Color Display 28.8 Internal Fax/Modern
- 1GB removable Hard Drive
- 16MB EDO RAM expandable to 40MB 256K Syncburst L2 Cache
- Options Bay accepts 6X CD-ROM, 3.5" Floppy Drive (both included) or Optional 2nd Lithium Ion Battery
- 59 Watt Lithium Ion Battery
- Integrated dual-button pointing stick, optional touchpad (shown)
- Integrated Soundblaster Pro 16-bit Stereo Audio
- One Type II and one Type III PCMCIA Slot PCI Local-bus PCMCIA Controller with Graphics Accelerator
- Parallel, Serial, PS/2, Game port, and one 2-way
- One-year extendable warranty

**CALL FOR OTHER MODELS AVAILABLE** 

# 1-800-254-7808

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

Use your WinBook Card, 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.



Circle 254 on reader service card

ning...and winning...and winni







April 1996 WinBook XP5 P120 16/1.3GB Active













# The HEART of an Artist"



# Vivid colors. Ergonomic design. Performance and features to indulge the visionary in you.

Princeton Graphic Systems® monitors have always had a solid reputation for pushing performance barriers far beyond industry standards. This tradition was proven with the highly respected Ultra 15 which won *PC World*'s Best Buy Award a remarkable three times in a row. The 135MHz/82KHz Ultra 17+ further redefined the industry with its award-winning, high refresh rate performance and ultra-low price. Now, our **E**xtra**O**rdinary new models surpass even our own stellar benchmarks.

Case in point, the EO75. With its super-high 95KHz horizontal frequency, 200MHz video bandwidth and an ultra-fine 0.26mm dot pitch, this 17" (15.8" viewable) monitor delivers a bold, flicker-free resolution of 1600x1200 @ 75Hz. That's rock-solid performance. Furthermore, our engineers added Enhanced Imaging Circuitry for a sharper focus without the moiré problems so common to other 0.26mm monitors. That's a difference you can see!

Princeton's next generation of EO monitors incorporates PreVu<sup>SM</sup> controls and Coloright<sup>SM</sup> technology perfect for intense, graphical applications. In addition, Princeton offers an ExtraOrdinary, full three year "Bucket to Bezel" limited warranty\*.

The EO Series is already available at your nearby dealer. See it today. Their performance will win your heart. Their price will ease your soul.

# The SOUL of an Accountant "

Fall '96 Las Vegas Convention Center Booth No. 15205

\$722 ESP



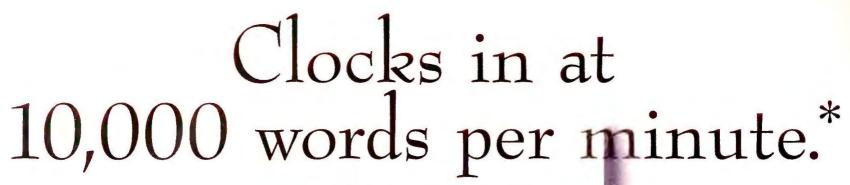
Princeton Graphic Systems • 2801 S. Yale St., Ste.110 • Santa Ana, CA 92704 • Tel. 800/747-6249 or 714/751-8405 • Fax 714/751-5736 • Fax-On-Demand 714/751-0168 • Web Site; www.prgr.com

© 1996 Princeton Graphic Systems. All rights reserved. All trademarks are the properties of their respective owners: As an Energy Star<sup>os,</sup> Partner, Princeton Graphic Systems has determined that these products meet Energy Star<sup>os,</sup> Guidelines for energy efficiency. Prices and specifications are subject to change without notice.

\*PreVus\*\* and Colorights\*\* are not available on the EO40. Full three-year limited warranty is offered on the following models: EO40, EO50, EO17, EO70 and EO75.

PRINCETON BRAPHIC SYSTEMS

800-747-6249 ext. 182



# QUICK. WHAT CAN PAPERPORT ix DO?

- In as quick as two seconds, it scans anything: photos, text, business cards.
- Its Xerox TextBridge™ OCR software saves you the hassle of retyping.
- It lets you file scanned documents into folders, so you can easily find them later
- Its CardScan SE<sup>™</sup> software stores business cards, so you never forget a name.
- It turns your printer into a copier, and your PC into a fax machine.
- 6 It comes with Netscape Navigator™
  —free! And you can use it to send paper over the Internet.
- 7 Its unique FormTyper™ software makes filling out forms a breeze.
- 8 It turns paper mail into e-mail.
- It also connects to more than a hundred popular applications
- 10. It can change the shape of your office. So what are you waiting for?

Drag it onto one of 100 popular

Windows applications, including Microsoft

Mord, Lotus cc:Mail, or Symantec WinFax PRO

VISIONEER

So you can clock out early.



PaperPort automatically takes

t in. Voilà It's scanned

dit, copy, print, e-mail, fax, file, or tweak the material as necessary.

# YOUR TAKE ON: Cyrix versus Intel ◆ Software registration ◆ Editorial objectivity

# **CYRIX FASTEST-BUT BEST?**

YES, THE CYRIX 6x86-P200+ may be faster than the Pentium ["Cyrix P-200+ PCs Beat Intel's Best Pentiums," Top of the News, September], but the problem is,

the dustbins of technology are full of superior products. Most of them gained their edge by moving outside the mainstream at a cost in compatibility. So, yes, the P200+ runs Windows today, but how do I know that Microsoft won't tweak its operating system in favor of Intel

tomorrow?

George A. Kirkman, Internet

"CYRIX P-200+ PCs Beat Intel's Best Pentiums" hardly seems fair to Intel. You imply that while Intel has simply increased the megahertz of its processors, Cyrix has created a new architecture for its latest chips, citing its use of out-of-order completion to boost processing efficiency.

This may all be true, but you have to remember that you're comparing Cyrix's 686 with Intel's 586. While Intel has been increasing its processor's clock speeds in its Pentium line, it has also been developing the Pentium Pro, which is a whole new architecture and does make use of out-of-order completion. Pentium Pro prices have dropped to the point where you can get a nicely equipped system for under \$3000, and frankly, in the long run the Pentium Pro will have Cyrix beat as 32-bit software becomes commonplace. No doubt, Cyrix has created an impressive product, but I hardly think it's time to say that the torch has been passed to Cyrix.

Allan C. Tong, Odenton, Maryland

# **BLOW THE WHISTLE ON SOFTWARE REGISTRATION**

HOORAY FOR YOU, Stephen Manes! Full Disclosure [September] brings up an issue that I have always felt is indicative of the

arrogance and lack of consideration so rampant on the business scene today. It is about time someone blew the whistle on software registration and the entire concept of intruding on people's privacy. We

> are expected to spill our guts and tell all to everyone: the banker, the market research firm, the government, the employer, the merchant, and now the software manufacturer. Many, perhaps most, of us still value confidentiality. Thanks for pointing it out.

> > Janice D. Ochoa, Woodinville, Washington

# **NOT AN EASY UPGRADE**

AS A LONGTIME user of WordPer-

fect, I think it's great that the

product still has a shot at unseating Microsoft Word ["Software Suites: Corel Takes on Microsoft and Lotus," September]. However, it does dismay us WordPerfect devotees that Corel is not offering a simple upgrade from the Windows 3.1-compatible version 6.1 to the 32bit Windows 95 version 7.0. The current \$99 package includes two other Corel products that I have no use for. Corel customer service has vaguely promised a fall release of a WordPerfect-only upgrade. This does not seem to reflect much appreciation for those of us who have hung with WordPerfect all these years.

Scott Cox, Internet

# LOCAL DEALERS OVERLOOKED

REGARDING "Bargain Hunter's Guide to Buying PCs" (September), an unmentioned source of inexpensive, high-quality PCs is local dealers who sell no-name clones. My experience with them has been outstanding; over the course of ten or so years I've bought many computers from these small storefront shops and have yet to be disappointed.

I do my homework, I know what I want, and I choose stores that I believe will be around for a few years. What I've found is

people who treat you fairly, are knowledgeable about what they sell, and provide excellent, inexpensive service, all for a price that is equal to or less than the name-brand mail-order people, and usually cheaper than the discount chains as well. I know it's impossible for a magazine to cover all these stores. But I'm disappointed when I read an article about shopping for computers and find that the local folks are not even mentioned.

Joe Didier, Baton Rouge, Louisiana

# MISSING MONITORS

WHAT HAPPENED TO your stated mandate to provide "ongoing" comparisons of monitors, comparing new models to ones tested in recent months?

I realize you've changed your testing methodology somewhat, but why didn't you retest the earlier models using the new criteria? Not a single one of the Top 10 17-inch Monitors from your July issue was included in the 25 reviewed this month. I find it hard to believe that none of July's Top 10 would have been in September's chart. What's going on here?

Ken Liang, Toronto, Ontario Editor's response: Vendors incorrectly informed PC World that two of the monitors, the Iiyama VisionMaster Pro 17 and the Princeton Graphic Ultra 17+, would be discontinued. We will retest them for our January review. The other monitors from July's chart were being upgraded at the deadline for our September roundup and could not be tested. Unfortunately, this information was cut from the article. We'll test these upgraded models as soon as they become available. - John Goddard

# PC WORLD'S NEW FACE

CONGRATULATIONS! As an avid reader of PC-related publications, I want to give you a piece of my mind. Your new layout and expansion of key features is great. Although I normally read each issue cover to cover, I find that the new layout makes me even more efficient, letting me put major pieces of the content into an order that fits my personal mental database.

Ed Halley, America Online



thought into the redesign of *PC World*. As a regular reader of your magazine, I'm sorry to say it doesn't work. Here's why: Sections that were important had been close to the front of the book and each had its own clearly defined space. Now all the important stuff is hidden. It took me 15 minutes to find the *Hardware* column, and I knew what I was looking for!

We all have sections we turn to first—time is always a premium—and when we can't find what we want, we tend to put the magazine aside. With the old magazine I frequently gleaned tidbits on the way to where I wanted to go. Now it is confusing and time-wasting.

Mario Suriani, Internet

## UP FRONT ABOUT OBJECTIVITY

I ALMOST FELL OUT of my chair when I read Cathryn Baskin's statement "Though the suspicion of *PC World*'s editorial collusion with advertisers is unfounded, it

calls for action" [*Up Front*, September]. I thought that maybe several editors had been rounded up and made to walk the plank for objectivity violations.

I do not think that a steady reader of *PC World* would believe that editorial objectivity was in jeopardy at any time. I have always found your magazine to be forthright and fair. All one has to do is scan through your product reviews and notice some products from big-name advertisers getting a thumbs-down. I am afraid that you are being unfairly grouped with some of your competitors. Please rest assured that current readers are well aware of your honesty and proconsumer slant. Most of us are current readers because of it.

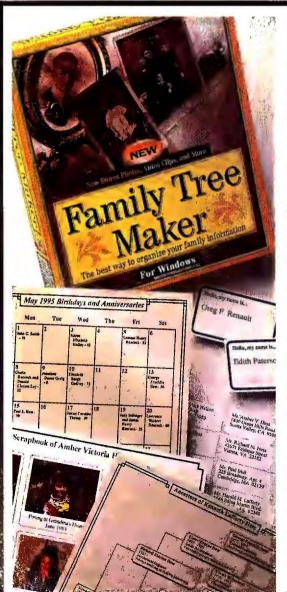
Eric J. Smith, Slingerlands, New York

CATHRYN BASKIN STATES the staff's surprise at readers' suspicion about editorial collusion with advertisers. As a reader, I am not surprised that you were surprised. In the face of facts, it is hard for me to

believe that you have much respect for the knowledge that your readers have about the computer industry and its products. A case in point: Packard Bell, which does not advertise in any of the computer magazines I read, rarely is included in your ratings, and when it is, it does not show very favorably. Yet the products it produces account for 44 percent of the U.S. market. It was number one in retail sales, number two in all U.S. shipments of PCs, and number four in the world in 1995.

Are all of us who buy these products that far off base? I don't think so.

Edward J. Spuler II, Lowell, Massachusetts
Editor's response: We last reviewed Packard
Bell computers for our June Top 20 PCs
review. Our evaluation cited two major problems: bad performance and abysmal service.
Neither problem is new. In fact, since we
began our monthly survey of PC reliability
and service almost three years ago, readers
have consistently rated Packard Bell's
service among the worst of all PC com-



# Find Your Ancestors **FAST**

# Family Tree Maker™ Deluxe Edition

does more than print family trees. It includes an index of more than **100 MILLION** names that helps you find your ancestors. Now, you can create a lasting record of your family history!

# Who Are You Related To?

Like most people, Derek Erb thought researching his family history would be time-consuming. That is, until he discovered Family Tree Maker with the **FamilyFinder™ Index**... It lists the names of more than 100 million people who appear in centuries of state and federal records.

# "An Explosion of Information"

With the FamilyFinder, Derek easily found names of 40 ancestors. While the actual records are far too vast to be included on this one CD, the FamilyFinder did tell Derek **exactly** where he could find more information about each relative listed.

Instead of searching through a library, Derek purchased these records from us. We have over **50 fact-filled CDs to choose from**.

© Copyright 1995 Broderbund Software, Inc. All products are trademarks of their respective holders.

Using the CD records, Derek expanded his family tree by three generations. Derek called it "an explosion of information!"

# **Heirloom-Quality Family Trees**

In seconds, you too can discover your ancestors. Add these names and facts together with what you already know about your family. Then, Family Tree Maker will automatically print your family tree in a variety of beautiful styles. And they're perfect for framing, too!

# **Multimedia Family Albums and More**

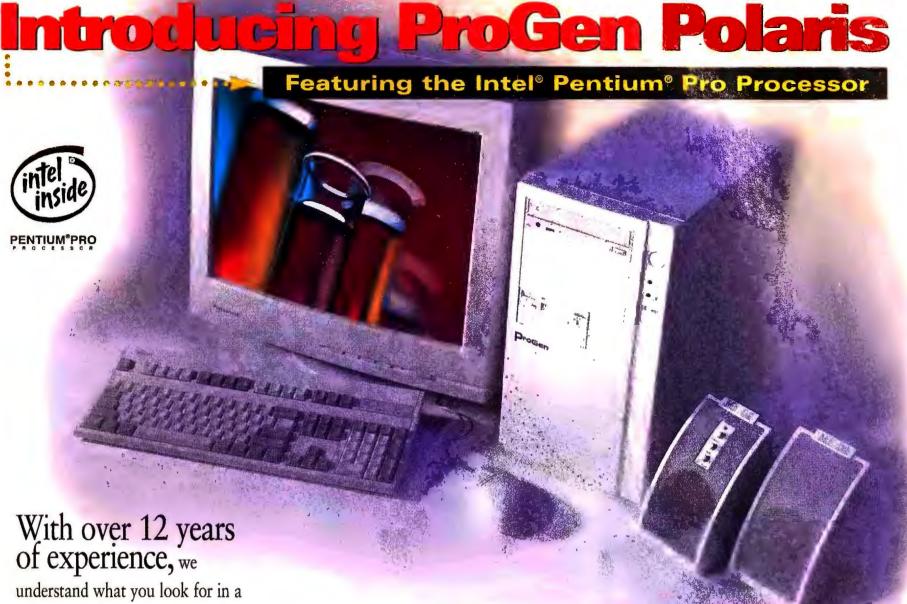
Family Tree Maker also stores **photos**, **video**, **audio**, scanned documents, and even your cherished family stories. It creates calendars, labels, and more! Don't miss the chance to preserve your family history - **Order Today!** 

\$69.99 New Version 3.0! Plus shipping & tax. CD-ROM

For Windows 3.1 and Windows 95 Call 2800-474-8696 and ask for 510

90-day money back guarantee – no questions asked. Sold at software stores everywhere or call us direct.

Banner Blue Division



PC system. From multimedia to professional to workstation PCs, ProGen® systems feature the latest technologies at the best prices. And of course, you can expect equally solid service and support from ProGen. ProGen ProCare features a 3-year limited warranty and 1-year on site service\*. We think you'll agree: feature for feature, dollar for dollar, ProGen Systems offers you the best computer value anywhere. To find out more, call a ProGen consultant today. Or, come and visit us on the web at: http://www.progen.com.

# Sales Hours

M-F, 6:30 A.M. - 7:00 P.M. PST Sat., 9:00 A.M. - 3:00 P.M. PST

Customer Service/Tech Support Hours

M-F, 8:00 A.M. - 5:00 P.M. PST

# Nova

- Genuine Intel Performance/VS Systemboard
- 256K Internol L2 Coche
- Foster PCI 2.1 compliant & EDO copoble 82440FX PCIset
- 32 MB EDO RAM (up to 128 MB)
- Creotive Lobs SoundBlaster 32 PnP
- 1.44 MB 3.5" Floppy Disk Drive
- 33.6kbps FAX/madem with voice
- New MS-Windows® NT Workstation v4.0
- 104-key Windaws 95 Enhonced Keyboord
- Genuine Microsoft Mouse 2.0
- 80W PMPO Amplified Stereo Speokers
- ProGen ProCare Warranty (3yr + 1yr on-site)

# \$ 2499 180MHz EIDE

- Panasonic 17" .27dp
   PnP Monitor
- Large Capacity 2.5GB
   Fast EIDE Hard Drive
- Matrox Millenium 3D
   1600x1200, 2MB WRAM
- 8X EIDE CD-ROM Drive

# \$ 3949 200MHz SCSI

- Panasonic 21" .25dp PnP Monitor
- Large Capacity 2.1GB
   Ultra SCSI Hard Drive
- Adaptec 2940 PCI Ultra SCSI Adapter
- Matrox Millenium 3D 1600x1200, 4MB WRAM
- New 12X EIDE CD-ROM Drive

# Polaris

180MHZ

- Genuine Intel Performance/VS Systemboard
- 256K Internol L2 Cache
- Foster PCI 2.1 compliant & EDO copoble 82440FX PCIset
- 32 MB EDO RAM (up to 128 MB)
- 1.6 GB Fast EIDE Hord Drive
- ProGen Gold 64V+ 2MB EDO RAM (S3 Trio 64V+) MPEG, Cinepak
- 8X EIDE CD-ROM Drive
- 1.44 MB 3.5" Floppy Disk Drive
- 33.6kbps FAX/madem with voice
- New MS-Windows 95 CD and manual
- 15" Digital PnP monitor
- Windows 95 Enhonced Keyboord
- Genuine Microsaft Mouse 2.0
- ProGen ProCare Warranty (3yr + 1yr on-site)

\$ 7 9 4 9 \$77/mo. 36-month lease in most states

Technical Support: 1-888-777-5501

1-888-776-9595

Customer Service: 1-800-848-8767 Circle 184 on reader service card We accept VISA, M/C, Discover, & American Express



A division of ProGen Technology inc

ProGen® Technology, Inc. 15501 Redhill Avenue, Tustin, CA 92780 Ph: 714/566-9200 Fax: 714/566-9267 BBS: 714/566-9255 E-Mail: progen@ix.netcom.com

\* On site service is based on the discretion of ProGen technical support. Leasing Rate will vary pending on state legislation, and is intended for business or corporate use only. 30-day money-back Guarantee(shipping cost not included)

©1996 ProGen\* Technology, Inc. Intel Inside and Pentium Processor logo are registered trademarks and the Pentium Processor logo is a trademark of Intel Corporation. All other trademarks are the property of their respective owners. Prices are subject to change without notice

# y the best multimedia monitors



The features that make ViewSonic monitors the perfect choice for multimedia also make them perfect for the internet.

Consider the many advantages of the ViewSonic 17GA (16.0" viewable) and 15GA (14.0" viewable) PerfectSound™ multimedia monitors. They're the recognized leaders in affordable high performance screen technology with .27mm dot pitch, Super Contrast screens and ARAG® anti-reflection, anti-glare coating-all of which contribute to richer colors

more detailed images from center screen to corner. Producing resolutions up to 1,024 x 768 at 85Hz provides flicker-free images, reducing fatigue and eye strain.

Dual bezel integrated speakers deliver full, rich stereo sound while saving desktop space. There's even volume and mute controls to let you listen without distracting others. There's also a built-in microphone,\* headphone jack, and external microphone port. For added convenience, OnView® controls let you make image, audio and color adjustments via a simple on-screen menu.

# Your windshield on the information superhighway.

As the internet continues to grow and fulfill its potential with more sophisticated graphics and real-time sound, you'll appreciate these same ViewSonic multimedia monitors even more.



# are also the best internet monitors.

When it comes to applications like spreadsheets, wordprocessing, charts, graphs, business suite software or multimedia presentations, again these monitors are the perfect solution.

ViewSonic has a full line of monitors ranging from 14" to 21" (various viewables) and each comes with a limited 3 year warranty on CRT, parts and labor. We also offer an optional Express Exchange<sup>™</sup> Service program that insures 48 hour replacements.

# **Top-rated time** and time again.

How's this for high praise?



Home PC, in the April '96 issue, included the 17GA in their Top 100 Hardware Products.





MacUser magazine, in their December '95 issue, named the 17GA its Best Buy and in their

March '96 issue, gave the 15GA a coveted Four Mice rating.



Windows magazine, in their December '95 and April '96 issues,

"recommended" the 17GA.



February '96 issue of PC Graphics and Video "Highly Recommended" the 17GA.

Call 800-888-8583 and ask agent 7476 for a dealer where you can see and hear

the ViewSonic monitors that are the best of all possible worlds.







# **Want Pentium Performance?** Trinity POWER let a...



The Trinity Works line of PowerStacker processor upgrades are true system upgrades designed to lessen the "pane" in your life

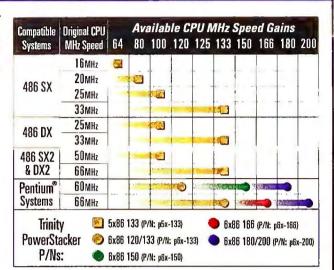
caused by slow processing.

The PowerStacker 5x86 and 6x86 are the convenient and high-performance solutions for increasing your 486 or Pentium® 60/66 performance without investing in a new computer system.

The PowerStacker upgrade gives you the power and performance for today's most demanding software applications. Both upgrades are 100% compatible with your existing hardware and software, and no drivers are needed. You will only notice the faster speed!

www.trinityworks.com

800-278-4944 • (512)249-1099 • FAX (512)249-0570 12201 Technology Blvd., Suite 145, Austin, Texas 78727



# 🎹 Trinity Works, Inc.





Distributed Through:



©1996 Trinity Works, Inc. The Trinity PowerStacker 5x86 and the Trinity Works logos are trademarks of Trinity Works, Inc. AMD is a registered trademark of Advanced Micro Devices, Inc. All other trademarks end registered trademarks are used for reference purposes only and do not constitute an endorsement by the trademark holders.

# Circle 238 on reader service card

DECEMBER

# **BEST CD-ROMS: SPIN AND SURF**

'Tis the season for our picks for the best CD-ROMs, and some even come with interactive Web links. Among the big winners: addictive 3-D action in Quake, realistic golf gaming in Links LS, customizable itineraries in TripMaker 1997, and much more.

# PRINT IT! PICK A PERSONAL PRINTER

Wish your printer would print faster? Groan at its poor text quality? Grimace when trying to print banners? We'll take you step by step through picking a printer and review new models from Canon, Epson, HP, and more.

# **EXPECT LESS-AND GET IT:** PC RELIABILITY AND SERVICE UPDATE

From fee-based support to longer hold times, our latest survey of 11,000 readers shows a growing dissatisfaction with most PC service and support. Which vendors are serving consumers best-or less?

# **SMART WEB SEARCHING**

Finding what you need on the World Wide Web can take its toll in time and frustration. Here are the best search strategies, from metasearch engines and offline browsers to easy tips for saving time and money.

# **ALSO NEXT MONTH:**

► The PC World Top 100: Updated monthly, this is the most current buyers guide to PCs and peripherals. Check out the Top 20 Power Desktops, Budget Desktops, and Notebooks, and the Top 10 Personal Printers, 15-Inch Monitors, Graphics Boards, and External and PC Card Modems.

► Special Report on Small Office, Home Office: What are the best ways to back up your PC when you have no MIS department to turn to?

► **Here's How:** Step-by-step upgrade guide on adding memory to your PC, plus much more.



# LETTERS

panies. Regardless of the number of PCs Packard Bell sells or whether the company chooses to advertise in PC World, we cannot recommend these systems to readers. However, we'll continue to review Packard Bell systems in upcoming issues. -Cathryn Baskin

# **UPLOAD TO FTP SITES**

IN "BEST WEB BROWSER" (August) you say that Internet Explorer and Netscape Navigator are not able to upload to FTP sites because they support only anonymous FTP. Here's a tip that works with Netscape Navigator 2.x and higher: When you want to upload to your own FTP site, type in your user ID, password, and domain as in the following URL: ftp:// userid:password@domain (for example, ftp://jmendez:mypassword@pcworld.com).

Jesse Mendelsohn, Internet

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

# CORRECTIONS AND CLARIFICATIONS

In October's Bugs and Fixes, we referred to a bug in some U.S. Robotics Sportster V.34 modems. As we reported, U.S. Robotics has stated that it will replace modems for customers who encounter the problem and request an exchange. We referred to the exchange program as a recall. However, U.S. Robotics (847/982-5151) has asked us to make clear that it is not asking customers to return all affected modems and does not consider its offer to exchange modems a recall.

In "Bargain Hunter's Guide to Buying PCs" (September), an incorrect phone number was printed for Micro Exchange. The number is 800/284-9296.

The Web address for the U.S. Robotics Win-Modem 33.6 upgrade patch (Bugs and Fixes, September) has changed; it's now http:// www.usr.com/home/online/files/dIO7.htm.

September's Quick Takes review of Okidata's Okipage 4w printer should have stated that the device is an LED printer, rather than an ink jet printer.

The price for the IBM PC 350 P200 was listed incorrectly in September's Top 20 Power Desktops. It should have read \$4122.

PC World regrets the errors.

# www.winthis.com











WITH DESKTOP SYSTEMS THAT PUT OUT
THEIR OWN FIRES, YOU DON'T HAVE TO COME TO WORK
WEARING THE SAME OLD SUIT EVERYDAY.





The next time there's a five-alarm fire at the office, sit back and relax. With the new PowerMate\* Series from NEC, you can manage the entire network without leaving your desk.

The fact is, exclusive NEC MagicEye™ technology monitors the function and operation of each PowerMate system, including its hard drive activity,

temperature and voltage. It'll even alert you if a computer is tampered with. If a problem is detected, Intel's LANDesk\* Client Manager 3.0 lets you remotely access the system for efficient, centralized management. What's more, Cybermedia's FirstAid 95 Deluxe automatically

fixes configuration errors and, along with McAfee's anti-virus software, protects your valuable data.

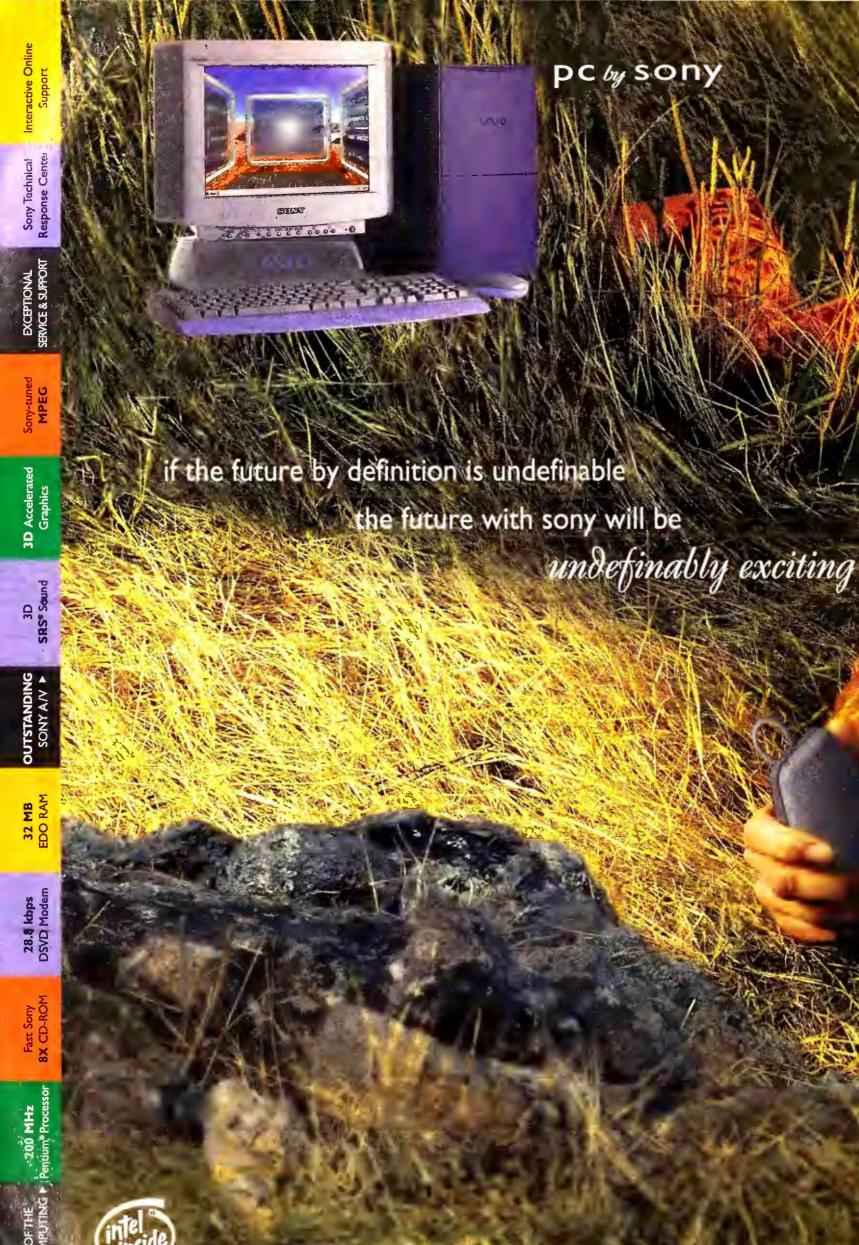
Alone, the PowerMate desktop computer can be anything from a general office PC to a powerful corporate workstation. Linked together, they're a sophisticated network that you can remotely manage.

Granted, you may still have to put out an occasional fire. But at least now you can do it in everyday business attire. For more information, call 1-800-NEC-INFO, or visit us on the web at http://www.nec.com.

SEE, HEAR AND FEEL THE DIFFERENCE.™

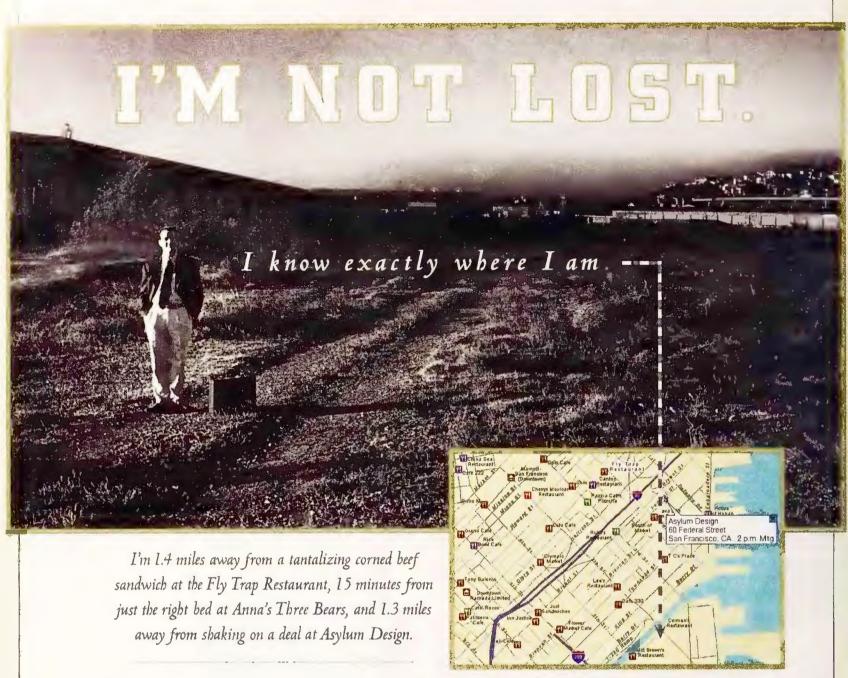




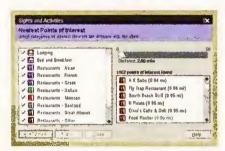








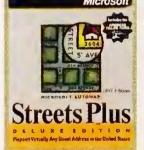
When faced with the realization of being hopelessly lost, most members of the human race will staunchly resort to denial. Happily, Microsoft" Automap" Streets Plus - Deluxe Edition is about to eliminate the problem of losing one's bearings.



Access an extensive listing of restaurants and botels no matter where you are.

Now, the traveling businessperson can pinpoint virtually any address in the United States on over 6 million miles of road. Maps can be personalized with Pushpins to mark important clients, personal contacts, and new business prospects.

3 Add to that Web links to the Internet, capabilities to import your contact lists as well as American Yellow Pages' 14 million



listings, and you're looking at the business tool that could give anyone a competitive edge, not to mention a keen sense of direction. Experience more of the Automap products at www.microsoft.com/automap/



# Microsoft Where do you want to go today?"

Also available: Microsoft Automap Trip Planner, the ideal way to plan your next weekend getaway or family vacation.

Web links to 425 places

Over 6 million miles

GPS satellite support

14 million business listings

#### An Escape From Tech Support Hell?

Automated software diagnostic tools may save you from long waits for help.



HAVE YOU CALLED A hardware or software company's technical support line lately? I have, and you know what? They really don't want to talk. Sure, everyone offers telephone support, but they don't seem to want customers to use it.

Just about every company—from the biggest fish down to the very smallest guppy in the personal computer industry pond—is busy practicing "call avoidance." That's mumbo jumbo for "do whatever it takes to keep the customer from calling in and talking to customer support."

You see, although hardware and software companies have developed phone-based support, not many have an effective system in place to field all the incoming calls. The results? Exorbitant support costs for hardware and software companies, and ridiculously long hold times for customers. It doesn't take a rocket scientist to figure out that's a formula for disaster.

Customer satisfaction with software support is at a ten-year low, according to Bill Rose, executive director of the Software Support Professionals Association, an industry group based in San Diego. And no wonder: 85 percent of the calls made to PC hardware and software companies during peak hours encountered busy signals, notes Dataquest, a market research firm in Westborough, Massachusetts. And PC World's Reliability and Service Survey, a monthly questionnaire, finds that it takes consumers just over 30 hours, on average, to speak with a technical support representative who can resolve their problem.

With the phone lines jammed, more and more customers are turning to online support options, logging on to company Web sites and company-sponsored message boards on commercial online services. Customers looking for assistance post thousands of messages every day—and frequently bemoan the poor response they get. Even companies that were pros at customer service are getting battered. Last year, for example, both Compaq and Intuit—two leaders in support in the consumer market—faced a hailstorm of criticism from customers angry about long hold times and unsatisfactory electronic tech support alternatives.

The problem, says Tom Sweeny, Dataquest's director of software services, is this: While nearly every company is directing customers to its online support services, few know how to process the flood of electronic queries efficiently. "These are phone-centric organizations," says Sweeny, noting that most companies have yet to integrate and route electronic queries as quickly as they respond to questions over the phone. "Unlike with their phone services, companies won't commit to a turnaround time for electronic submissions," says Sweeny. "They still haven't figured out the staffing issues."

Jim Wilmott, product support manager for Broderbund, can attest to the difficulties of managing an online support operation. Broderbund has been aggressively promoting its Web-based support, where the company's



WITH ITS FREE UPDATES,
PATCHES AND FIXES,
THE INTERNET IS THE
FOUNTAIN OF YOUTH
FOR YOUR PC SOFTWARE.

UNFORTUNATELY, YOU COULD SPEND A LIFETIME TRYING TO FIND THEM BY YOURSELF.

Now with the push of a button, CyberMedia's new Oil Change™ will take inventory of the software on your PC and scout the Internet for new updates, hardware drivers and fixes.

When an update is discovered, Oil Change can download and safely install it at the push of a button. If you don't like it, Oil Change's UNDO button lets you safely restore your original set up.

Keep your existing software up-to-date with the push-button simplicity of Oil Change. Otherwise, looking for updates can get old fast.

CyberMedia

1-800-721-7824 ext.729 www.cybermedia.com



#### CONSUMER WATCH

knowledge base—a database of solutions to previously reported problems—is available for customers who feel comfortable trying to diagnose and troubleshoot their own problems. Customers love the tools, but Broderbund is still grappling with ways to respond to the inevitable queries

that it receives electronically. "We need an elegant solution, and we really don't have one," says Wilmott. His team shoots for a 24-hour turnaround on e-mail questions, but it does not always achieve that goal.

And Broderbund is not alone. "No one will commit to a turnaround time for electronic submissions," says Sweeny.

Two new technologies, expected to be available to consumers this fall, may resolve some of the difficulties consumers and PC companies face. Both rely on software diagnostic tools to help identify the cause of problems, and-in theory-expedite their resolution.

#### **AUTOMATIC HELP?**

THE FIRST OF THESE TOOLS is a software program called e.support from TouchStone Software and the Software Support Professionals Association. It's designed to provide consumers with a single interface for contacting hardware and software companies for e-mail-based support. TouchStone expects the consumer software to be bundled with new and existing hardware and software products or downloaded from the e.support Web site (http://www.esupport.com).

The e.support package includes two components: a sophisticated forms-based program that walks users through a series of questions about the problem they're having with their hardware or software, and a copy of WinCheckIt, TouchStone's Windows 95 diagnostic software. After users complete a problem report, they are prompted to run WinCheckIt, which produces a detailed profile of their PC. Once those two files are complete, the entire document gets e-mailed to the consumer's hardware or software company.

The concept is promising, but some bugs must still be worked out. The forms approach to e-mail queries is a great idea, since it prompts customers to provide technical support with the kind of information it needs to begin diagnosing a problem. But the program is most effec-

Right now one

e-mail message

can generate

four to five

exchanges between

tech support and

the customer.

tive when combined with the accompanying diagnostic report. Unfortunately, WinCheckIt did not get high marks as a diagnostic tool when PC World last reviewed it ("Complete Guide to Windows Utilities," June).

There's another catch: The complete WinCheckIt report goes only to those

companies that subscribe to TouchStone Software's service. According to Carolyn Gross, product line manager for Touch-Stone, several major hardware and software companies have expressed interest in the program, but at press time the company hadn't announced its list of initial subscribers.

Vendors that don't subscribe will still be forwarded e-mail detailing your problem, but they'll get a truncated version of the diagnostic report. More important, perhaps, the nonsubscribers won't be as enthusiastic about the program and may be less likely to promote its use or devote sufficient staffing to respond quickly to e.support mail.

Broderbund's Wilmott, who's considering adopting e.support for his company, says it could help tech support respond to the growing number of e-mail messages his company receives every day. Right now, says Wilmott, one e-mail message can generate four to five exchanges between tech support and the customer. "With e.support, in one fell swoop, the techs would have all the info they needed to solve the problem. If it can do that, it's a valuable tool."

#### HOPE FOR HARDWARE HASSLES

WHEREAS E.SUPPORT will be bundled with both hardware and software products, SystemWizard will be bundled first with PCs. The software, from System-



### AnthroCarts!



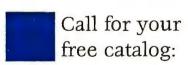


AnthroCarts are so flexible. You have dozens of shapes and sizes to choose, plus over 50 accessories to configure your cart exactly the way you want.

And they have a Lifetime Warranty! Made of steel and high density particle board, these AnthroCarts are as tough as nails.



See them all in our catalog, then call us direct to order. We'll ship to you the very next business day!



800-325-3841

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



Anthro Corporation® Technology Furniture® 10450 SW Manhasset Dr. Tualatin, OR 97062 Fax: 800-325-0045

http://www.anthro.com

Since 1984. Prices from \$299. For a lower cost line for the home, ask for our Compacta catalog. GSA contract. Available for OEM applications. Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.

#### CONSUMER WATCH

Soft in Natick, Massachusetts, is designed to help home and business users resolve common hardware and software conflicts. It includes elaborate diagnostic tools that can either be launched by the consumer, much like any other Windows application, or be set to start automatically when a problem occurs (such as a General Protection Fault in Windows).

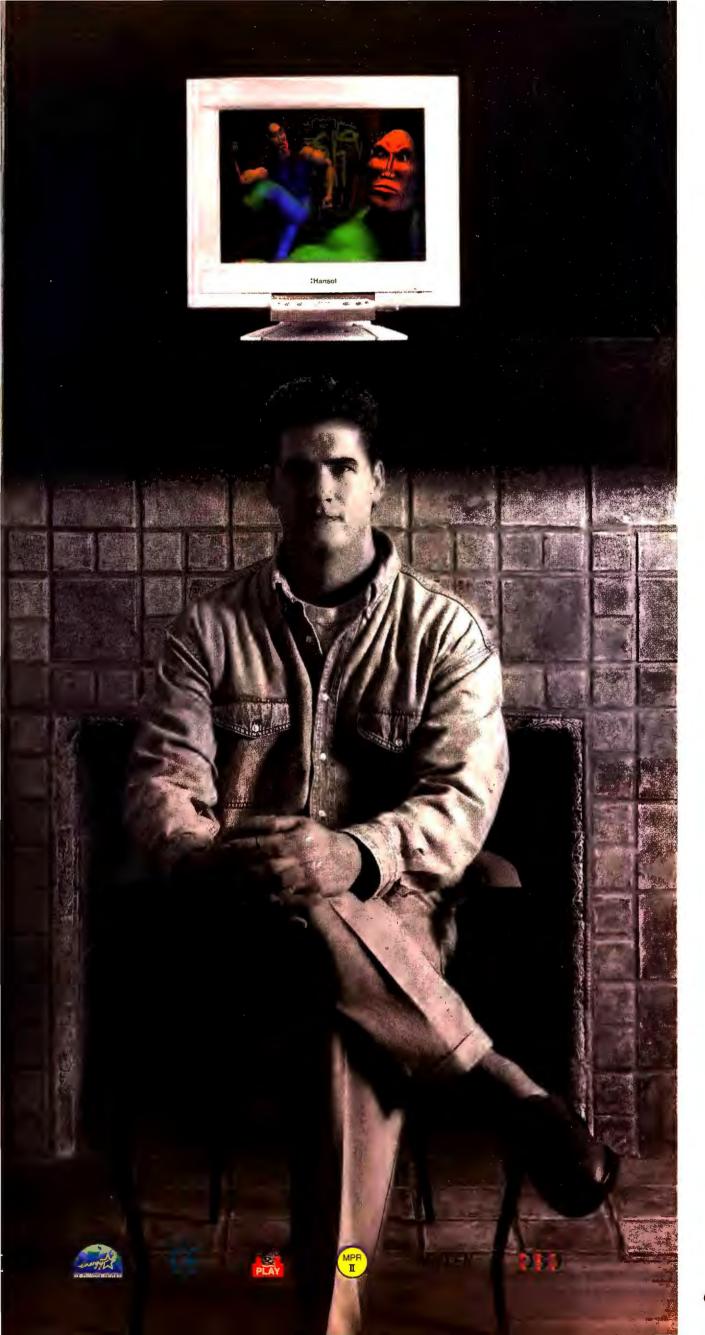
The software will troubleshoot problems the moment they occur. Using a knowledge base customized for a specific model and brand of PC, the software will either identify and correct the problem, or dial in to the particular PC company's own knowledge base on the Internet, which could contain more detailed or more recent information. The database that resides on the consumer's PC will be updated each time a new problem is identified and corrected.

AST will offer SystemWizard on its home PCs later this fall. Digital Equipment, which, along with Intel, helped to develop the software, will be offering SystemWizard on its business-class systems at about the same time.

SystemWizard is designed to detect and fix multimedia configuration hassles, outdated printer drivers' conflicts with modems and communications software, and other problems. If the expert system isn't able to solve the difficulty, the call is transferred to the company's technical support phone line, where a live technician is assigned the task of resolving the problem then and there.

Will either of these programs answer all your tech support problems? Of course not. But early looks at both indicate they are steps in the right direction. They give customers and companies some of the tools they need to resolve problems. That means you spend less time waiting on hold while companies practice call avoidance, less time sending e-mail back and forth, and more time getting work doneor having fun-on your PC.

Send your comments on technical support or any other topic you'd like to see covered in Consumer Watch to consumerwatch@ pcworld.com. Roberta Furger is a contributing editor for PC World.



Mike
Latschislaw
finally found
a monitor
as good as
the games
he designs.

Over at the JVC games division they look to Mike Latschislaw to make their games come alive. But while he's doing it, Mike looks to something else. The new 17PX monitor from Hansol.

Because according to Mike, no other monitor sets up as easily, has as many controls (20 on-screen settings), is as practical to use, and with its radical, modern design, is just such a pleasure to look at.

So next time you've got a game on the screen, think of the guy who designs them. Then think of the monitor he uses. The new 17 PX from Hansol.

Because when it comes to monitors, Mike doesn't play games.

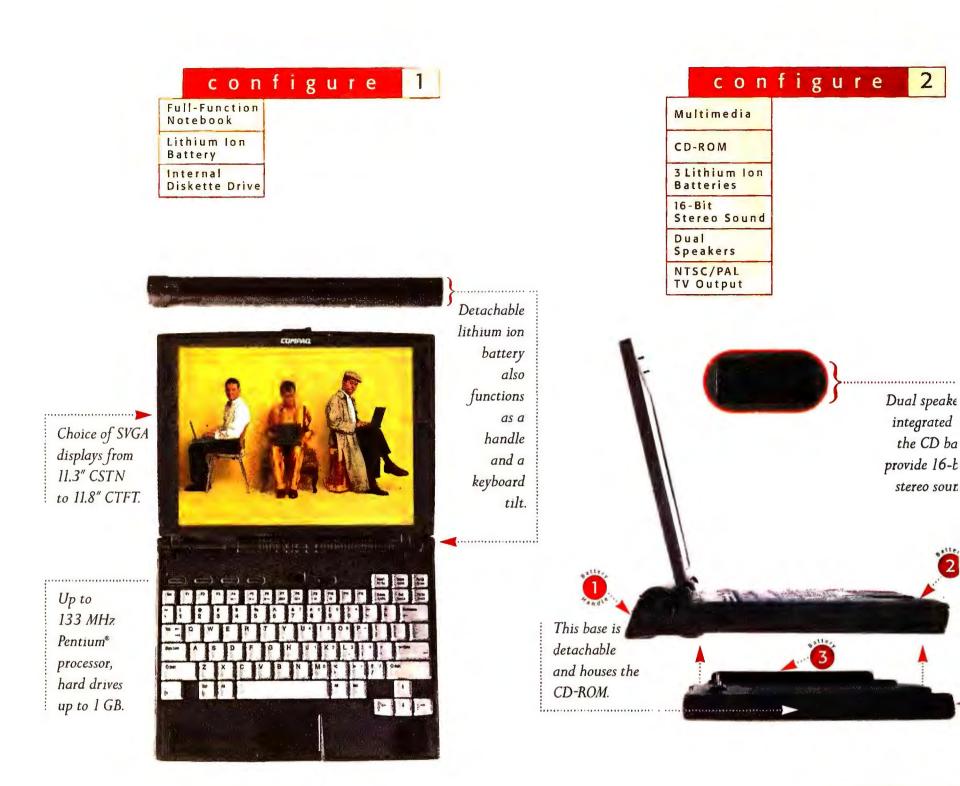
#### Hansol

For further information, call toll-free 1-888-HANSOL1(1-888-426-7651). Hansol Multitech, Inc., 6 Centerpointe Dr., Suite 220, La Palma, CA 90623

©1996 Hansol Multitech, Inc. All trademarks and registered trademarks belong to their respective owners.

See us Shine at Sands Booth #M1644 at Comdex

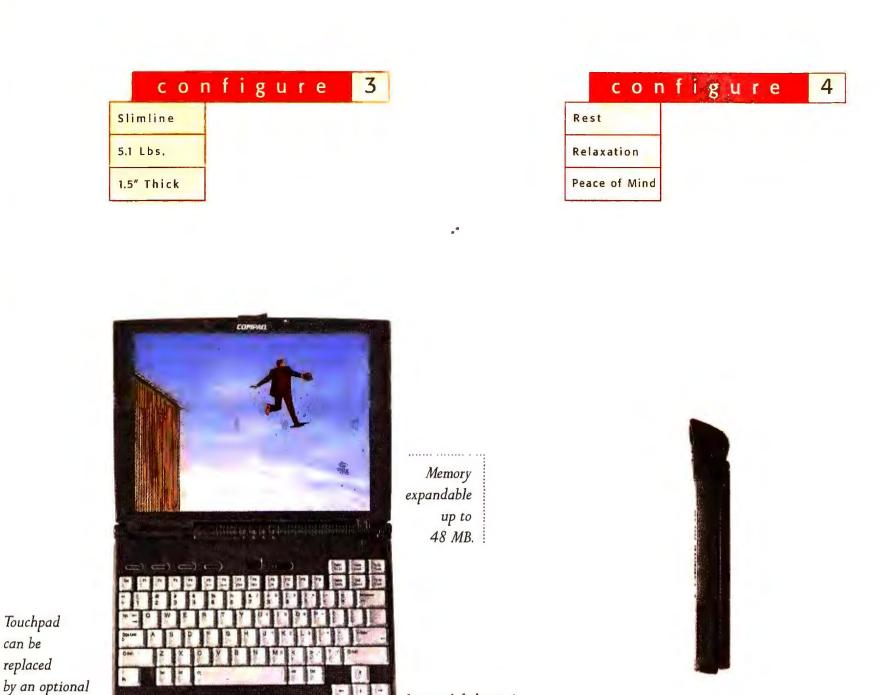
Circle 102 on reader service card



#### THE COMPAQ ARMADA 4100. IF IT'S

It's your call. On one hand, it's a full-function notebook. Or in a snap it's multimedia with CD-ROM. Or it's lean and mean. It a fax machines\* and dual speakers for incredible 16-bit stereo sound. And it's Internet-ready. The new Compaq Armada 4100. It's how





#### NOT ONE THING, IT'S ANOTHER.

Internal diskette

drive is replaced by a battery.

can be

trackball.

ovides for three batteries with up to 10 hours of life. It's a virtual office too-complete with a full duplex speakerphone, answering and onquer the task at hand. One way or another. For more information, call 1-800-853-9521. Or visit our site at www.compaq.com.



Has It Changed Your Life Yet?

Extus

Approach

Transcription of the state of the state

Sometimes it takes a

few trophies before true

excellence is recog-

nized. Case in point: Lotus
Approach.® Since its introduction, Approach has
garnered more than 50
database awards, and is
applauded by novices,
programmers, and yes,
even the critics. No other
database has garnered so
much praise by so many
different audiences. Ever.

Approach is in a league of its own when it comes to usability. Or as PC World put it, "Approach was our usability testers'

One award. Big deal. Two. So they got lucky. Three awards. Gee, that's not bad. Four? Why don't we have this?

queries, report building, analyses, charts, and much more. Working with data simply

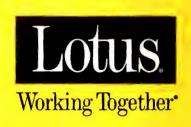
couldn't be easier.

But don't let Approach's superior ease of use fool you. Approach satisfies the power-hungry user as well, with robust programming tools for building sophisticated, custom business solutions - fast. PC Magazine recently called it "a great combination of simplicity and power." No wonder the trophy case is getting crowded.

Find out for yourself why Lotus Approach is the critics' choice. Call 1-800-TRADE-UP, ext. C291

favorite, hands down." Its award-winning user interface guides users with ease through

to order. Or visit our web site at www.lotus.com.



Fire somebody!

# ILLUSTRATION: RICK SEALOCK; ICON: JEFFREY PELO

#### Hewlett-Packard policy on paper jams ◆ Intelesys support ◆ Thumbs-up on Gateway

#### **NO WARRANTY ON PAPER JAMS?**

I PURCHASED A Hewlett-Packard 5-MP laser printer from my local Computer City last December. The first printer broke and was replaced; then I had problems with the second one—a corner of each page curled when I printed a document. I tried changing the paper and fanning the sheets, but the problem got worse. The paper started jamming, and I took the printer to Computer City for repairs. I had to pay \$45 to have the paper cleared since paper jams are not covered by HP's warranty. I don't believe the jam was caused by improper action on my part. Furthermore, a user can't adjust the spacing on the roller (if that's the cause of the jamming) or remove the bits of paper once they get stuck.

Editor's response: We forwarded Freedman's letter to Hewlett-Packard and spoke with Brian Davis, support quality supervisor. Davis explained that if the paper jam is the result of a mechanical failure, the repairs are covered under warranty. He notes, however, that paper jams are generally related to the media used. "We have no control over the types of paper users feed to the machine," says Davis. He urges users to consult the manual for specifications. Although Freedman's problem wasn't covered, HP sent him a toner cartridge. Freedman reports he is very

Eli Freedman, Baltimore

If your printer has problems, Davis advises you to call tech support right away. "Our staff is there to assist customers in clearing jams and other feeding problems," he says. You can reach HP tech support at 208/323-2551. You pay toll charges, but the support itself is free for products under warranty. Out of warranty, call 900/555-1500;

you'll be charged a maximum of \$25 per call.

#### WHAT HAPPENED TO INTELESYS?

IN MARCH 1995, I purchased an Intelesys Pentium Star 75 multimedia computer. When I phoned Intelesys six months later, a company called Dynasys answered the phone and provided me with technical support. Dynasys told me I was still covered by the original three-year warranty. Then in May 1996,

employees of a company called Nexar began answering the phone and refused to provide technical support. Am I still legally entitled to my original Intelesys warranty through Nexar? What's going on? Marshall Cooper,

**EData** 

St. Margarethen, Germany

Editor's response: In August 1995, Intelesys of Fremont, California, ceased operations. Soon thereafter, Dynasys, a PC maker in Westborough, Massachusetts, purchased the Intelesys name, intending to use it. In the end, however, Dynasys changed its name to Nexar. "Dynasys did not buy Intelesys out-

> right or the customer list," explains Craig Conrad, Nexar vice president of market-

> > ing communications. Conrad says Intelesys cus-

tomers should contact Computer Universe at 415/362-1444 in San Francisco for support. Computer Universe president Khurrum Hamirani (former director of operations at Intelesys) says, "We were contacted by the Better Business Bureau in Oakland, California, about complaints from Intelesys customers, and we agreed to handle sup-

port." Hamirani says he hasn't been compensated by Intelesys's owners for providing the service. "I want to make it clear that we will help Intelesys customers out of personal good will," says Hamirani.

#### **FLEXIBLE ON-SITE SERVICE**

IN JUNE LAST YEAR, I bought a Gateway P-75. After a year it malfunctioned, and I called tech support. The technician determined that the hard drive was faulty. I had exceeded my one-year on-site warranty by two weeks, but he authorized on-site service anyway, and the new drive arrived two days later. Although it takes a while to get through to Gateway tech support, I always receive courteous, professional service.

Karen Palmer, Internet

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



#### THE FINE PRINT

satisfied with HP's handling of the situation.

#### Watch Out for Credit Card Extras

Mail-order companies make it easy for you to purchase their products by credit card, check, or COD. But you need to look closely at the ads for special pro-

visions hidden in the small print, like extra fees or shipping delays that may be imposed, depending on how you pay.

- 1. This ad for Omni Data Communications includes the Visa and MasterCard logos, but the fine print notes that you pay a
- 3 percent surcharge when you charge your order.
- 2. Be prepared for later delivery than you might anticipate. If you pay by personal check, your order won't be shipped until

your check clears the bank; the ad states that personal checks require two weeks to clear.

3. If you choose to pay cash on delivery, be aware that the ad specifies COD orders cost an additional \$4.75.



## Learning to golf on narrow fairways was, in my

butt on the doglegs, but I always seemed to hook wildly on the straight holes. With one search, I found Improve Your Golf Game, which suggested rethinking the path of the drive. So I scrolled down my search list and took a Private On-Line Golf Lesson, which profiled me as overcompetitive and tense. At first I balked, but then I clicked into Better Golf Through Hypnosis and realized my type-A drive was getting me nowhere. So I signed up for a week-long Zen golf camp at the Golf Orgy Web site. Not only did the relaxation techniques improve my swing tempo, my doctor believes they also radically increased my fertility.



Where will

Go Get It get you?

To click our GO GET IT button, you don't need a membership or a professional keystroke.

©1996 Lycos, Inc. All Rights Reserved. Lycos is a trademark of Carnegie Mellon University.

Circle 135 on reader service card

#### Virtually Software





The "Scanning OS"

Award-Winning RECORE OCR

Now You Can Scan Direct to Any Application

#### OCR It!

Click once to scan & convert your images to text. No more retyping!

#### File It! -

Save files in an electronic file cabinet with text search tools. Type notes & highlight important info.

#### E-Mail It!

Once you scan, you can send your image via electronic mail without leaving your application!



#### Scan Direct!

Scan to any application! Add 10 applications to the Scan Buttons for one button scanning to Print, Copy, Fax, OCR & E-mail!

#### Add Your Apps!

Plug-in your favorite Windows applications! Add multiple applications like MS Word, Excel, Adobe Photoshop, Presto! Forms, etc.

#### Fax It!

Turn your scanner into a stand-alone fax machine. Scan your pages straight to your fax modem!

#### Print/Copy It!

Turn your scanner into a copy machine! Drag & Drop to print or make a copy of the scanned image.

#### Drag & Drop It!

Drag & Drop documents to the applications you use most! Just add them to the Application Bar.

#### And More!

Presto! PageManager LE offers Built-in OCR & File Search by date, annotation or keyword.

#### Has this happened to you:

hassles, no worries.

You spend \$500 for great new software, but it doesn't work with your scanner? So you spend \$400 for a new scanner, and now it doesn't work with your software? We know your concerns. That's why Presto! PageManager LE, the "Scanning OS", adds scanning abilities to any application. No

Call Today for Your \$14.95\* Software!

Visit Us at COMDEX! Booth S7630

800-670-7167

Or Download Presto! PageManager LE http://www.tophat.com

Presto! PageManager LE lets you have one-button scanning, printing, faxing, copying, editing, OCR & e-mail with any Twain compliant scanner.

Presto! PageManager LE adds value to your scanner! Call today for your virtually free software, a \$59 value for only...

Presto PageManager L

© 1996 NewSoft, Inc. NewSoft, Presto!, & Magic Within are trademarks of NewSoft, Inc. All other product names are trademarks of their respective companies. All rights reserved.

MAGIC WITHIN

<sup>\*</sup> There is a non-refundable \$5 (US) or \$10 (Canada) shipping/handling charge. Outside US call 510-252-0267. Please have your Visa, Mastercard, or American Express card ready when you call. CD-ROM format. Limited edition only. Information and prices subject to change without notice.

#### Internet Explorer 3.0 Debuts With Holes

ACCORDING TO MICROSOFT, customers downloaded more than a million copies of the company's Internet Explorer 3.0 browser in the week following its August 12 release. Not surprisingly, the initial version contained several bugs. The first one affects only Web sites that you access via a user name and a password. Instead of typing their name and password once, users of IE 3.0 had to reenter this information for every page on a site.

More seriously, Princeton University computer science researchers Dirk Balfanz and Ed Felten, who previously broke the news about security holes in Netscape Navigator, discovered a hole in Internet Explorer's security that can seriously damage a user's hard disk. If an infected document such as a Word or Excel file is embedded within a Web page, downloading that page could unleash harmful macros that execute DOS commands like Delete or Format. For more information, go to Princeton's Web site (http://www.cs.princeton .edu/sip/news/Augo6-2.html). Although the glitch could theoretically jeopardize files on the user's computer, as of press time, there had been no reports of Web pages exploiting the hole.

Microsoft has released a 441K patch that plugs the security hole and solves the password reconfirmation problem. You can find it at http://www.microsoft.com/msdownload/iepatch.html.

#### MORE IE PROBLEMS

MICROSOFT HAS ACKNOWLEDGED other problems with the initial release of Internet Explorer 3.0. For example, IE 3.0 called for inflated free disk space requirements (as much as 63MB); it also produced excessive flickering when loading Web pages, had difficulty refreshing pages that contained frames, and was incompatible with Trumpet Winsock and some Netscape plugins. Microsoft has replaced the original release—version 3.0 (4.70.1155) according to the program's Help-About dialog box with one that fixes the erroneous disk space requirements. Download the replacement from Microsoft's Web site (http://www .microsoft.com/ie). Solutions for the other problems were not available at press time.

IF YOU FIND A HARDWARE or software bug, post your report on PC World Online or send us e-mail at bugs@pcworld.com.



#### Cardinal Modem Flash ROM Upgrades

If you own a 28.8-kbps Cardinal modem, you may be able to upgrade it to 33.6 kbps by downloading and applying a Flash ROM upgrade from the company's Web site (http://www.cardtech.com/ customer/download.html). The upgrade applies to Cardinal modems with any of the following model numbers: MVP288I, MVP2881S, MVP288XF, MVP288XS, or MVP288C2.

Note: Cardinal modems with the model number MVP288I2 or MVP288XF2 may or may not be upgradable via Flash ROM. To determine if yours is, download and run the 336info.exe utility from the same page. While you're on Cardinal's site, check out the new Windows 95 drivers for Cardinal voice modems that allow you to hear dial tone, dialing, and connection sounds.

#### **DELL LATITUDE XP PORTABLE AND PC CARDS**

GOT A DELL LATITUDE XP? PC Cards don't work on some early models if the system is powered up while attached to a docking station. You can work around this problem by ejecting and then reinserting the PC Card, but for a more permanent solution, download and install a new BIOS from Dell's Web site (http:// wincgi.us.dell.com/filelib/10be.htm).

#### Faulty RAM Upgrades for Toshiba Laptops

Have you recently upgraded your pricey Toshiba Tecra 710 or 720 with an 8MB, 16MB, or 32MB Toshiba NoteWorthy memory module? You may have experienced resume mode failures or intermittent memory errors. The first problem afflicts about 40 percent of the NoteWorthy EDO RAM cards sold by midsummerall of which are populated with IBM-manufactured memory. If you have a problem module and try to use the laptop's resume mode, you'll get an error message when you power the machine back on. To find out if you've installed the faulty upgrade, open the system's memory compartment and look at the module's chips. If the letters SEC are not printed across the top of the chip, you're in for a headache.

A second problem occurs only with Satellite Pro 420 and Satellite 110 models. It's caused by certain SEC-labeled memory modules that use the wrong type of chip, creating intermittent memory errors. As with the Tecra modules, the only way to check for the faulty RAM is to open the upgrade compartment and look at what's printed on the chips. In this case, the faulty chips bear the part number SEC - KM416V12O4AT-6. The good chips are numbered SEC - KM416V1004AT-6. Only the digit indicated in red is different. If you have one of the faulty memory modules, contact the dealer you purchased it from for an exchange, or call Toshiba Product Support at 800/999-4273.

See How Business Travels

#### Center Stage, Monte Carlo.

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

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

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

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

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

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

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

OUTSTANDING PERFORMANCE

Up to 133MHz Pentium® processor, 256K

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

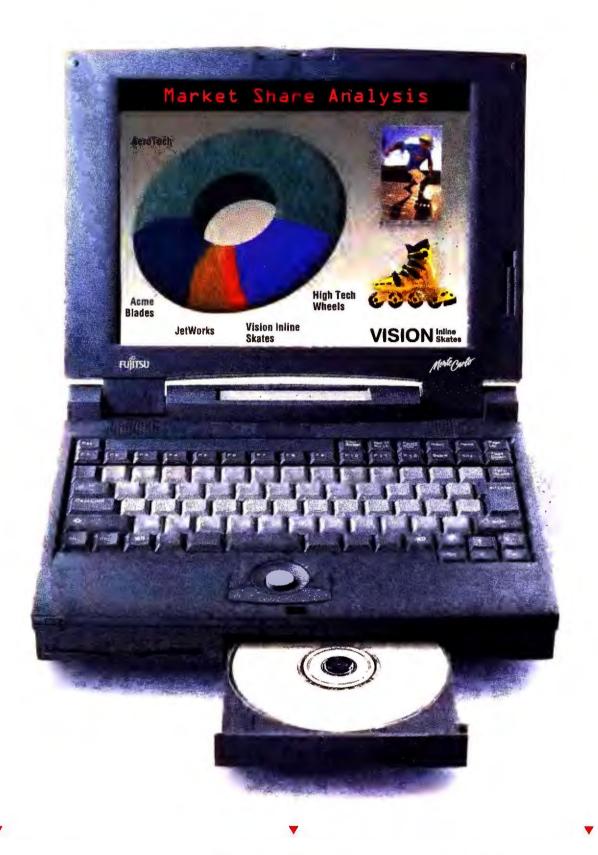
RAM all built on 32-bit PCI bus architecture

DAZZLING MULTIMEDIA

Dynamic sound, quality stereo speakers, microphone, and MPEG 1 support enhance multimedia presentations SIX-SPEED CD-ROM

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





LARGE, BRILLIANT SCREEN

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

FLEXIBLE CONNECTIVITY

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

WORLDWIDE SERVICE & SUPPORT

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



{ See How Business Travels }

#### Fast Track, Milan.

Meet the Milan notebook from Fujitsu. High-performance models in a slim design.

You need to move with power, purpose and speed. These are the attributes you'll find in the Milan™ line of notebooks. The Milan notebook takes the lead with up to a 133MHz Intel Pentium® processor and expandable EDO RAM that handles your work with ease. Its removable lightweight Lithium Ion battery also keeps you going for up to 4.5 hours. With premium components and precision manufacturing, the Milan notebook is engineered for mobile comfort. The Milan notebook from Fujitsu is backed by a three-year limited warranty, including 24-hour, 7-day toll-free technical assistance. All from Fujitsu, a \$36 billion global leader in information technologies. So when it comes to increasing productivity in your life, let the Milan notebook put you on the fast track.

#### MAXIMUM PERFORMANCE

Up to 133MHz Intel Pentium processor,

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

RAM all built on 32-bit PCI bus architecture

#### BRILLIANT DISPLAYS

SVGA color display offers sharp text and graphics displayed in crisp 800 x 600 resolution

#### REMOVABLE LITHIUM ION BATTERY

Lightweight, removable battery provides up to 4.5 hours of battery life to keep you going





#### OUTSTANDING STORAGE

Up to 1.2GB hard drive has ample room for all the applications and files you need to stay productive

#### FLEXIBLE CONNECTIVITY

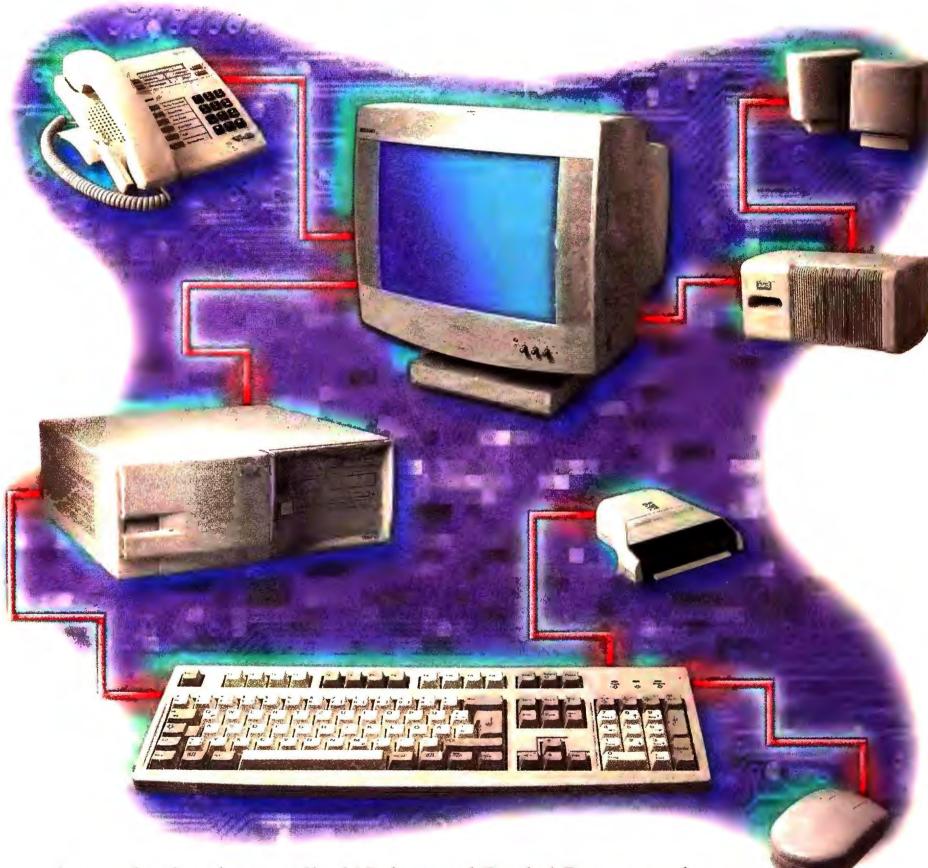
PCMCIA slots offer expandability and connectivity while an IrDA-compliant port provides for wireless data transfer

#### WORLDWIDE SERVICE & SUPPORT

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



## TOPOF THE LAS



A new technology called Universal Serial Bus promises to make installing common peripherals easier and offers faster throughput than serial or parallel ports. Products are due by year-end.

# A Better Way to Plug and Play?

OVER THE NEXT few months, vendors promoting Universal Serial Bus products will generate more noise than a Boston rush hour. Designed to replace your serial, parallel, keyboard, and mouse ports with a single connection that accepts multiple devices with the ease of Plug and Play, USB has already garnered the support of such big-name system vendors as Compaq and IBM. Peripherals giants such as Logitech, Philips, and Altec Lansing are also putting the finishing touches on the first round of USB devices.

Still, as summer came to an end, support for the technology was anything but universal. "We've been examining it for several months," said John Wandishin, director of marketing for printers at Brother International. But the company has yet to announce a product. This caution was echoed by officials at several other vendors, including Gateway 2000, U.S. Robotics, and Digital Equipment. Digital has scotched plans to produce a USB printer this year. But with backing from Intel and Micro-

Russell Glitman and Randy Ross



PLUG AND PLAY for real? USB devices will connect via simple ports and plugs, as shown above.

soft, the standard has more than enough momentum to carry it through a slow start.

#### ONE PORT, **MANY PERIPHERALS**

USB DEVICES USE inexpensive connectors, each about the size of a phone jack, and can transfer data at up to 12 megabits per second—faster than common serial and parallel ports. This throughput makes USB ideal for a variety of low- and medium-speed devices, ranging from personal printers and low-resolution scanners to mice, monitors, modems, and speakers. Peripherals requiring greater bandwidth, such as video cameras, high-resolution printers, and high-capacity tape drives, work better with the faster connections provided by technologies like SCSI or the emerging IEEE-1394 standard, also known as FireWire (see "Plugging In: Upcoming High-Speed Options").

A single USB port on the back of your PC can support numerous daisy-chained devices. This arrangement facilitates installation and greatly reduces your chance of running out of ports or slots when adding peripherals. In a typical scenario, you might connect a monitor with USB ports of its own to your PC's USB port. (Monitors will still connect to a graphics card via a standard video cable.) To the remaining USB ports on the monitor, you could connect a keyboard that itself might have USB connectors, a modem, and a scanner. You could then plug more USB devices into the keyboard. None of I N

these devices require IRQs or additional ports.

The technology claims a number of features for

#### Has Reveal Gone Under?

REVEAL COMPUTER, once a major player in the multimedia market, has all but gone out of business, according to a PC World investigation. Problems first came to light on the company's Compu-Serve forum, when customers complained of nonexistent technical support and unanswered phones. Former employees, who requested anonymity, say the firm dismissed virtually all its workers in a series of layoffs that began in January. Repeated calls to Reveal have gone unanswered, and the company's Web page and CompuServe file libraries appear not to have been updated for months. Major retailers such as CompUSA and Circuit City say they no longer carry Reveal products.

#### **Packard Bell Settles Used Parts Suit**

**BEGINNING January 1, Packard** Bell Electronics will post the phrase "may include components from a previously sold computer" on cartons of PCs that might contain recycled parts. The labeling is part of a settlement various government agencies reached with Packard Bell. The company, which claims no wrongdoing, will also reimburse authorities about \$5 million for the investigation.

#### Smarter, Faster **Parallel Ports**

**NEW ENHANCEMENTS expect**ed next year will extend the life of parallel port technology, which is being challenged by the Universal Serial Bus and FireWire

R N E **GET UP-TO-THE-MINUTE NEWS, including** reviews of Sharp's thin and wide notebook and Compag's 4 x 4 server with four Pen-

tium Pro processors, at PC World Online. Just point your browser to http://www.pcworld.com/news.html.



easing installation. Later this year, Microsoft plans to add USB support to Windows 95 as an extension to its Plug and Play technology, according to Mike Glass, technical evangelist for Microsoft. In theory, if you connect a USB peripheral to a USB-equipped PC, the system will recognize the device and load the appropriate drivers. Thus you won't need to set IRQs or dip switches when adding USB peripherals. USB should also support hot swapping, so you can attach devices while the PC is on without rebooting.

Another feature should help eliminate cable clutter. USB that lets these devices communicate with your PC's operating system.

Top-tier vendors such as IBM and Compag have been shipping desktop PCs with USB ports for several months. Dell, Sony, and Toshiba plan to offer PCs with the ports. You won't pay extra for a PC with this new technology, according to Richard Cheston, a brand manager in IBM's PC division. Notebook products with USB will follow soon: Dell plans to offer a notebook with a USB connector by mid-1997. For those who want to upgrade an existing PC that has a 486 or faster CPU and a PCI



DAISY-CHAIN DEVICES: Keyboards, like the one shown here, and other peripherals will include USB ports so you can add compatible devices.

had not said when USB support would be available to current owners of USB PCs. A retail version of Win 95 with the support is expected in 1997, but driver upgrades for current Windows users could be available as downloads from Microsoft's Web site before

the retail version ships.

#### THE BIG NEWS: **USB PERIPHERALS**

USB PERIPHERALS are debuting as you read this. Most cost the same as traditional models or a bit more. The first to ship are communications and input devices, monitors, and speakers.

In November, Mitel expects to ship a \$349 telephone with a 33.6kbps modem that connects to your PC via a

USB connector or a serial port. In December, Philips plans to ship a line of monitors that have three USB connectors built into the base. A 15-inch monitor will list for \$499the same price tag the non-USB model will carry. Also in December, expect to see USB speakers from Altec Lansing. The three-piece USB46 system will have a street price of \$150-about \$25 to \$50 more than comparable units without USB. Altec Lansing claims

its digital speakers sound better than their comparably priced non-USB equivalents.

Next year, expect to see USB modems, keyboards, scanners, and other input devices. The modems will likely include both a USB port and a serial port. ISDN modems with USB connectors may also appear. Unlike the slower serial port, which tops out at 115.2 kilobits per second, a USB port offers enough bandwidth to handle ISDN's 128-kbps throughput.

#### **SLOW TO BOARD** THE BUS

THOUGH INTEL'S Pappas says a USB printer will debut by year's end, at press time none of the printer vendors we contacted, including Hewlett-Packard, Epson, and Brother, had immediate plans to introduce USB versions.

Likewise, storage vendors we contacted, including Iomega,



SNAP IN, SNAP OUT: A handy USB connector is about the size of a phone jack.

#### Inaugural Run of the Universal Serial Bus

First peripherals prepare to head out.

| PRODUCTS                              | Vendor                          | Expected to ship | Price                   | Contact      | Reader<br>service no |
|---------------------------------------|---------------------------------|------------------|-------------------------|--------------|----------------------|
| Monitors                              | Philips Consumer<br>Electronics | Q4 1996          | \$499 to \$2499<br>list | 800/531-0039 | 738                  |
| Phone-modem                           | Mitel                           | Q4 1996          | \$349 list              | 800/648-3579 | 739                  |
| Speakers                              | Altec Lansing                   | Q4 1996          | \$150 street            | 800/648-6663 | 740                  |
| USB add-in card                       | CMD Technology                  | Q4 1996          | \$59 street             | 714/454-0800 | 741                  |
| Connector base for<br>17-inch monitor | liyama                          | Q1 1997          | under \$150<br>street   | 215/957-6543 | 742                  |
| Hand scanner                          | Logitech                        | 01 1997          | \$130 street            | 800/231-7717 | 743                  |
| Keyboard                              | Key Tronic                      | Q1 1997          | n/a                     | 800/262-6006 | 744                  |
| Modem                                 | Boca Research                   | Q1 1997          | n/a                     | 407/997-8621 | 745                  |
| Keyboard                              | Cherry Electrical<br>Products   | Q2 1997          | n/a                     | 800/510-1689 | 746                  |
| Joystick                              | Microsoft                       | 1997             | n/a 🔻                   | 206/882-8080 | 747                  |

connectors can carry electrical current, so devices that now require an AC adapter, such as modems and portable printers, may not need one, according to Jim Pappas, director of interconnect technology at Intel's architecture lab.

n/a = not available

#### THE FIRST STOP

THREE INGREDIENTS are required for USB to work: a computer equipped with USB circuitry, peripherals with this circuitry, and driver software

bus, CMD Technology is expected to offer a USB add-in card. The PCI card, predicted to sell for \$59 on the street, includes two USB ports.

By year-end, Microsoft will ship PC makers a version of Windows 95 that supports USB peripherals, according to Microsoft's Glass. PCs with the support should be available by February. So if you plan to buy a PC, be sure the vendor includes this version of Win 95. At press time, Microsoft

#### **Make the Right Connection**

| INTERFACE  | Speed                  | Peripherals   |
|--|------------------------|---|
| Serial port, RS-232  | 115.2 kbps             | mice, modems, other low-speed devices   |
| Parallel port, Centronics to<br>Extended Capabilities Port | 800 kbps to<br>16 mbps | printers, scanners, external drives   |
| Universal Serial Bus                                       | 12 mbps                | all of the above  |
| Enhanced-IDE mode 4  | 133 mbps               | hard drives, optical drives, CD-ROM drives  |
| Enhanced-IDE Ultra DMA/33 1                                | 264 mbps               | same as Enhanced-IDE mode 4   |
| SCSI Wide Ultra  | 320 mbps               | same as Enhanced-IDE mode 4 plus internal devices such as tape drives and high-speed scanners |
| IEEE-1394 FireWire   | 400 mbps               | same as SCSI Wide Ultra plus external devices such as video cameras and printers              |
| SCSI Wide Ultra2 1   | 640 mbps               | same as SCSI Wide Ultra   |

'Available in 1997.

Seagate, and HP's Colorado Memory Systems, say they have no immediate plans to release USB products. Pappas says storage devices that typically connect to parallel ports, such as removable-cartridge and tape drives, will eventually be available in USB versions.

Microsoft had not shipped

the software drivers for Windows 95 at press time, so we could not verify any of the USB vendors' claims regarding speed, ease of installation, or the ability to daisy-chain multiple peripherals to a single port. As with any new technology, be prepared for complications in the early going.

Still, the risks are minimal. Many new systems will include a USB port at no extra charge, and the next version of Windows 95 will provide software support. If you have more peripherals than ports, the Universal Serial Bus could be just the ticket.

-Randy Ross

(see "A Better Way to Plug and Play?"). The new standard, called 1284.3, will make it easier to daisy-chain peripherals to a parallel port. Also due is a PCI version of the parallel port that will boost performance from the current 16 megabits per second to 40 megabits per second.

#### **New Pentium Chip**

INTERNATIONAL Meta Systems, a newcomer to the x86 CPU business, will introduce a 200-MHz Pentium-class chip with MMX multimedia-enhancing technology late next year. Intel created MMX technology to improve multimedia performance. Intel's first MMX Pentium chip will enter production early next year. AMD and Cyrix also plan to introduce MMX chips at about that time.

#### **Norton Utilities 2.0**

THE NORTON 2.0 BETA we examined has a host of Improvements over version 1.0. A System Genie offers a simple way to customize a Win 95 computer without manually editing the Windows Registry. Virus scanning takes place transparently in the background via Symantec's AntiVirus technology. Version 2.0 also supports Microsoft's new FAT32 file system. Due this year, the utility will cost about \$80.

#### **Two Digital Cameras**

RICOH AND SONY have announced digital still-image cameras for less than \$900.



#### Plugging In: Upcoming High-Speed Options

IN ADDITION TO USB, other technologies designed to improve system performance will emerge in the coming year. Two of the most promising are the IEEE-1394 specification, also known as FireWire, and the Accelerated Graphics Port.

FireWire will offer many of the benefits of USB, plus much higher performance. By next spring you'll see FireWire addin cards supporting speeds of 200 megabits per second, and by August 1997 you'll be able to buy cards capable of 400 mbps, says Robin Selden, managing director for the Advanced Media Products Group at Adaptec. These speeds compare to those offered by SCSI products. You'll use these fast cards for connecting home electronics devices such as camcorders to your computer.

FireWire devices will support

plug-and-play installation and hot swapping and cost about the same as comparable SCSI adapter cards. Home video-editing kits based on FireWire will run from \$700 to \$1000.

The Accelerated Graphics Port is a high-speed motherboard connection between the graphics controller and system memory. The technology is designed to provide more realistic three-dimensional graphics and games. "It will add capability,

cost," says Jake
Richter, senior editor of Jon
Peddie's PC Graphics Report.
AGP initially will operate at
about 2128 mbps, twice as fast
as today's PCI bus. PCs with this
technology will be widely avail-

able by the end of 1997. AGP

video cards will sell for around

but it won't add

estimates that systems with AGP connections will need 24MB to 32MB. But with RAM prices plummeting, he expects that by next year 32MB of RAM will cost little more than 16MB costs today. Initially, AGP will ship only

on Pentium Pro PCs.

\$200 to \$400, about what 3-D cards sell for today, Richter says.

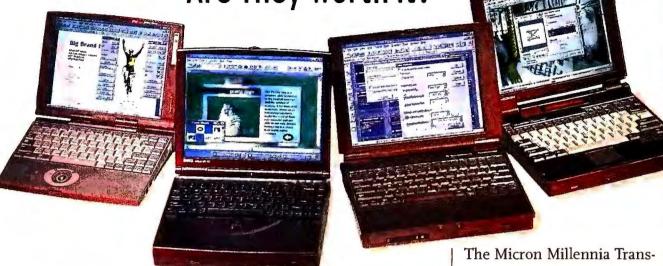
AGP graphics controllers store
3-D textures and bit maps in system memory instead of in
more-expensive video
memory.

As a result, units sporting the technol-

ogy will require more

system RAM: Richter

150-MHz Notebooks Are Fast, but Are They Worth It?



AS THE FIRST notebooks based on Intel's Pentium-150 processor come to market with higher prices than their P-133 predecessors' and marginal performance gains, you may find yourself asking, Why buy one?

It's not that these notebooks are slow. Dell's P-150 Latitude XPi CD with 16MB of EDO RAM recorded a score of 166

on our PC WorldBench test suite, about 10 percent better than average for similarly configured P-133 notes. But since prices are higher—by \$200 or more-than prices of comparably equipped P-133 notes, it's questionable whether P-150s have enough added oomph to justify bypassing a P-133.

We tested four P-150 notebooks, from Dell, Digital, Micron, and Texas Instruments.

port P150 took top honors as the fastest notebook we've ever tested, posting a PC WorldBench score of 189.

But these P-150 notes' overall performance increase is less than spectacular. The modest gain is explained in part by their slower bus. While P-133 notes generally use a 66-MHz bus, P-150s run at 60 MHz.

Battery life ranged from just over 4 hours for the TI to just under 3 hours for the Dell, on a par with P-133 notes.

FAST CLASS: High-speed P-150 notebooks offer marginal performance gains over P-133 mobile systems. From left to right: Digital, Dell, Texas Instruments, and Micron.

Compaq, Gateway, and IBM should have P-150 notes by the time you read this, but none were ready in time to test.

#### **DETAILS, PLEASE**

IT'S HARD NOT to like Micron's superfast Millennia Transport P150. With PCI graphics and an 8X removable CD-ROM drive, it's got all the essentials for hard work and fun. MPEG-1 playback software and a 12.1-inch active display are included. You also get a 2.1GB removable hard drive, a 28.8-kbps fax-modem PC Card, a second lithium ion battery, a leather carrying case, and both a touchpad and an eraserhead pointing device. The adequate speakers are conveniently located on the wrist wrest. With all this gear, the Millennia costs \$5550 and

#### TEST REPORT

#### The New High-Speed Mobiles

Pentium-150 notebooks post marginal gains over Pentium-133 notebooks.



HOW WE TEST Higher PC WorldBench scores are better. For a description of PC WorldBench 1.0 tests, see PC World Online (http://www.pcworld.com). Data based on PC WorldBench testing conducted by the PC World Test Center. All rights reserved.

#### 150-MHz Pentium Notebooks

PRO: Ultimate mobile computing. CON: Ultimately, prices are too high. VALUE: It's not here; check out Pentium-133 notebooks instead.

weighs 8.2 pounds. (By comparison, the Millennia Transport P133 with a modem and a second battery costs \$5199.)

While most of the Pentium-150 notebooks follow the design of their P-133 predecessors, Dell has revamped its Latitude and integrates both a floppy drive and a 6X CD-ROM drive. However, this arrangement leaves the base thicker than most, and we found typing uncomfortable, even with the notebook tilted on its fold-out legs. Another drawback: We had to use a pen to push the CD-ROM drive's inverted button. On the other hand, the unit accommodates a Type II and a Type III PC Card simultaneously. The speakers are small slits that leave plenty of space for the expansive 12.1inch active-matrix LCD screen. Dell uses the NeoMagic Magic-

#### Dell Latitude XPi CD

PRICING: From \$4399

**Dell Computer** 

800/915-3355

http://www.dell.com

READER SERVICE ND. 820

#### **Digital HiNote** Ultra II LTS5150

PRICING: From \$5099

**Digital Equipment** 

800/344-4825

http://www.pc.digital.com

READER SERVICE NO. 821

Graph 2090v graphics accelerator chip set (see Just In, October) to get full-screen, 30frame-per-second video playback. We like the big screen, and with the included software MPEG-1 support, video playback is great. These extras make the Latitude bulkier than most notes and heavy, at 8.4 pounds. The PC we tested has 16MB of RAM and costs \$4399.

At \$6447, Texas Instruments' TravelMate 6050 is the most expensive notebook in our tests. It does have a big 12.1-inch active-matrix display with backlit inverters for brighter visuals. Multimedia

#### Micron Millennia Transport P150

PRICING: From \$4599

Micron Electronics

800/209-9686

http://www.micron.com

READER SERVICE NO. 822

#### TI TravelMate 6050

PRICING: From \$5499

Texas Instruments

800/848-3927

http://www.ti.com

READER SERVICE NO. 823

performance gets a boost from MPEG-1 decoding and a Zoom Video port. Video playback looks good, and the speakers sit in the wrist rest—a perfect spot to blast the senses. The TravelMate we tested has a 1.35GB hard disk, 32MB of RAM, and a 6X CD-ROM drive. The base model with 16MB of RAM and no CD-ROM drive costs \$5499.

Digital's HiNote Ultra II LTS5150 is one of the thinnest, lightest notes in this class—it weighs only 5 pounds. You get 16MB of RAM and a 1.44GB hard drive, but the 11.3-inch active-matrix screen is relatively small. A multimedia module with a 6X CD-ROM drive and speaker clips to the bottom of the HiNote, bringing its weight to 5.8 pounds. The base model we tested costs \$5099; the multimedia module is \$699.

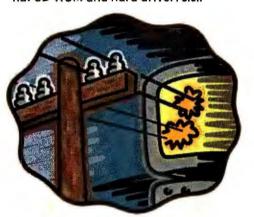
#### THE BOTTOM LINE

THOUGH MICRON'S P-150 sets a speed record and several of these P-150s offer impressive multimedia components, the combination of high prices and marginal performance gains over P-133 notes makes it hard to recommend them. Our advice: Save some money and stick with the P-133.

Ricoh's \$799 RDC-2 has many features found in the vendor's \$999 RDC-1, plus adjustable exposure control. Sony's \$849.99 DSC-F1 has an infrared connection to transfer images wirelessly to PCs that have IrDA ports.

#### **Three PDAs**

EARLY NEXT SPRING Corel plans to debut a personal digital assistant for under \$500. The unnamed device will have a word processor, a calendar, a voice recorder, and Internet connectivity, plus support for an external CD-ROM and hard drive. Psion



will ship the \$599 Series 3c, an upgrade to its Series 3a line. The 3c has a serial port for connecting to a PC, and cc:Mail and Microsoft Mail clients. Psion's new Siena line, with basic PIM features and a word processor, will cost \$299 and come with 1MB of RAM.

#### **TidBytes**

One-Stop Telecom Shop: MFS World-Com plans to offer long-distance and local phone service and Internet access. Companies must meet federal regulations before offering all three services, and no other provider, including AT&T, has succeeded. Back from the ashes: After its wildly unsuccessful introduction of SoftRAM 2.0, Syncronys Softcorp will introduce Soft-RAM 3.0 this fall. We found that version 2.0 did not increase the performance of system RAM as claimed. Look for our test report next month.

#### Battery-Friendly P-150 Due Soon

THE NOTEBOOKS we tested are. all based on a 3.1-volt version of Intel's new 150-MHz Pentium mobile processor. Intel, though, claims it can make a

2.9-volt P-150 processor, which should be ready by the time you read this. Systems with the lower-volt-

age processor should have slightly longer battery life and produce less heat, allowing vendors to add more

On the other hand, vendors

components or forgo a fan.

who design systems for the lower-voltage chip may actually be at a disadvantage when Intel releases the notebook version of

> its 166-MHz Pentium sometime early next year. According to an official at Micron, designing for the new high-heat conditions that the higher-volt age processor creates

will prepare the company to accommodate the 166-MHz Pen tium and components such as Zoomed Video that increase a system's heat level.

—Gabrielle Mitchell

FIRST LOOK YOU'VE NEVER SEEN a computer quite like the Compaq Presario 3000. The innovative design packs a no-holdsbarred multimedia system into a compact desktop that is easy to carry from room to room and offers the push-button convenience of consumer electronic products.

The Presario 3000 may remind industry gray-hairs of Compaq's first luggable product that launched the mobile market a decade ago, but this movable 28-pound machine boasts more features than many PCs twice its size.

So, what's unique about this

system? The first thing you notice is the integrated 12.1inch LCD panel, less than 2 inches thick. Twice as bright as typical notebook screens, this gorgeous display offers practically the same viewing area as a 14-inch monitor, and better clarity. You can tilt the screen to see it better in different lighting conditions, but it's not detachable.

Behind the screen, a grille houses a pair of 5-watt JBL Pro stereo speakers, which deliver surprisingly decent sound. A 16-bit Sound Blaster-compatible controller is integrated on the motherboard. The guts of the system are basically the

THE PRESARIO 3000 packs more multimedia into its luggable design than many tower systems.

same

as in Compaq's other Presario models, with a few exceptions: You get a 4disc 6X CD-ROM drive and a built-in 33.6-kbps modem that is duplex-speakerphone capable. Through the end of the year, Compaq is also including DSVD (Digital Simultaneous Voice and Data) software. The power behind the system is provided by a P-166 CPU, 24MB of EDO RAM expandable to 128MB, and a 64-bit PCI graphics chip. A 2GB hard drive gives you plenty of storage for work and play, and two PCI and two ISA slots are free. The Presario

3000 also has two Universal Se-

rial Bus ports, the new easy-to-

connect bus design (see "A Bet-

ter Way to Plug and Play?").

This entire assemblage is attached to a small base, which houses a group of buttons for controlling the onboard telephony features and CD player. Also available at the press of a button are a sleep mode and a utility that Compaq calls SmartQ, which launches help software and customizable user interfaces. The keyboard latches onto the unit, and an infrared mouse fits into a

holder. A handgrip provides quick portability.

Not bad for \$3499, but how does the system perform? In a demo, just fine. Unfortunately, a model was not available for us to test. For a definitive answer, look for PC World's review in an upcoming Top 5 Home PCs roundup.

Nearly a year ago, the sleek, curved Acer Aspire hit the computer market and redefined the look of the PC. Compaq, always known for innovation, has changed the look of computers even more dramatically, and with the Presario 3000, it presents a choice like none we've seen before.

—Russell Glitman 🕨

#### **Boom Box Notebook**

NOT CONTENT TO REDESIGN the look of desktops, Compaq has also changed the shape of notebooks, first with its Armada business line and now with the Presario 1000 multimedia notebook.

With an 11.3-inch active-matrix or dual-scan screen and 128-bit

graphics, the Presario 1000 is all work when it's open, but it lets you play when you close the lid.

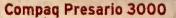
That's because the unit's speakers and audio controls for the 6X CD-ROM drive remain exposed. The speakers produce top-quality sound-the best we've heard from an integrated mobile setup.

A 33.6-kbps modem keeps you connected, and the hard drive options-from 810MB to 1.44GBoffer lots of room. The Presario 1000 comes with 16MB of EDO RAM expandable to 48MB, two Type II PC Card slots, and a choice of either a nickel metalhydride or a lithium ion battery.

Weighing in at about 7 pounds, the Presario 1000 lists from \$2499 to \$3999, depending on the options you select.

READER SERVICE NO. 805

MUSIC to your ears: The Presario 1000 delivers multimedia for work and play.



PRO: Attractive, compact multimedia power.

CON: Costs more than most home systems.

VALUE: So hot it's cool.

List price: \$3499

Compaq Computer, 800/652-6672

http://www.compaq.com

READER SERVICE NO. 806

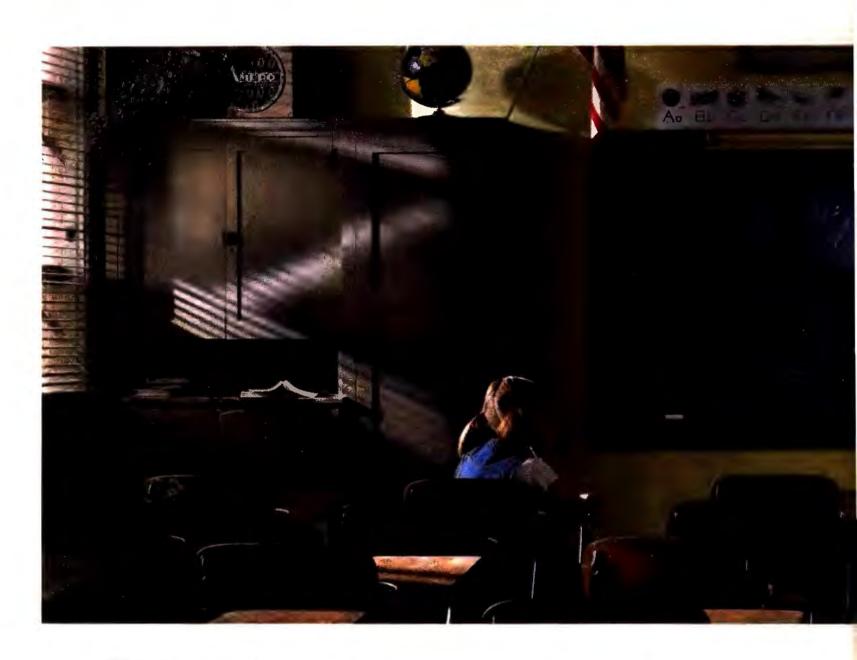


- It would be great if the Internet was more like a shopping mall.
- It would be great if the Internet was more like a post office.
- It would be great if the Internet was more like a human being.

Think the internal should be more like you? Then you'll fike Product Internet You get these internet access with the Vilotosoft internet Espherer it were transfer at welf as green online temptres like e-mail that rooms traveland sports. Note to member 40 feet to us 100 clears you it like that

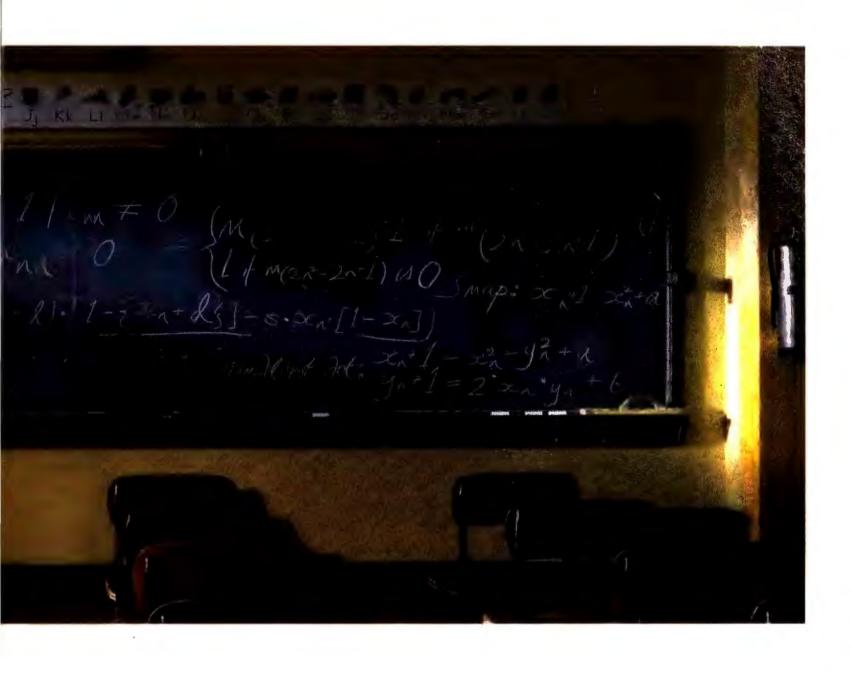


www.prodlgy.com/1-800-PRODIGY



HOW MUCH do you need to know to operate a computer? How about, "The green plug goes in the green hole."





The new Acer Aspire™ 2000 Series. Easy to set up. Even easier to use.



1-800-558-ACER www.acer.com/aac/

#### What's Worse: Flying Coach or Setting Up an ISDN Videoconferencing System?

A NEW GENERATION of high-speed ISDN videoconferencing products for the PC is emerging with Win 95 soft-

ware, Plug and Play support, and enhanced video. These packages benefit from the 128kilobits-per-second throughput of high-speed ISDN phone lines, which are now available at reasonable rates in all but the most remote areas. (ISDN is shorthand for Integrated Services Digital Network.) While these systems promise to reduce time-consuming travel and enhance communications, we found setting them up as exasperating as catching the last flight out of Newark before a blizzard. In other words, a painful experience.

We looked at two recent releases: Intel's ProShare Video System 200 and Elsa's Elsa-Vision. Both systems can stymie all but the most expert users with a litany of hardware



BETTER PACK A LUNCH: Even with Plug and Play hardware, setting up ISDN videoconferencing remains a daunting proposition.

conflicts and driver problems. Worse, our phone company-Pacific Bell-failed to provide timely and accurate information to help us configure the packages for our ISDN lines. The silver lining? Once we worked past the initial snafus, both products let us perform real-time video calls, share Windows applications, and exchange files. Video performance was slightly better than that of earlier ISDN products we've reviewed and far better than with the PC-based videoconferencing products that use analog phone lines (known as POTS, for plain old telephone service). But while these new products may provide an alternative to face-to-face meetings, they don't do well with larger gatherings.

#### **VIDEO ON DEMAND**

NEW STANDARDS from the International Telecommunications Union allow systems to interact with each other. The H.320 specification allows products like Intel ProShare Video System 200 and PictureTel Live200p to conduct video calls over ISDN lines. while the T.120 specification should provide data and application sharing. Currently only the ProShare system supports this specification.

The latest versions of Pro-Share, ElsaVision, and PictureTel's Live200p all run under Windows 95. On our two test systems-the ProShare Video System 200 and the ElsaVision—the 32-bit code produced markedly fewer system crashes than 16-bit versions had under Windows 3.11 in previous tests. Windows 95's multitasking boosted performance and enhanced video quality. In addition, the Elsa-Vision and Live200p systems pack everything onto a single full-length PCI card, whereas earlier products required as many as three ISA cards. Intel's ProShare, however, still comes as a two-board set.

#### WEB BROWSER

#### Testing 1, 2, 3... New Web Audio Formats

it. But it's not the only way to get audio on and off the Internet. If you want to record sound files, Voxware's ToolVox audio kit (http://www.voxware.com/download.htm) is great for handling speech files. The kit has great compression and lets you change tone, pitch, and speed with the dexterity of a sound engineer. Macromedia, the leader in Web multimedia, has improved Shockwave (http://www.macromedia.com/shockwave/ new/). It now supports streaming audio, and its sound quality is better than Real Audio's.

IF YOU HAVEN'T HEARD Real-

Audio, you've at least heard about

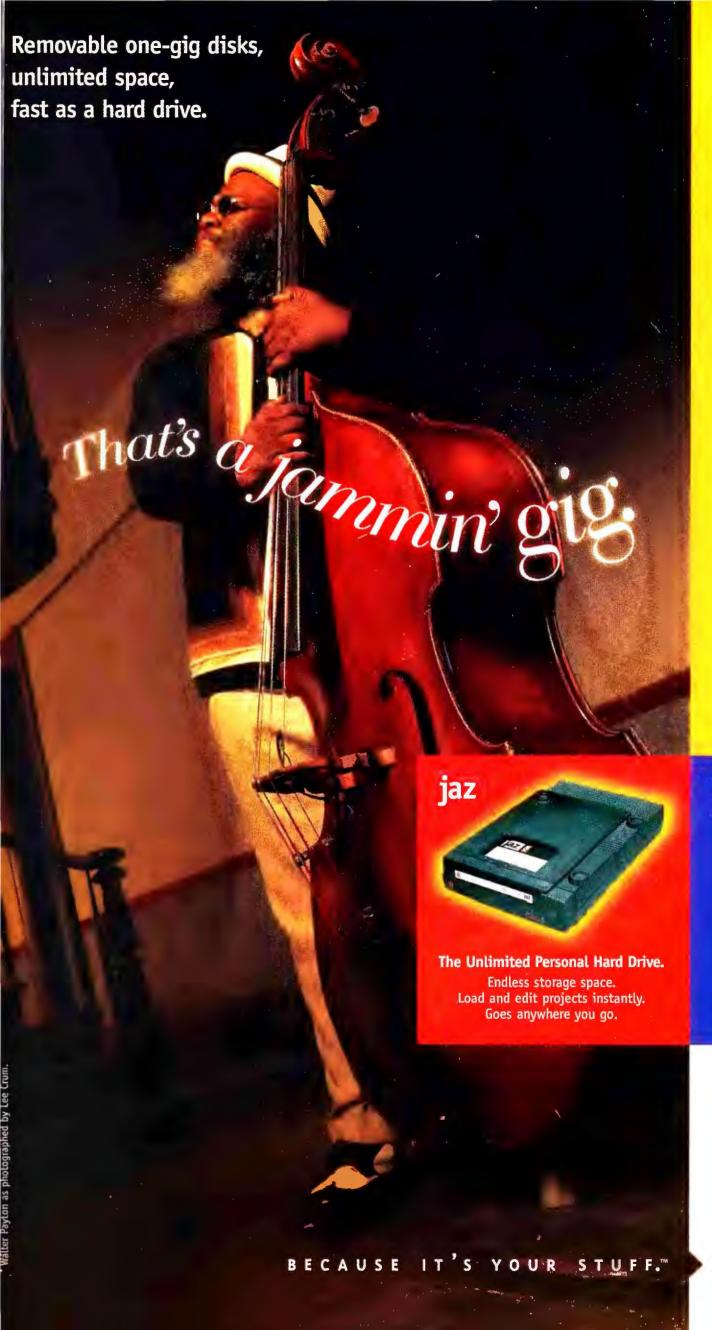
That's because Macromedia has better codecs, or algorithms your PC uses to translate sound files. Another audio alternative comes from FastMan, which recently launched the Rapid Transit player, a highcompression plug-in that reads its own .lcc files. You won't see these upstart sound files often, but if you do, go to http://monsterbit .com/rapidtransit/ to get the software to hear them. Real Audio remains the leading source of audio on the Web. If you're among the addicts of this popular audio file format, consider upgrading to the new Real Audio Player Plus (http://www.realaudio.com/). The



REALAUDIO PLAYER PLUS has a new look that includes a preset channel option.

new decoding software gives you an interface that behaves like a car radio, allowing for station presets; in addition, you can record files. Now the real trick: finding something interesting to listen to.

-Richard Overton



For the nearest dealer, call: 888-2-IOMEGA, ext. j18 Or see us at: www.iomega.com



The Jaz™ drive is you, man. It's fast, it holds tons of stuff, and it's personal. You won't find an easier or cooler way to upgrade your hard drive. Just connect it to your PC or Mac and you're jammin': files, pictures, graphics, video, CAD stuff, whatever. And with its dark green color, hey, the cat's got style.





Only ElsaVision takes full advantage of video-savvy graphics cards that use Windows 95's DirectDraw interface to speed frame rates and enhance image quality. The downside: The system won't work with older graphics cards lacking DirectDraw capability. Still, none of the systems force you to throw out your existing graphics card in favor of the one in the package—a real problem in earlier products.

#### PROBLEMS, PROBLEMS

IN SPITE OF ITS ADVANCES, PC-based videoconferencing is too complex for most users to set up on their own. All these packages present a tangle of wires for cameras, microphones, speakers, and ISDN peripherals, which must be hooked into hard-to-reach ports. Even with Windows 95 Plug and Play, installing Elsa-Vision and ProShare took hours of trial and error. With

Conference Manager

The Early Tools Tools Internet Montrace Tools Internet Mon

pected gotcha in all of this. These systems require a small box called an NT-1 that connects between the ISDN

phone jack and the PC videoconferencing card. But none of the vendors supply an NT-1 unit, which typically costs about \$150 on the street.

We also had to deal with the ISDN challenge. We thought we knew the specifics of our

ISDN lines, but when we tried to dial out, both packages said our service provider identification (SPID) numbers were invalid. Turns out, Pacific Bell had changed the SPIDs on one of the lines since we last used it, while the other line

used a different SPID format than we thought. When new SPIDs failed to solve the problem, Pac Bell began guessing—"try changing 415904988301 to 415904988300," and so on. After a day of this, we went to another ISDN line, which worked on the first try.

THREE-RING CIRCUS: You'll need a blg monitor to juggle

all the video windows, call controls, and whiteboard and

payoff: online collaboration and real-time video feedback.

application-sharing features in Intel's ProShare. The

#### HARD AT WORK

Once we cleared the setup headaches, the ProShare Video System 200 worked surprisingly well. On a Pentium-120 with an ATI mach64 graphics adapter, it delivered reasonably smooth video and audio that stayed in sync with one another. Its image quality was vastly superior to that of POTS products, such as Creative Labs' ShareVision 300 and Intel's Video Phone. A sensible interface made juggling video and applications easy, although you need a 17-inch monitor to accommodate everything.

We had mixed success with ElsaVision. The product relies on DirectDraw to speed video, forcing us to install a compliant graphics adapter. Also,

| FEATURES                     | Elsa ElsaVision  | Intel ProShare Video<br>System 200   | PictureTel Live200p (not tested)   |  |
|------------------------------|--|--|--|--|
| List price                   | \$1649   | \$1499   |  |  |
| Add-in boards number/type    | 1/PCI  | 2/ISA  | 1/PCI  |  |
| Bundled hardware             | camera, headset  | camera, headset; speakers  | camera, headset, speakers  |  |
| Also functions as ISDN modem | •  | 0  | •  |  |
| Operating systems            | Windows 95, Windows 3.1  | Windows 95, Windows 3.1  | Windows 95   |  |
| System requirement 1         | 486DX-33 with 16MB of RAM  | 486DX2-66 with 16MB of RAM   | 486DX2-66 with 16MB of RAM   |  |
| Plug and Play                |  |  |  |  |
| Multipoint connections       | • 110000 110000 110000   | And the state of the state      | E A COLOR DE LA CO |  |
| Whiteboard                   | A Library of Charles   | A rate of the state of the stat | Minute house to an a state of the wa   |  |
| Application sharing          | •  | ● den la den la den  | O Sancta and the sanctabas of  |  |
| Supported standards          |  |  |  |  |
| H.320                        | · re- part a section to an analysis and an analysis and an experience  | Section of the s      | O STANKE AND STANKE STA |  |
| T.120                        | O Salar Sala | - Tanger and the control of the cont | Os Ballowin in Mana to Landich Miller h.   |  |
| TAPI                         | O State Control of the American Control of the   | 0  | O STATE OF THE PARTY OF THE PAR |  |
| Customer support             |  | and the state of t |  |  |
| Warranty (years)             | 3  | The state of the s | 1  |  |
| Toll-free support            | O STATE OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS  | O west . settled to set was a set beath.   | O with all and hall of the train of the  |  |
| Daily support (hours)        | 10   | 10   | 24   |  |

# THE NEW TI EXTENSA 510. GET 100MHz WITHOUT PAYING MEGABUCKS.



Now you can fly through your work and keep your spending down to earth. The new TI Extensa™510 offers a powerful, yet practical, 100MHz



Pentium processor plus full PCI bus architecture for maximized performance. Also standard are its special Windows keyboard, 810MB hard drive, light weight (under 6 pounds), and award-winning TI service and support. Like they say, it's your money. To get more machine for it, call 1-800-TI-TEXAS today. And start doing extraordinary things.

Internet: http://www.ti.com E-mail: 2ti@msg.ti.com





EYES AND EARS: The Intel (left) and Elsa cameras sit atop your monitor and provide controls for tweaking outbound video quality.

the ElsaVision board would connect on only one of the two 64-kbps data channels, resulting in slow frame rates (although image and audio quality remained high).

Both products use Intel's whiteboard and applicationsharing software. The whiteboard works like a digital scratch pad, allowing both parties to add images, edit text, and select from a palette of drawing tools to highlight, circle, and strike out anything on the board. Application sharing lets users collaborate on documents and files. While users at either end can edit documents, determining who has

control of the mouse and keyboard can become confusing.

When either the whiteboard or application sharing is launched, the video temporarily freezes. We noticed that graphics-intensive operations, such as scrolling or jumping to another page, caused prolonged interruption of video updates, though audio continued uninterrupted.

#### **AVOID THE PAIN**

CAN PC-BASED videoconferencing supplant face-to-face meetings? For conversations between two people, the answer is yes; with larger gatherings, it's difficult to get useful visual detail.

More important, can you avoid configuration hassles? You can if you purchase your videoconferencing system and ISDN line at the same time and tailor your ISDN order to the product. If you have an existing ISDN line, ask your telephone company about its configuration—or consider hiring a consultant. - Greg Smith and Michael Desmond

#### Elsa Elsa Vision

CON: Problems attaining optimal ISDN throughput; setup is a bear. VALUE: Good for cramped systems.

PRO: Comes on a single PCI card.

List price: \$1649 800/272-3572

http://www.elsa.com

READER SERVICE NO. 807

#### Intel ProShare Video System 200

PRO: Good video, synced audio.

CON: Video frame rate slows with

application sharing.

VALUE: Beats flying coach.

List price: \$1499 800/538-3373

http://www.intel.com

READER SERVICE NO. 808

#### How to Pick Up NetChicks, or Is Wired Tired?



#### BOOK REVIEW

PREOCCUPATION with things cyber is a mania ripe for satire. On the heels of Stale, the online send-up of Microsoft's webzine, Slate, comes re> Wired (Harper Collins, 1996, 800/ 742-7831, http://www.harper collins.com), a clever \$12.50 parody of Wired magazine.

The book is the work of Tom Connor and Jim Downey, who also wrote two "Martha Stuart" parody books. With articles like "Bill Gates' Guide to Picking Up NetChicks" and a piece on a hot IPO from the fledgling "Pubescape," re> Wired goes for the obvious jokes. But it's nailed Wired's unrelenting cyber-über-alles attitude cold.

Re>Wired is especially funny when mocking those apocalyptic proclamations that are a signature of Wired. In a roundtable discussion on twentyfirst century media, Newt Gingrich, Barry Diller, and John Barry Barleycorn (a play on John Perry Barlow, the Grateful Dead lyricist and cyberpioneer) debate the future of

the Internet: "Cyberspace transcends our very existence," says Barleycorn. "It can do whatever it pleases. It knows no laws. It's more important than anything ever."

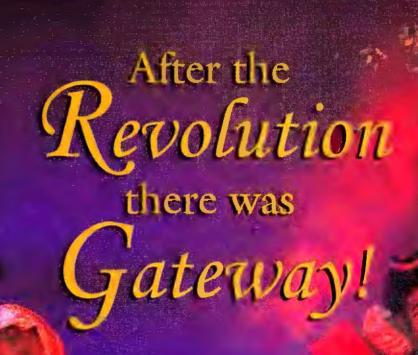
Another feature, "The Coolest Chat Rooms," details some of the hottest chat sites on the Internet, like #Meatweavers (for those who like to weave

processed meat into furniture) and the Zen Chat Garden ("...enjoy the silent flicker of the cursor on the pure whiteness of the screen").

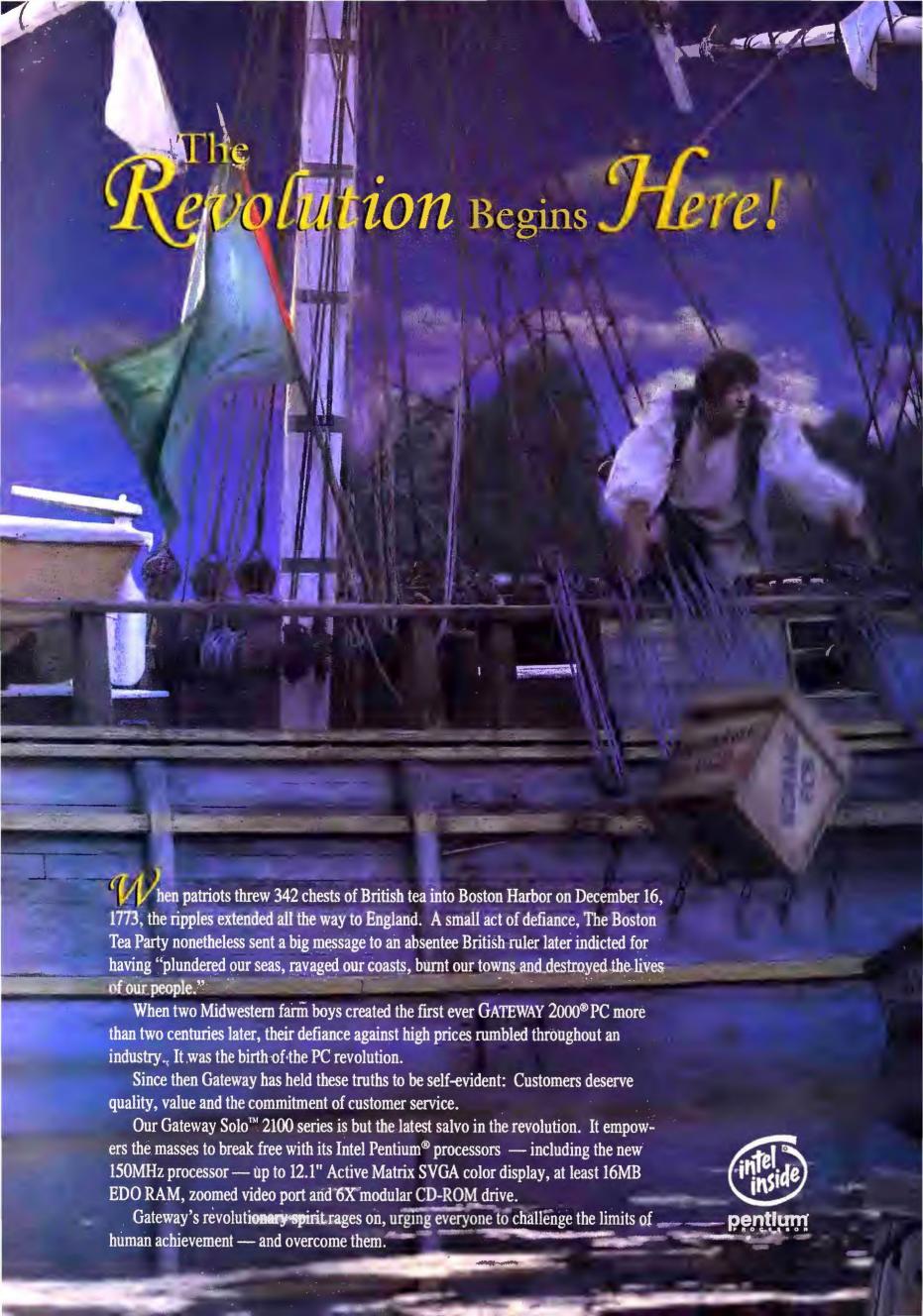
You'll also find a Jonathan Swift-like "modest proposal" to implant software into newborn infants, and a hilarious celebrity profile of a homicidal hacker. Re> Wired is the perfect remedy for anyone who's started taking technology too seriously. -Glenn McDonald

Quick: Which of the following quotes were published in Wired, and which come from the parody re>Wired?

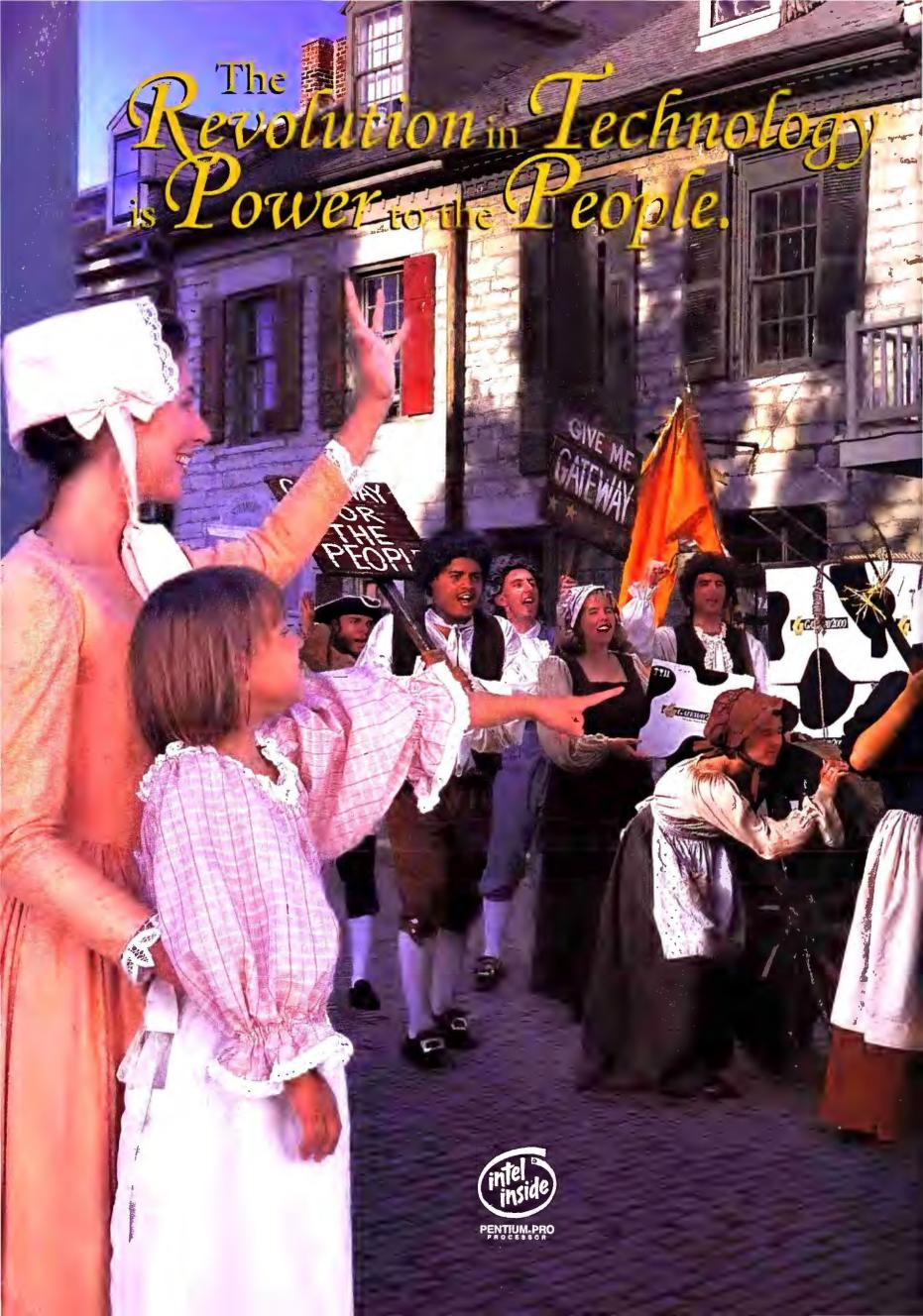
- A) The U.S. is no longer a democracy, but Government by Hallucinating Mob, driven mad by television.
- B) War is never anything less than accelerated technological change.
- C) Millions of online genetic algorithms are hacking the technomedium of the global cybertribe.
- D) The infrastructure of trend dissemination is owned in America. Answer: C) is from re>Wired; the rest are from Wired.









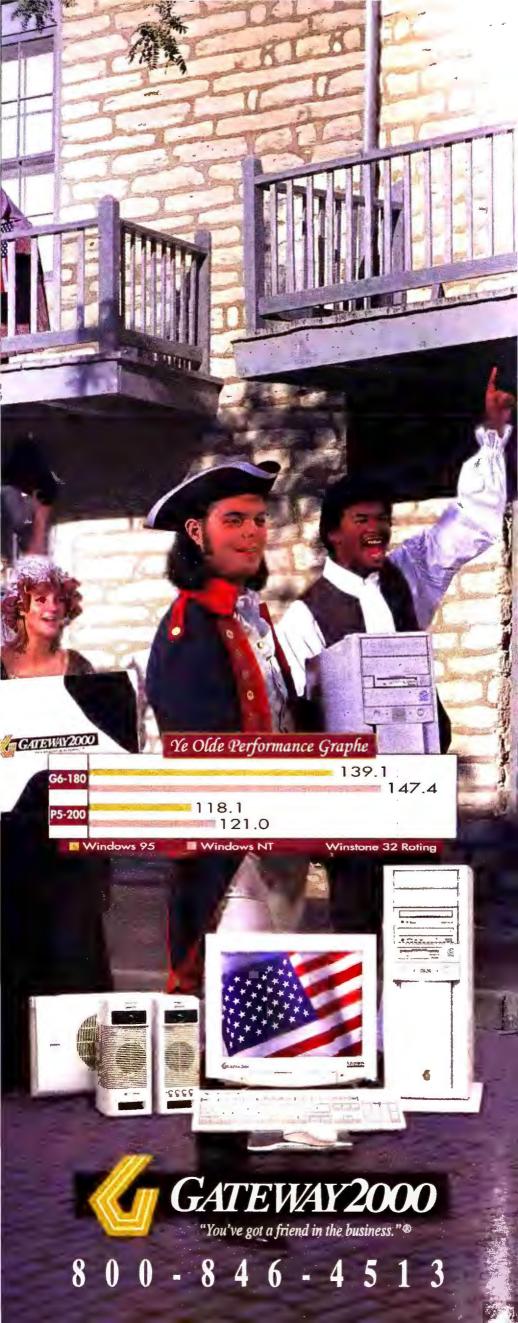




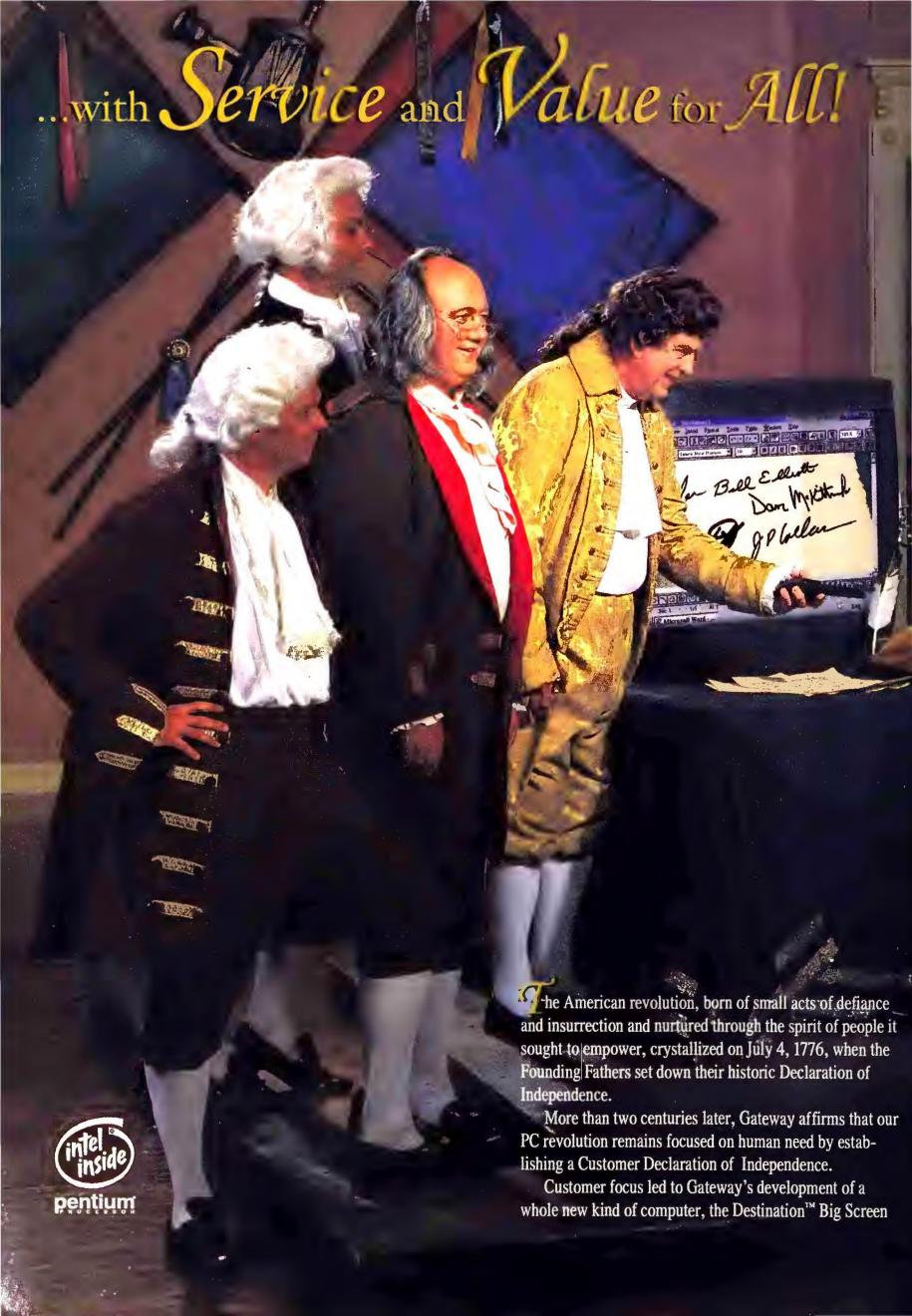
Our custom-configured G6 systems take advantage of the Pentium Pro processor's advanced design to squeeze every bit of breathtaking speed and performance out of the new generation of 32-bit software. The Pentium Pro also delivers high performance on today's 16-bit applications.

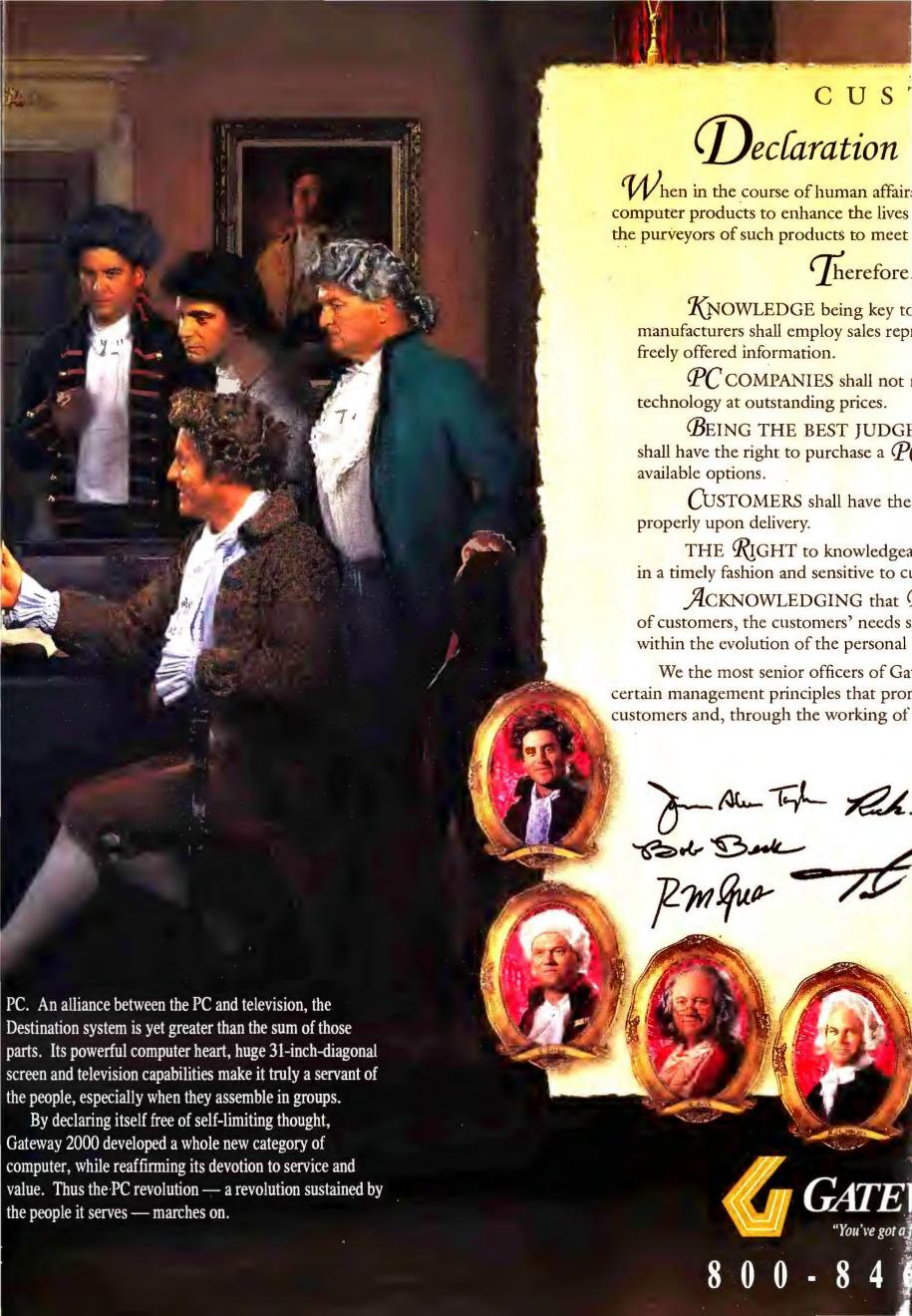
In fact, tests show the 180MHz Pentium Pro processor posts better overall benchmarks than a comparable 200MHz Pentium system for about the same price. \*\*Exercise your freedom to choose, call Gateway 2000 today.

Witness our desktop systems. Our sales professionals will help you custom configure your system from available options. You can also choose from many software and operating system options, and then have the system shipped right to your door, ready to use. Such customer-centered service has captured the hearts of the people. Soon they'll expect all PC companies to follow Gateway's example, thus transforming an industry.









## Destination™ Big Screen PC

- Intel® 133MHz Pentium® Processor
- 32MB Synchronous DRAM
- 256K Pipelined Burst Cache
- Destination 31" VGA Monitor
- STB® 2MB VRAM Graphics Accelerator w/ Cable-Ready TV Tuner
- 2GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 16-Bit Hi-Fi Wavetable Audio Card
- TelePath® 36.6 Data/14.4 Fax Modem
- 7-Bay Charcoal-Colored PC Case
- Wireless Keyboard w/ Integrated
- EZ Pad™ Pointing Device
- Wireless Field Mouse® Remote
- Four-Channel RF Receiver
- Microsoft® Windows® 95
- Destination Software Collection

\$2999

Business Lease<sup>†</sup> \$110/mo.

## D6-200

- Intel 200MHz Pentium Pro Processor
- 64MB EDO DRAM
- 256K Internal Cache
- Destination 31" VGA Monitor
- STB 2MB VRAM Graphics Accelerator w/ Cable-Ready TV Tuner
- 3GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 16-Bit Hi-Fi Wavetable Audio Card
- ▶ harman/kardon High-Fidelity Sound System
- TelePath 36.6 Data/14.4 Fax Modem ■ 7-Bay Charcoal-Colored PC Case
- Wireless Keyboard w/ Integrated **EZ Pad Pointing Device**
- Wireless Field Mouse Remote
- Four-Channel RF Receiver
- MS Windows 95
- Destination Software Collection
- Gateway Gold<sup>™</sup> Premium Service and Support\* for Big Screen PCs

\$4799

Business Lease<sup>†</sup> \$176/mo.

- Intel 180MHz Pentium Pro Processor
  - 32MB EDO DRAM
  - 256K Internal Cache
- Destination 31" VGA Monitor
- STB 2MB VRAM Graphics Accelerator w/ Cable-Ready TV Tuner
- 2GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 16-Bit Hi-Fi Wavetable Audio Card
- ▶ harman/kardon High-Fidelity Sound System
- TelePath 36.6 Data/14.4 Fax Modem
- 7-Bay Charcoal-Colored PC Case
- Wireless Keyboard w/ Integrated EZ Pad Pointing Device
- Wireless Field Mouse Remote
- Four-Channel RF Receiver
- MS Windows 95
- Destination Software Collection

\$3999

Business Lease<sup>†</sup> \$147/mo.



## ▶ harman/kardon **High-Fidelity** Sound System

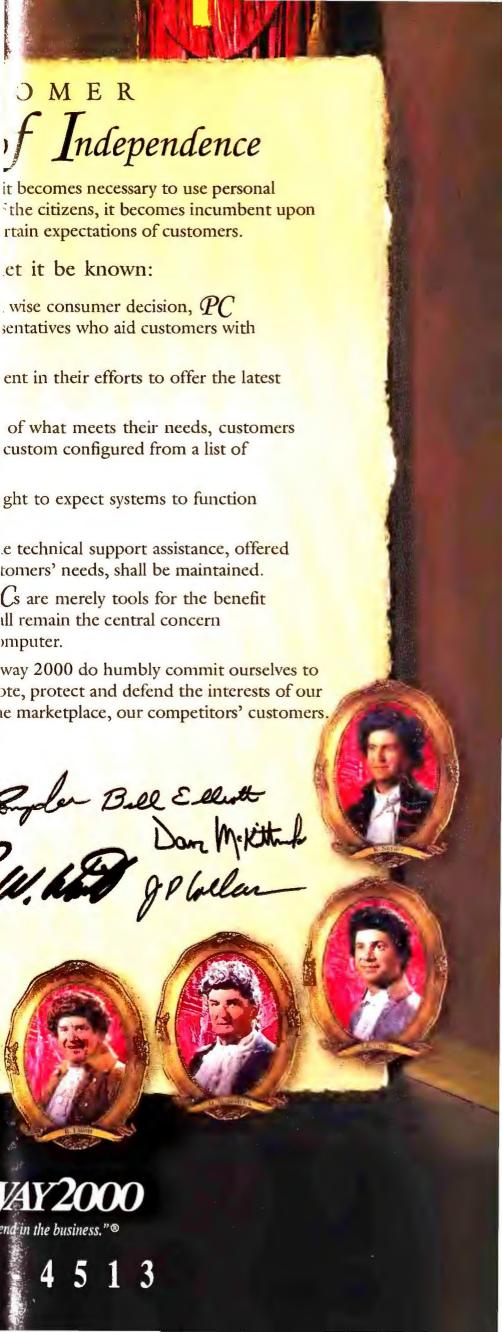
Seven-piece Dolby® Pro Logic® Surround Sound speaker system including AVR-10 audio/video receiver with remote, subwoofer, center channel, and four satellites for the ultimate multimedia audio experience.

\$699

\*The Destination 31" monitor is covered by a one-year limited warranty.



8 4 6 -



## P5-133 FAMILY PC

- Intel® 133MHz Pentium® Processor
- 16MB Synchronous DRAM
- CrystalScan®15 .28dp Monitor (13.9" viewable)
- 2MB DRAM, 64-Bit PCI Graphics
- 1GB 10ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 16-Bit GATEWAY<sup>TM</sup> Sound
- Altec<sup>™</sup> Lansing ACS-40 Speakers
- TelePath® 33.6 Data/14.4 Fax Modem for Windows with Speakerphone
- 7-Bay Mini Tower Case
- 104<sup>+</sup> Keyboard & MS Mouse 2.0
- Microsoft® Windows® 95
- ■ Generations II Software Collection

\$1699

## P5-166 FAMILY PC

- Intel 166MHz Pentium Processor
- 16MB Synchronous DRAM
- 256K Pipelined Burst Cache
- CrystalScan17 .28dp Monitor (15.9" viewable)
- 2MB DRAM, 64-Bit PCI Graphics
- 2GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 16-Bit Gateway Sound
- Altec Lansing ACS-40 Speakers
- TelePath 33.6 Data/14.4 Fax Modem for Windows with Speakerphone
- 7-Bay Mini Tower Case
- 104<sup>+</sup> Keyboard & MS Mouse 2.0
- MS Windows 95
- Generations II Software Collection

\$2199

## G6-180 FAMILY PC

- Intel 180MHz Pentium Pro Processor
- 32MB EDO DRAM
- 256K Internal Cache
- Vivitron17<sup>™</sup> .26dp Monitor (15.9" viewable)
- 2MB DRAM, 64-Bit PCI Graphics
- 2GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 16-Bit Ensoniq® Wavetable Sound Card
- Altec Lansing ACS-40 Speakers
- TelePath 33.6 Data/14.4 Fax Modem for Windows with Speakerphone
- 7-Bay Mini Tower Case
- 104+ Keyboard & MS Mouse 2.0
- MS Windows 95
- Generations II Software Collection

\$2649

## G6-200XL

- Intel 200MHz Pentium Pro Process
- 32MB EDO DRAM
- 256K Internal Cache
- Vivitron17.26dp Monitor (15.9" viewable)
- Matrox® 2MB WRAM PCI Graphic
- 3GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- CD-Recordable w/ SCSI Controller
- 16-Bit Ensoniq Wavetable Sound C
- Altec ACS-400 & ACS-250 Speake
- TelePath 33.6 Data/14.4 Fax Mod with Speakerphone
- 12-Bay Tower Case
- 104+ Keyboard & MS Mouse 2.0
- MS Windows 95
- MS Office 95, Professional Edition
- Generations II Software Collec

\$3699 Business Lease \$13

Professional Systems\_

## P5-133

- Intel 133MHz Pentium Processor
- 16MB Synchronous DRAM
- CrystalScan15 .28dp Monitor (13.9" viewable)
- 2MB DRAM, 64-Bit PCI Graphics
- 1GB 10ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 7-Bay Mini Tower Case
- 104<sup>+</sup> Keyboard & MS Mouse 2.0
- MS Windows 95
- MS Office 95, Professional Edition

 $\$1599 \; \text{Business Lease}^{\scriptscriptstyle +} \$59/\text{mo}.$ 

## P5-166

- Intel 166MHz Pentium Processor
- 16MB Synchronous DRAM
- 256K Pipelined Burst Cache
- Vivitron17 .26dp Monitor (15.9" viewable)
- 2MB DRAM, 64-Bit PCI Graphics
- 2GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 7-Bay Mini Tower Case
- 104+ Keyboard & MS Mouse 2.0
- MS Windows 95
- MS Office 95, Professional Edition

\$2199 Business Lease \$81/mo.

## P5-200

- Intel 200MHz Pentium Processor
- 32MB Synchronous DRAM
- 256K Pipelined Burst Cache
- Vivitron17 .26dp Monitor (15.9" viewable)
- 2MB DRAM, 64-Bit PCI Graphics
- 3GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 7-Bay Mini Tower Case
- 104+ Keyboard & MS Mouse 2.0
- MS Windows 95
- MS Office 95, Professional Edition

\$2549 Business Lease<sup>†</sup> \$94/mo.

## G6-180

- Intel 180MHz Pentium Pro Process
- 32MB EDO DRAM
- Vivitron17 .26dp Monitor (15.9" viewable)
- 3GB 11ms EIDE Hard Drive
- 7-Bay Mini Tower Case
- 104+ Keyboard & MS Mouse 2.0
- MS Windows 95
- MS Office 95, Professional Edition

\$2549 Business Lease \$94/

Gateway Solo™ 2100 Portable PCs\_

## S5-120

- 11.3" DSTN SVGA Color Display
- Intel 120MHz Pentium Processor
- 16MB EDO DRAM expandable to 40MB ■
- 256K Pipelined Burst Cache
- 1MB EDO Video RAM
- Zoomed Video Port
- 810MB Hard Drive Modular 6X CD-ROM Drive
- Modular 3.5" Diskette Drive
- 16-Bit Sound & Stereo Speakers
- Lithium Ion Battery & AC Pack 85-Key MS Windows 95 Keyboard
- Carrying Case
- MS Windows 95
- MS Works 95

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

## S5-133

- 12.1" Active Matrix SVGA Color Display
- Intel 133MHz Pentium Processor
- 24MB EDO DRAM expandable to 40MB
- 256K Pipelined Burst Cache
- 1MB EDO Video RAM
- Zoomed Video Port
- 1.3GB Hard Drive Modular 6X CD-ROM Drive
- Modular 3.5" Diskette Drive
- 16-Bit Sound & Stereo Speakers
- Lithium Ion Battery & AC Pack
- 85-Key MS Windows 95 Keyboard Carrying Case
- MS Windows 95
- MS Office 95, Professional Edition

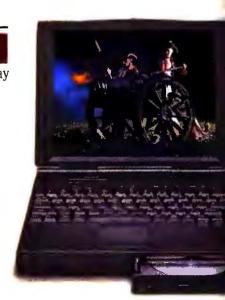
\$3899 Business Lease<sup>†</sup> \$143/mo.

## S5-133 Best Buy

- 12.1" Active Matrix SVGA Color Display
- Intel 133MHz Pentium Processor
- **40MB EDO DRAM**
- 256K Pipelined Burst Cache
- 1MB EDO Video RAM
- Zoomed Video Port
- 1.3GB Hard Drive
- Modular 6X CD-ROM Drive
- Modular 3.5" Diskette Drive 16-Bit Sound & Stereo Speakers
- 28.8 PCMCIA Fax/Modem Lithium Ion Battery & AC Pack
- 85-Key MS Windows 95 Keyboard
- Carrying Case
- MS Windows 95
- MS Office 95, Professional Edition

\$4499 Business Lease<sup>†</sup> \$165/mo. and communications protocols.

- 256K Internal Cache
- 2MB DRAM, 64-Bit Graphics
- 8X CD-ROM/3.5" Diskette Drives



\*Maximum data transfer rate dependent certain variables including particular modems with which you are communical telephone lines, communications softwar





4 6 - 4 5 http://www.gw2k.com

800-846-3609 Toll free from Puerto Rico

Toll free from Canada

800-846-3613

## Revolutionary ExTraS!



- Microsoft® Encarta® 96 MS Cinemania® '96 MS Julia
   Child: Home Cooking with Master Chefs MS Bob™, for Gateway
   2000 MS Works 95 MS Publisher 95 MS Money 4.0
- MS Golf 2.0 MS Music Central<sup>™</sup> 96 MS CD Sampler
- MS Entertainment Packs 1-4 (31 fun games!) Ca\$h Graf Home Office Plus<sup>™</sup> Mayo Clinic<sup>®</sup> Family Health Book Mediamatics Arcade<sup>™</sup> MPEG Player The Masters<sup>®</sup>: Interactive Journey Through Its 60-Year History, for MPEG

## Powerful Upgrades

■ CD-Recordable \$599

4X read/2X write recordable CD drive with SCSI controller, CD Creator 2 for MS Windows® and three media disks.

- Altec<sup>™</sup> Lansing ACS-250 Subwoofer \$75 (upgrade from PCs that include Altec ACS-40 speakers)
- Altec ACS-400 Speaker System w/ ACS-250 Subwoofer \$120

(upgrade from PCs that include Altec ACS-40 speakers)

- Iomega® Ditto™ 3200 Internal Tape Backup Unit \$199 3200MB with compression, nominal 1600MB
- 3Com® 16-Bit Triple Media Card \$99
- SMC® PCI 10/100 Twisted Pair Card \$129
  - MS Windows NT® 4.0 Upgrade \$99

(upgrade from PCs that include MS Windows 95)

- Big Screen 31" VGA Monitor \$1699\*\*
- Big Screen Presentation Package \$1899\*\* (includes Big Screen 31" VGA monitor, wireless keyboard, Field Mouse® remote and RF receiver)

\*\*Call for monitor specifications and for desktop and portable PC configuration options.

## Portable PC Options

- 28.8 PCMCIA Fax/Modem **\$200**
- 14.4 PCMCIA XJACK® Fax/Modem \$119
- 3Com 10BASE-T Ethernet Adapter \$129
- 3Com Coaxial Ethernet Adapter \$159
- IBM® Token Ring Adapter \$399
- Upgrade 120MHz to 133MHz Intel® Pentium® Processor \$150
- Upgrade 133MHz to 150MHz Intel Pentium Processor \$150

## Software

## ■ Games & Entertainment Pack

Su-27 FLANKER<sup>™</sup>; Al Unser Jr. Arcade Racing<sup>™</sup>; 3-D Ultra Pinball<sup>™</sup>; The Journeyman Project 2<sup>®</sup>: Buried in Time<sup>™</sup>; Greg Norman Ultimate Challenge<sup>®</sup> Golf; and Windows 95<sup>®</sup> Game Sampler and game pad. \$99

■ Kid's BackPack<sup>™</sup> III

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

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

## Printers, Scanners & Digital Cameras

- Epson® Stylus<sup>™</sup> Color 200 Ink Jet Printer \$179
- Epson Stylus Color 500 Ink Jet Printer \$279
- Epson Stylus Pro Printer \$379
- Hewlett®-Packard LaserJet 5L Xtra Printer \$479
- Hewlett-Packard LaserJet 5P Printer \$799
- Epson Action Scanning<sup>™</sup> System II \$399
- Epson Photo PC \$499

## Service & Support

## Gateway Gold™ Premium for Desktop Systems

- Extended Three-Year On-Site Agreement\*
- Priority 800 Number For Access to Technical Experts
  With system purchase \$99

Within current on-site service agreement \$129

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

Gateway accepts most major credit cards and C.O.D. terms, with net 30-day terms and leasing options available to qualified commercial customers. Ask a sales representative today about finance options.

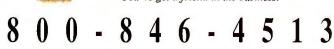
Call the GATEWAY<sup>TM</sup> component add-ons division at 800-846-2080 for our complete line of extras for Gateway customers. Sales Hours: 7am-10pm Weekdays (CT).

GSA Schedule # GS-35F-3349D



Gateway 2000 Manufacturing, North Sioux City, South Dakota, is ISO 9002 certified.





http://www.gw2k.com



© 1996 Gateway 2000, Inc. GATEWAY 2000, CrystalScan, black-and-white spot design, Field Mouse, "G" logo, TelePath and "You've got a friend in the business" slogan are registered trademarks, and Destination, EZ Pad, Family PC, GATEWAY, Gateway Gold, Gateway Solo and Vivitron are trademarks of Gateway 2000, Inc. The Intel Inside Logo, Intel and Pentium are registered trademarks of Intel Corporation. All other brands and product names are 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. Many Gateway 2000 products are custom engineered to Gateway 2000 specifications, which may vary from the retail versions of the software and/or hardware in functionality, performance or compatibility. 'Leasing arranged by independent leasing companies to qualified commercial customers. Lease payments based on 36-month term. Lease terms subject to change without notice or obligation. 'Each tested system included an Intel Pentium processor. The G6-180 uses an Intel 180MHz Pentium Pro processor and the P5-200 uses an Intel 200MHz processor. Ziff-Davis' Winstone 32 version 1.0 overall score was achieved on the G6-180 and P5-200 using 32MB DRAM, 3GB bard drive, and STB Tseng ET 6000 video adapter 2MB MDRAM with 1.22M driver refresh rate of 75Mz, Toshiba 8X IDE controller with no controller RAM cache and no CD-ROM specific software cache, vcache, and 640x480 pixels, 256 colors. Both systems were tested using MS Windows 95 Enhanced Mode with Paging, and MS Windows NT 3.51. All products used in these tests can be shipped to the consumer as a custom configuration. The Winstone 32 test was performed without independent verification by Ziff-Davis. Winstone is a registered trademark of Ziff-Davis Publishing Company, L.P.

## New Vision: AST's Home PC With TV, Videoconferencing



**AST'S NEWEST HOME** PCs offer videoconferencing capabilities, but setup is tricky.

DESKTOP

INTEL HAS A VISION for the home computer: The company is hoping to transform it into a multimedia communications center. For months, the chip giant has pushed key technologies to enable ubiquitous PC-based video conferencing and to promote a convergence of the PC and TV. At last those efforts have borne fruit, with this fall's release of consumer-oriented PCs (from AST, Compaq, and other vendors) that incorporate these

technologies. Unfortunately, while the technologies themselves are intriguing, experts say that the future they promise is not as close at hand as Intel makes it out to be.

One of the first such systems, AST's Advantage 9312 Communicator PC, is a Pentium-166 minitower packed with Intel's Video Phone and Intercast technologies. The system boasts a configuration comparable to those of top-ranked PCs tested in PC World's Top 20 reviews, with a 256K secondary cache, 24MB of RAM, and a 2.5GB hard drive. It also sports an 8X IDE CD-ROM

drive, an integrated ATI CT Mach 64 graphics accelerator with 2MB of DRAM, and a 16-bit sound card including wavetable MIDI hardware. The 9312 had average performance for a P-166 in the PC WorldBench test suite, garnering a creditable score of 197. The name of

this new model—the Advantage 9312 Communicator PC-says it all. Inside the chassis is a combination video capture and TV tuner card that allows the unit to process signals from the bundled analog video-conferencing camera as well as from cable and broadcast television channels. An internal 28.8-kbps DSVD modem provides quick Web browsing and has features for handling real-time video.

## IS ANYBODY HOME?

VIDEO CONFERENCING is at the heart of the Communicator PC. Unlike earlier video conferencing systems, which

worked only with expensive digital ISDN phone lines, AST's Video Phone uses existing analog lines. More important, the Video Phone employs an industry-standard video conferencing schemeknown as H.324—that should allow all H.324-compliant PCs to talk to each other.

We tried out a prerelease version of the Communicator PC's Video Phone capability, with mixed results. We were unable to make a video connection from my office because multiplexed phone lines prevented data synching-a growing problem as more homes add second and third phone lines. After moving to a new site, we found that the video quality was superior to that of earlier analog video conferencing products, but the frame rates and image quality did not compare well with those of higher-bandwidth ISDNbased products such as Intel's ProShare. We also encountered the dirty little secret of PC-based multimedia: a wild tangle of cables, wires, and

## **AST Advantage 9312** Communicator PC

PRO: Intercast technology for TV combined with Web data.

CON: Costly, tricky setup, and some hitches to videoconferencing.

VALUE: Not quite ready for prime time.

800/876-4278 Street price: \$2599

jacks that will overwhelm all but the hardiest users.

Intel and its customers are targeting a broad consumer market, including emptynesters with grandchildren; analysts say that such a choice of markets may create problems. "I think ease of use is going to be an issue. Video conferencing takes some setup to do, and it's not going to be as easy as a traditional phone call," says Bruce Ryon, director of multimedia research at Dataquest. The system would also be costly for many grandparents.

Still, since the H.324 standard has garnered wide market support—both Intel and Microsoft are rolling out products using the scheme— Ryon expects that within five years, this type of video conferencing could be common.

## TV'S NEXT BIG THING

ALSO SHOWCASED in the Advantage 9312 Communicator—and more promising—is Intel's Intercast technology, a new scheme that combines broadcast TV, real-time data downloads, and Web browsing into a single experience. Intercast delivers data to the PC by using the video blanking interval in a broadcast or cable TV signal. The signal is then received by a preinstalled TV tuner card, and the incoming video is displayed in a full or one-quarter screen. Simple screen controls allow you to switch channels, adjust settings, and capture still or moving images to disk.

With Intercast, broadcasters can transmit data so as to add digital content to their pro-

Laurianne McLaughlin and Gabrielle Mitchell

gramming. During the Atlanta Olympics, for example, NBC provided scores, stats, and background information for Intercast testers. However, the service may be better suited to professionals who need to track stock markets while monitoring CNBC or other news channels at the office.

Intercast's interface includes an integrated Web browser window. When CNN airs a story, you may be invited to click on related links, listed in the separate window. At press time, NBC, CNN, and MTV's M2 channel were broadcasting using Intercast, Intel said.

—Michael Desmond

## Low-Cost Camera Brings Videoconferencing Home

cable that attaches to a parallel port. YOU'RE ON COMPRO audio **CAMERA: This** product makes Net conferencing affordable. Included D-Viewer software controls camera settings.

CAMER THANKS TO THE rise of affordable video communications tools such as Connectix's \$299 Color QuickCam digital camera and White Pine Software's Enhanced CU-SeeMe software, videoconferencing is now readily available to ordinary computer users via the Internet. The latest product to boost the videoconferencing trend is ACS Innovations' Compro Digital Color Internet Camera, priced at only \$245. Like the QuickCam, the Compro is a small, 24-bit digital camera capable of capturing video movies and still images at various frame rates and

Instead of using internal memory or a video capture card, the Compro camera transfers images directly to

resolutions.

Since the camera doesn't have capability, you'll have to provide your own microphone to capture sounds. I tested a preproduction version.

your PC via a

The Compro, which is compact enough to place atop a monitor, is easy to set up and use—but it will take you some time to adjust the manual focus and tweak the software controls to obtain the best possible image, especially in low-light conditions. The quarter-screen video setting (160 by 120 pixels) provides the fastest frame rate and least amount of jerkiness for transmitting live digital video on the Internet, but the color quality suffers as a result. Nevertheless, this setting is more than adequate for basic videoconferencing.

You can use the Compro to capture still images at higherquality resolutions of up to 640 by 480 pixels—though this is not as convenient as using a standard digital still camera because the Compro

## CONTENTS

- 78 AST Advantage 9312 Communicator PC
- Compro Digital Color Internet
- Lotus cc:Mail Release 7.0
- Microsoft Outlook 97
- Exabyte Eagle Nest TR-3, Iomega Ditto 2GB tape drives
- HP OmniBook 800
- Olympus SYS.230 storage drive
- 88 Ecco Pro 4.0, Janna Contact Personal PIMs
- 90 HP DeskJet 400 printer
- LaserJet 5L Xtra printer
- Fractal Design's Expression
- 96 TuneUp.com online antivirus service
- **NeTpower workstations**
- Web Buddy, Internet Utilities
- More Like This, EchoSearch search engines
- 100 IBM AntiVirus 2.5
- 104 United Connection, Personal AAccess online reservations
- 104 Streetfinder 1997 Edition

I N E R & N E T



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

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

must remain tethered to your PC. It comes bundled with image viewing and videoconferencing software, as well as with AVI and TWAIN drivers for other applications.

-Richard Jantz

## Compro Digital Color **Internet Camera**

PRO: Inexpensive; captures digital movies and still images.

CON: No microphone or viewfinder; mediocre color quality.

VALUE: Affordable Web videoconferencing.

ACS Innovations, Inc.

888/226-6776

http://www.acscompro.com

List price: \$245

## Lotus cc:Mail Release 7.0 Helps Manage E-Mail

LOTUS'S LATEST version of cc:Mail alleviates one of today's biggest headaches-e-mail overload. My review of a beta copy revealed an impressive assortment of new tools for skimming, sorting, and delegating your way to an empty in-box. Perhaps the best (but not unique) new feature in release 7.0 is Preview Pane, which displays the first para-

## cc:Mail Release 7.0

PRO: Slick tools for managing e-mail overload.

CON: Requires lots of disk space.

VALUE: Could save cc:Mail users lots of time.

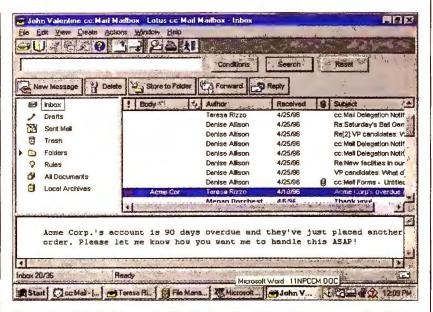
Lotus Development Corp.

800/343-5414

http://www.lotus.com

Street price: \$55 per user (for 50user pack)

READER SERVICE NO. 750



SKIM YOUR E-MAIL: cc:Mail 7.0's Preview Pane lets you see the first paragraph of a message without opening it.

graph of each message when you click on it. This saves time by letting you see the gist of a message without having to open it. Similar previewing features are also available in Microsoft Outlook 97 (reviewed below) and in Qualcomm's Eudora 3.0. Release 7.0's new sorting options let you organize messages according to subject, author, or other criteria.

If you're going away for a few days and don't want to return to a deluge of e-mail, you can now delegate your mailbox to a coworker who

will read and respond to messages. Currently, cc:Mail release 6.0 lets users view only one inbox at a time: To check your inbox, a coworker must log off cc:Mail and log on again with your password.

With the current version of cc:Mail, intense online discussions quickly turn your inbox into a tangle of messages. Companies that often engage in robust e-mail discussions will appreciate the new feature that groups messages with related responses, as in online threads, so that you can easily follow a discussion. This feature was not fully functional in the beta version I saw.

Release 7.0 also sports an improved interface with context-sensitive menus that display different tools, according to the tasks you want to perform. One drawback: The full installation requires a porcine 40MB of disk space.

-Randy Ross

## The Future Is Bright for Microsoft Outlook 97

MOST OF THE things that Microsoft got wrong with Schedule Plus 7.0 and Microsoft Exchange weren't as terrible as they were annoying. Microsoft Outlook 97, the Office 97 replacement for Schedule Plus, remedies some of the more vexing oversights, including merging Exchange (the mailbox) with the scheduler. I saw a beta version.

SCHEDULER

We found Outlook 97 to be a welcome substitute for the awkward Exchange/Schedule Plus partnership. Outlook improves upon several applets that were in Schedule Plus, and it also provides a few new components.

The well-received Schedule Plus interface remains largely intact. But with the addition of Exchange, scheduling is easier: When meeting invitations are dropped onto your calendar, you can use Exchange to accept or reject them, without needing to toggle between the mail and calendar windows. Microsoft has also improved the Schedule Plus address book by adding the Contacts applet. In addition to dragand-drop support, Contacts finally gets fields for Internet and Web addresses and other

useful information lacking in Schedule Plus.

Outlook 97 also includes Notes—electronic "sticky" memos-and the Journal, which helps you track contacts and projects. Unfortunately, Outlook lacks an integrated text editor-a feature that other personal information managers such as Starfish Software's Sidekick provide.

Outlook's tidy interface includes an oversize icon bar and flexible toolbar options. However, the "today" icon in the calendar was hard to spot, and I've yet to discover how to view other user schedules,

which was easy to do in Schedule Plus. All in all, though, Outlook is a good alternative for users who need a simple solution for group scheduling that's integrated with a useful PIM. As well as being part of the Office 97 suite, Outlook will sell as a stand-alone upgrade for Schedule Plus.

—Gabrielle Mitchell ▶

## Microsoft Outlook 97

PRO: Well-integrated applets. CON: Could use a text editor.

VALUE: Manageable groupware solution.

Microsoft Corp.

800/426-9400 http://www.microsoft.com

Price: Not set at press time

# AT ITS PRICE FOR A 100MHZ PENTIUM PROCESSOR AND HIGH SPEED CD-ROM, THIS BABY IS MOVING FAST.



## EXTENSA 570CDT

- Integrated high speed CD-ROM
- 100MHz Pentium® processor with PCI bus & 256KB L2 cache
- Two Type II or one Type III PC Card slot(s)
- 10.4" SVGA TFT with
   1.2GB HDD (570CDT) or
   11.3" SVGA DSTN with
   810MB HDD (570CD)
- 16-bit stereo sound card, microphone and speakers
- Pre-installed choice of Windows<sup>®</sup> 95 or Windows for Workgroups<sup>®</sup>







Introducing the new TI Extensa™ 570CDT. A multimedia powerhouse that won't send you to the poorhouse. Packed into this productivity machine

is the latest technology: integrated high speed CD-ROM, powerful 100MHz Pentium processor with full PCI bus architecture for maximized performance, versatile PC Card slots, serial infrared port, 16-bit stereo sound, high resolution SVGA screen, pre-installed Internet browser and much, much more. Catch it while you can

by calling 1-800-TI-TEXAS. And start doing extraordinary things. Internet: http://www.ti.com E-mail: 2ti@msg.ti.com



## Eagle Nest Delivers Low-Cost Backup

IF YOU HAVE more than one PC, backup isn't easy: You must either lay out the bucks for multiple tape drives or deal with hooking and unhooking a parallel port tape drive. (And many parallel-port drives can be slow, although Iomega's Ditto drive, reviewed below,

Exabyte's Eagle Nest TR-3 tape drive is a clever solution to the problem. "Nest" neatly describes the device, a frame with electrical connections that you install in a free 5.25-

performs admirably.)

Exabyte Eagle Nest TR

PRO: No-hassle backup for multiple computers.

CON: No tapes come with unit.

VALUE: The more PCs you have,

the better the value.

Exabyte Corp.

800/392-2983

http://www.exabyte.com

Street price: \$199; extra Nests, \$49;

accelerator card, \$45

READER SERVICE NO. 752



NESTING INSTINCT: With a Nest installed in every PC, the Exabyte TR-3 tape drive travels effortlessly from system to system.

inch drive bay in each PC. You carry the core TR-3 tape drive from PC to PC, slide it into the Nest, and do your backup. I looked at a shipping version.

The TR-3 drive comes with one Nest, a floppy interface cable, and backup software on CD-ROM for Windows 95, Windows 3.1, and DOS. Extra Nests are \$49, and an optional \$45 accelerator card boosts the data transfer speed to about 20MB per minute. You'll probably want the card, which will let you back up a 1GB drive in about an hour. Without the card, the same process takes closer to four hours.

The Eagle Nest TR-3 works with a wide range of tapes but doesn't include one. If you use the optional data compression, you can cram up to 4.4GB of data onto a TR-3 Travan Extra tape. If your storage needs are more modest, you can use lower-capacity, lower-cost QIC tapes, which hold up to 1.7GB.

The Nests have several pluses. They're easy to install and are engineered well. You won't need to power down your PC, since the tape drive, which

## QUICK TAKES

Off-site storage is coming to home offices and small businesses. SafetyPosit gives Internet service providers tools that allow backup, encryption, and storage of critical files via the Internet. ISPs set the price and pay a 10 percent royalty to Software Partners, Suggested end-user pricing ranges from \$9.95 per month for a 10MB vault to \$395 per month for a 1GB vault. Software Partners, 800/828-5830; http://www .softwarepartners.com.

READER SERVICE NO. 754

weighs about 2 pounds, is hotswappable. And the fullfeatured software lets you schedule automatic unattended backups.

Although low-cost devices such as Zip drives are worth considering, if you have more than one PC the Eagle Nest TR-3 might be a better choice. For a small investment, you get a portable backup drive that uses media compatible with other backup systems.

-Stan Miastkowski

## **Iomega Creates Ditto Drive for Dummies**

TORAGE AN OLD COMPUTER geek adage says that "It's not a question of whether your hard drive will crash, it's a question of when." After spending a week with a shipping version of Iomega's Ditto 2GB tape drive, I found it to be an excellent insurance package. This easy-to-use device makes backing up a hard drive painless even for PC novices.

Setting up this external unit was almost as simple as plugging it into my printer parallel port. My Windows 95 PC detected the drive and prompted me for the supplied drivers. As for my printer, I just plugged it into a parallel port on the Ditto drive. It took some fidgeting at first to get the power and printer cords to stay in, but now I can back up or print without any fuss.

When I booted up the PC after installing the drive, it prompted me for a backup of my entire 1.2GB hard drive.

The Ditto can hold as much as 2GB of compressed data (1GB uncompressed) with Iomega's proprietary tapes. (It has readonly capability with the other popular formats such as Travan TR1, TR2, TR3; QIC 80, QIC 3010 and QIC 3020.) It took 1.5 hours to back up about 700MB of files and 1.5 hours to have Ditto doublecheck them, transferring the data at about 5MB to 6MB per minute, with a compression ratio of 1.2 to 1.

Considering its low price and ease of use, you shouldn't have to decide whether to buy this Ditto drive, just when.

—Shane Mooney 🕨

## Ditto 2GB

PRO: Easy to set up; easier to use. CON: Must use proprietary tapes to get the most out of it.

VALUE: Wonderful backup product for the technically challenged.

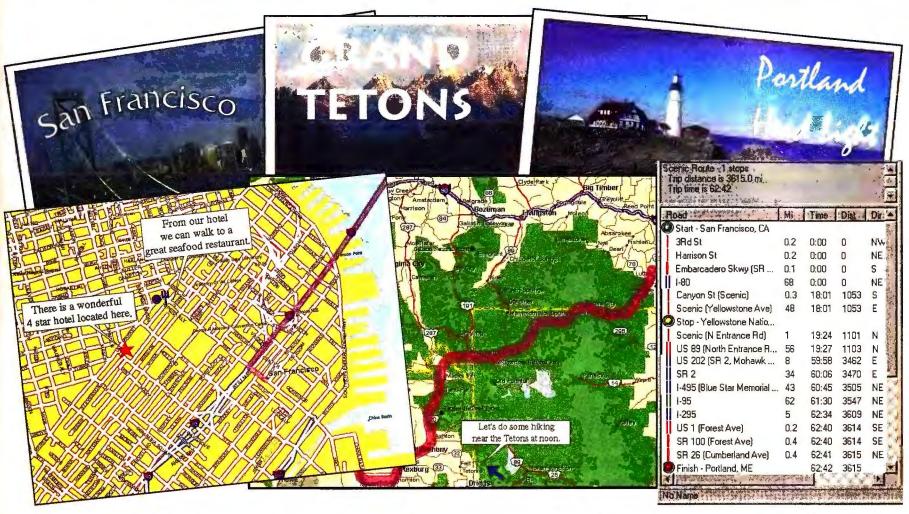
lomega

800/697-8833

http://www.iomega.com Street price: \$199 external, \$149.95

internal, \$19.95 for tape

## Make the Perfect Getaway!



"The new AAA Map'n'Go is by far the most complete travel planning program available. It is unbelievable how many features are packed into one CD, and yet it is fun and easy to run." W. Bowers, Chandler, OK.

## The Route For You

- Find the fastest, shortest, or scenic route to the destinations you select.
- Route around toll roads or busy urban areas.

## **Your Own Travel Agent**

- Get complete AAA TourBook® information on rates, amenities and atmosphere for over 43,000 lodgings, campgrounds and restaurants.
- Choose by price, type or AAA rating to suit your budget and style.
- Over 22,000 attractions and events, too.

## The Best Travel Planner, Ever!

- Search detailed street maps of 241 cities locate individual street addresses!
- Print directions or detailed strip maps including numbered highway exits!
- Find up-to-date travel information with the **FREE** Internet link to highway construction; fairs, festivals and other events; and weather.
- Never get lost again with the unique link to the Global Positioning System.\*



Available from your local software store or software catalogs. Or order direct from DeLorme at 1-800-452-5931, ext. 016 or preview at www.mapngo.com.

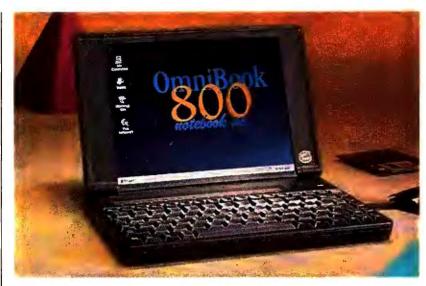




## HP OmniBook 800: Light, but Not Perfect

## NOTEBOOK

OmniBook 800 is the latest portable PC to straddle the fence between notebook and subnotebook. Like a subnote—known for diminutive dimensions and poor ergonomics—the OmniBook weighs a mere 3.75 pounds. But like a full-size note, the OmniBook features a comfortable keyboard and larger screen. It's far from perfect, but this HP portable does pack enough power to meet



COMPACT, POWERFUL PORTABLE: HP's new OmniBook 800 boasts a spacious keyboard and a large 10.4-inch screen.

OmniBook 800

PRO: Great keyboard and screen.

CON: Awkward pop-out mouse; lacks modem.

VALUE: You have to make too many concessions for size.

Hewlett-Packard

800/443-1254

http://www.hp.com/go/omnibook

Street price: \$4850

READER SERVICE NO. 755

today's demanding multimedia applications.

On the plus side, the Omni-Book's keyboard is spacious, and the notebook's impressive 10.4-inch active-matrix color screen presents a crisp, clear image at resolutions of up to 800 by 600. The machine has an IrDA infrared port and is compact enough to fit on an airline meal tray.

Alas, the OmniBook has its shortcomings. For starters, its pop-out mouse, which connects via a plastic tether, is awkward. The notebook has no internal modem (it accepts two Type II PC Cards). People who travel with the external floppy and optional (\$420) CD-ROM drives will have to stuff their bags with a motley mix of peripherals and cables.

## QUICK TAKES

## **Keep It Quiet**

If you work in a noisy office, the omnidirectional pickup pattern of most sound card microphones often results in recordings that are an incomprehensible jumble of sounds, MIDI Land's Free-D2 microphone solves this problem by using a sensitive high-quality directional condenser element to deliver a high signal-to-noise ratio and great sound. The Free-D2 also includes a flexible 18-inch tube with a stick-on bracket that gives you an unusually high degree of control over microphone placement. List price is \$29.95. MIDI Land, 909/592-1168.

READER SERVICE NO. 757

Street-priced at \$4850, the OmniBook 800 has a Pentium-133 processor, 16MB of RAM, a 1.44GB hard disk, and 16-bit audio. Corporate users will appreciate the optional (\$420) docking station. If you need a lightweight yet powerful portable, check it out.

—Jeff Bertolucci

## Olympus Ups the Ante on Removable Storage

WHEN YOU THINK removable storage, you probably think of the \$199 Iomega Zip drive, which has become the de facto standard for the consumer and SOHO markets.



MORE FOR YOUR MONEY: Olympus Sys.230 takes on the Zip drive.

Despite its proprietary storage techniques, it's won a lot of converts due to its low price and ease of use. But watch out for the Olympus SYS.230.

Until now, magneto-optical drives have been an expensive choice for power users. Olympus, however, is leveling the playing field: Its new SYS.230 drive retails for \$299.

On a point-by-point comparison, the SYS.230 blows the Zip out of the water. In informal tests of a shipping unit, the Olympus drive loaded and ran a large program twice as

fast as the Zip. It stored data 15 percent faster and deleted data 5 times faster. Olympus's magneto-optical disc is also more cost-effective than lomega's proprietary media: A 230MB Olympus MO disc is \$10 compared to \$18 for a 100MB Zip diskette; this means storage costs of about 4 cents per megabyte for the SYS.230 versus about 18 cents per MB for the Zip drive.

MO media are also more reliable—magnets can't harm your data. The Olympus SYS.230 will read any 3.5-inch 128MB or 230MB MO disc.

There is one downside to the Olympus drive: It requires a SCSI drive for best performance. Olympus has a model that plugs into the parallel port, but it isn't as fast.

—Jeff Sengstack ▶

## Olympus SYS,230

PRO: Low price; durable media.

CON: Can only be read by other MO drives; requires a SCSI card.

VALUE: Reliable and affordable.

Olympus Image Systems, Inc.

Olympus Image Systems, Inc. 800/347-4027

http://www.olympusamerica.com
List price: internal SCSI, \$299;
external SCSI with cable, \$359
READER SERVICE NO. 756



## Leave the details to us.

With QuickTasks,<sup>™</sup> the exclusive crossapplication tool that automatically performs the jobs you do most often, everyday tasks are made faster and easier. And unlike Microsoft® Wizards, QuickTasks doesn't force you to open individual applications to get the job started. You have access to OuickTasks right from your desktop and can start a task without even knowing which application to run. Options are presented to you automatically so you don't have to waste your time searching through pull-down menus. Create letters, faxes, spreadsheets and slide shows, schedule meetings, open e-mail, even access the Internet right from your desktop. Concentrate on the big picture and leave the tedious details of everyday work to your software. Features that help you finish faster with less effort—Corel® WordPerfect® Suite 7, the best in office suite applications.



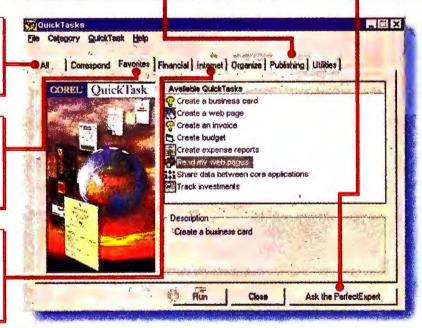
Format, spell check and even fax brochures, certificates, business cards, newsletters, press releases and more, simply by following automatic prompts displayed on your screen.

Ask task-related questions in your own words and choose from three levels of help---Show Me, Guide Me and Do It.

Choose from more than 60 pre-defined QuickTasks Th or create your own with the help of a Task Expert.

Compile a list of your most commonly used QuickTasks<sup>™</sup> for instant access to the jobs you do every day.

Create a Web page, browse Web pages and track your investments and stocks quickly and easily right from your desktop.



## Corel® WordPerfect® Suite 7 on CD-ROM† includes:

- Corel<sup>®</sup> WordPerfect<sup>®</sup> 7
- Corel<sup>®</sup> Quattro<sup>®</sup> Pro 7
- Corel<sup>®</sup> Presentations<sup>™</sup> 7
- CorelFLOW™ 3
- Sidekick<sup>™</sup> 95
- AT&T WorldNet<sup>™</sup> Service<sup>††</sup> software including Netscape Navigator™ 2.01 Internet browser
- Dashboard<sup>™</sup> 95
- Envoy<sup>™</sup> 7
- 150 fonts
- 10,000 clipart images
- † 3.5 inch disks and CD-ROM version also available. CD-ROM drive required to access full set of applications, fonts and clipart. 3.5 inch disks contain Corel\* WordPerfect\* 7 module.
- †† Telecommunication and other charges may apply, depending on usage and location.

Corel, WordPerfect and Quattro are registered trademarks and QuickTasks is a trademark of Corel Corporation or Corel Corporation Limited. Microsoft is a registered trademark of Microsoft Corporation in Canada, the United States and/or other countries. Sidekick and Dashboard are trademarks of Starfish Software, inc. Envoy is a trademark of Novell, Inc. AT&T WorldNet is a service mark of AT&T Corp. Netscape Navigator is a trademark of Netscape Communications, Corp. All other product and company names are trademarks or registered trademarks of their respective companies.







1-613-728-0826 ext. 3080

\*US\$ plus applicable taxes. Circle 70 on reader service card

# WICKED J, WINDO

## **Matrox Millennium**

- Ideal for high resolution, true color, and 3D Gouraud shading applications
- 2 to 8 MB of dual ported Window RAM memory
- Up to 1600 x 1200 in 16.7 million colors
- 220 MHz DAC for 85Hz at up to 1600 x 1200
- New improved MGA Powerdesk utilities for Windows NT 4.0 and Windows 95
- Upgradeable with the Media series for hardware MPEG playback and TV on the PC
- · Bundled with a software MPEG player, color calibration software, Netscape Navigator, and more
- Starting at \$199 (ESP 2 MB)

| Winbench 96<br>1024 x 768 at<br>24-hit | Matrox Willennius              | n 36 N        |
|--|--------------------------------|---------------|
|  | Number Nine Imagine 128-2 29 M |               |
|  | STB Lightspeed 128             | Not supported |

24-bit color







## All the speed you need

From the world renowned Matrox Millennium to the explosive new Matrox Mystique, you'll finally get all the speed you need and more. Both Millennium and Mystique deliver blazing fast acceleration for 3D, Windows, video and DOS. Their unique all-in-one design combines awardwinning MGA 64-bit graphics chips and powerful memory types so you get the highest possible performance no matter what your needs.

## The professional's choice

If you're looking for the fastest graphics acceleration for your professional applications, Millennium is the clear winner. Millennium's dual-ported Window RAM memory maintains high system performance even as you increase to maximum resolutions, color depths and refresh rates. As the professional's choice in accelerators, Millennium has won over 50 international awards and is included in high-end Pentium Pro systems from Compaq, Gateway, Hewlett Packard, IBM, and many more!



-800-362-9352

# LY FAST WS & VIDEO

## At work or play

An ideal solution for both the office and home, Matrox Mystique provides outstanding acceleration for general Windows applications, 3D texture mapped games, multimedia CD ROM titles, and DOS games. And unlike many of the competition's 3D decelerators, Mystique delivers true 3D game power with the highest frame rates possible and a unique set of 3D features not available with other products.

## **Exciting universe of video**

Matrox's high quality upgrade modules redefine video on the PC. You'll be able to send video over the internet, play PC games on the big screen TV, decode MPEG video in hardware, watch TV on the PC, and a whole lot more! Explore all the possibilities at an incredible price.

Get the fastest of the fast with a Matrox product. Call or visit our web site to find out which card or upgrade is right for you.



## //www.matrox.com/mga/speed

resolution with 8-bit and 24-bit color at 75Hz refresh using large fronts under Windows 95. All has not released threct 30 dinvers for the 30 Xpressoon therefore dinverse provided on the Microsoft Direct 2 of StOK were used 6 Monster Truck Madiness Microsoft Corp Monster Truck Madiness was tested in first person wew, with disshboard off, map off, sty texture on, horzon , smole effects on, image quelly high, texture normal scenery complex, shadow normal, smoothing of live tracks and particles. Test conducted at hull screen 640 x 480 @ 16 bit, Direct 30 tests done using Tunnel from the DirectX 2.0 SDK Diamond Steeth 30 2000Ut, and ATI 30 Xpression tests were conducted at 512 x 384 @ 16 bit in while Matrix Mystique tests were conducted at 640 x 400 @ 16 bit based on Gouraud shaded, perspective correct textured, point sampled. 16 bit per puet color dishered rendered oxyonos 11 Same failed when executed on ATI 30 Xpression.



- Ideal for mainstream Windows, 3D texture mapped games, video, and DOS applications
- 2 to 4 MB of fast single ported SGRAM memory
- · New! Up to 1600 x 1200 in 65,000 colors
- New! 170 MHz DAC for flicker-free displays
- Also includes MGA Powerdesk utilities for Windows
- Upgradeable with the Rainbow Runner series for hardware MPEG, playing games or watching presentations on TV, frame capture, and watching TV on the PC (Q1 '97)
- Bundled with a software MPEG player, 3D web browser plug-in, and three 3D games: Mech Warrior™2,
   Destruction Derby™2 and Scorched Planet™
- · Starting at \$179 (ESP 2 MB)



8-bit color

matrox

## QUICK TAKES

## PIM Updates: Ecco Pro 4.0 and Janna Contact

PERSONAL information managers keep trying to make your life simpler. In the newest versions of Ecco Pro and Janna Contact, you'll find changes

tact Personal is a low-cost option for individuals. I saw preproduction copies.

With release 4.0, Ecco Pro becomes a 32-bit application for use with Windows 95 and

ADDED BONUS: We liked the the picture-centric appointment manager in Janna Contact Personal.

aimed at streamlining interfaces and data entry. Ecco Pro 4.0 is a powerful choice for workgroups, while Janna Con-

Ecco Pro 4.0

PRO: Flexible, powerful; Individual and workgroup features.

CON: Interface has a learning curve.

VALUE: Excellent choice for organizing lots of material.

NetManage

206/885-4272

http://www.netmanage.com

Street price: \$99

READER SERVICE NO. 758

**Janna Contact Personal** 

PRO: Fairly simple interface, low price.

CON: Demanding users will need more functionality.

VALUE: Worth a try if you dislike Organizer and Sidekick.

Janna Systems

800/268-6107

http://www.janna.com

Street price: \$49

READER SERVICE NO. 759

Windows NT. Raw power and solid workgroup connections vault this PIM ahead of the competition.

The program retains the look and feel of version 3.0, with customizable folder views and notepads that help you organize tasks and appointments using outliner tools. The Calendar and Phonebook folders have a card-file interface.

The most common complaint about Ecco is that it's hard to learn. Version 4.0 simplifies the interface's menu structure. The PIM supports Object Linking and Embedding 2.0 but keeps the popular Shooter tool for quick cut-and-paste operations.

Mobile and remote users can use e-mail to manage and synchronize their Ecco Pro 4.0 schedules. The program supports cc:Mail, Exchange, Notes, and NetManage's own

Z-Mail client. Overall, Ecco Pro 4.0 makes a solid workgroup PIM.

NetManage will also be releasing Ecco Share, an enterprise version. Ecco Share's Web scheduling service lets group members set their schedules—or check those of others—using a Web browser. Ecco Share users can share their data across several servers and platforms—even with UNIX and Macintosh workgroups.

## **PERSONAL CONTACT**

JANNA CONTACT PERSONAL is a simpler version of Janna Contact 95. It competes with basic PIMs such as Starfish Sidekick, though the interface is a bit more complex.

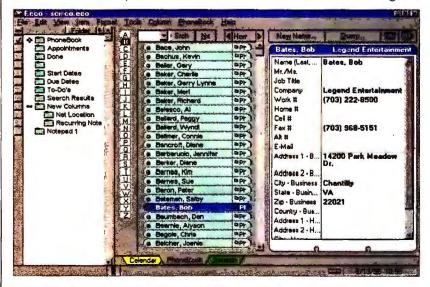
Janna Contact Personal displays contacts and tasks on a single screen for quick access. You can resize any of the win-

## **Net Some Contacts**

If Willy Loman had automated his work with a contact manager like Maximizer Enterprise 3.0, Death of a Salesman might have been a lighthearted Broadway musical. Well suited for sales forces, this workgroup-savvy version of the popular personal information manager does everything from rating sales opportunities to creating lead searches from information gleaned from the Web. The list price is \$600; a personal version retails for \$99.95. Maximizer Technologies, 800/804-6299; http://www.maximizer.com.

READER SERVICE NO. 760

PIM category, Janna Contact Personal (like Symantec's Act) focuses on information for turning contacts into sales. You can store all kinds of information right with your contacts—for example, sales reports, photos, voice recordings, or video clips. Janna Contact Personal makes good



YOU'VE GOT TO KNOW WHEN TO FOLDER 'EM when you want to get the most from Ecco Pro 4.0's organizing power.

dows (contact list, contact details, tasks, notes) as you wish. Use the toolbar buttons to sort items, toggle to the appointment calendar, or filter contacts by specific criteria.

While it clearly stands in the

use of the right mouse button for linking appointments and tasks to contacts. This PIM is inexpensive enough that you can try its organizational approach without much risk.

—Peter Scisco

The Pentium chip-based PC reaches a new level. Affordability.

## DELL DIMENSION™ P200v 200MHz PENTIUM® PROCESSOR

- \* 16MB SDRAM Memory
- \* 256KB Pipeline Burst Cache
- \* NEW 2.1GB Hard Drive [10.5ms]
- ★ 15TX Trinitron Monitor (13.7" v.i.s.)
- 64-bit PCI 2MB DRAM Video
- 8X EIDE CD-ROM Drive
- Microsoft Windows 95/MS Plus! CD/ 30 Days Free Support/Dell Mouse
- 3 Year Limited Warranty with 1 Year On-Site Service
- \* Upgrade to 32MB SDRAM, add \$199.
- \* Upgrade to a 3.2GB Hard Drive (11ms), add \$85.
- ★ Upgrade to a 17LS Monitor (15.7" v.i.s.), add \$179.
- \* 33.6 US Robotics Telephony Modem, add \$149.

Business Lease<sup>®</sup>: \$74/Mo. Order Code #500348

## THINK A P200 IS OUT OF REACH?



## AT THIS PRICE, YOU WON'T EVEN HAVE TO STRETCH.

High-end performance for under \$2000? What's the catch? There isn't one. A Dell Dimension P200v will give you the fastest Pentium processor available. That's right, 200MHz. Not to mention a Trinitron monitor, 8X CD-ROM and award-winning service and





support. All this can be yours for a mere \$1999. OK, we admit there is one little catch. To get it, you'll have to call.



TO ORDER

800-354-3355

http://www.dell.com

Mon-Fri 7am-9pm CT • Sat 10am-6pm CT Sun 12pm-5pm In Canada; call 800-232-6978

Keycode #03193



"Hey dad, how's it going?"

## Now

Be Half Way



"Just checking in. What's new at home?"



"Oh not much. Just this!"





EYO TO EYO.

(gasp!)

VideoPhon



"Gottcha! It's fake."

Finally, full-screen, color video conversations are a reality. Connectix VideoPhone<sup>™</sup> is the easy, fun and very inexpensive was to keep in touch with family and friends or even attend meetings at work. The VideoPhone software alone is about \$55; bundled with our Color QuickCam<sup>™</sup> it costs about \$250; bundled with our B&W QuickCam about \$150.

You'll be amazed! Try VideoPhone free by downloading a viewer from our web site. For information, call 1.800.571.7558 or visit www.connectix.com.

Circle 29 on reader service card

## Show and Tell With Connectix VideoPhone.

At computer stores everywhere. For PC and Mac over ISDN, LANs or the Net, PC with 28.8 modem.

## GIVING BIRTH TO GREAT IDEAS SHOULDN'T INVOLVE SO MUCH LABOR.

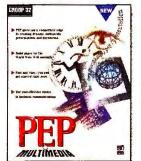


You only have one chance to make an impression. One opportunity to really reach out and grab them. Trouble is, your time is limited and drafting a powerful presentation isn't easy. Bottom line, you need a fast and easy multimedia solution that will have you creating more dynamic presentations in no time. What you need is PEP™—the complete electronic document solution designed to bolster your performance and leave your audience speechless.

With PEP, you can publish and distribute compelling multimedia presentations and documents without headaches or hassles. This comprehensive software makes your documents more powerful, your presentation more persuasive, your Web Site

more impact accessible and money was competition.

more impactful and your information more accessible—ultimately saving you time and money while keeping you ahead of the competition



With the mere touch of a button you can combine text, graphics, sound, pictures, drawings and even video—that turn lifeless information into a lively display of cutting-edge multimedia. Plus, with hot links, outlines, folder tabs, keywords and customized searches, you can put readers directly where you want them to be.

What's more, PEP makes output and distribution faster than you ever thought possible. Documents can be sent and used anywhere from your local area network, on diskette, CD-ROM or over the Internet. Send them to anyone with MS-Windows, even if they don't own PEP. It's that simple.

So, if you think you're ready for the ultimate in high speed electronic publishing, call Group 32 today at 800-553-0400

and we'll give you everything you need to breath life into your ideas while setting your documents on fire.



## ASK FOR PEP AT A RETAILER NEAR YOU.

## **HP's Inexpensive Home Color Printer**

HEWLETT-PACKARD'S \$199 DeskJet 400, the company's lowest-priced color ink jet printer to date, is an affordable option for home projects. Its speed and print quality are not good enough for business jobs or take-home work, but at this

## HP DeskJet 400

PRO: Compact, low price.

CON: Inconvenient design, so-so

image and text quality.

VALUE: For very tight budgets.

**Hewlett-Packard Company** 

800/752-0900

http://www.hp.com

Street price: \$199

READER SERVICE NO. 792

price, you can buy your kids their own printer.

The shoeboxsize DeskJet 400 can fit on small desks and sets up easily, in about 10 minutes. It replaces the HP 600C printers, and it offers 600-

by-300-dots-per-inch monochrome printing and 300-dpi color printing. You can print 3 monochrome pages per minute, which is a little below average (most competing products offer 4 ppm in



DeskJet 600 and BUT IT'S CHEAP: The DeskJet 400 takes a whopping 4 to 7 minutes to print one color page.

monochrome)—but you will have to wait a whopping 4 to 7 minutes for one color page.

Another inconvenience: Whenever you want to print in color, you must swap the black cartridge out for a color one. (HP's \$300 color ink jets hold both cartridges at once.) And the paper tray holds only 50 sheets.

In PC World's battery of printer tests using spreadsheets, multicolored text, documents inlaid with color photos, and complex, multipage presentations, a shipping DeskJet 400 unit ranked at just above average speed. Because it prints at 300 dpi, significantly lower than the typical 600-dpi resolution, the color documents, while acceptable, were a little washed out, and photographs had a grainy look. With black-andwhite documents, text looked only average, while monochrome images suffered from slight banding.

—Shane Mooney 🕨

## Now, A Revolutionary Way To Buy Greeting Cards!

POINT Select card from American Greetings Personal Cardshop for Home and Office CD-ROM

CLICK

Personalize card on your home PC

SEND

Send your order to American Greetings via modem

It's that easy with the American Greetings Personal Cardshop™ for Home and Office. It's a CD ROM for Windows™ that contains over 1,300 greeting card designs, and provides you access to the most convenient new service offered exclusively from American Greetings.

Here's how it works.... Pick a card design, personalize your message, then simply tell you computer to send it. Your order reaches us instantly by modem via a secure toll-free call. We print and mail your cards within one business day for you! You don't need a color printer, pen, or even postage stamps. It's fast, easy, and costs only \$1.95 to \$3.95 per card (plus postage) with discounts on multiple orders.

With over 1,100 greeting card designs to choose from, you'll never have trouble finding the "perfect" card again. Plus, you will benefit from these easy features...

- · Order cards up to one-year in advance
- · Reminder feature to keep track of important dates
- Built-in address book

The American Greetings Personal Cardshop™ for Home and Office is like having your own personal greeting card store that's open anytime of the day or night!

To order The American Greetings Personal Cardshop™ for Home and Office, call 1-888-550-3332 today or visit our web site at http://www.AmericanGreetings.com and save with our special introductory offer. With our money-back satisfaction guarantee, you can't lose. So order now!

> 1-888-550-3332 Call Toll Fee





@ A.G.C., Inc.

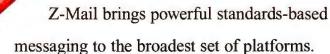
## Our Cross-Platform Solution Has Proprietary E-Mail Licked.



3

NetManage Z-Mail™ is a complete solution based on open Internet standards. Send mail—including files—to all users in your enterprise and over

the Internet. You can even send attached image, sound, video, database and spreadsheet files. And there are extensive off-line features for remote and mobile users.



Administration is simple. Scripting lets you integrate Z-Mail with existing applications and create custom mail filters and rules. It eliminates expensive mail gateways. So your cost of ownership is exceptionally low.

Z-Mail is part of the NetManage IntraNet Family—
a full suite of products designed to help you build a powerful
corporate IntraNet. Call now and GO! IntraNet today.



- Completely standards-based for the highest degree of present and future connectivity.
- Z-Mail Servers for Windows 95, NT and UNIX.
- Z-Mail Clients for Windows 3.1, 95 and NT, UNIX and Macintosh.
- Simple to install, setup and administer.
- Comprehensive solution for an exceptionally low price.

5 FREE Z-MAIL CLIENTS! with every server purchased before 11/30/96.

Download 30-day trial software from our website.

1-408-342-7537





sales.pw@netmanage.com www.netmanage.com

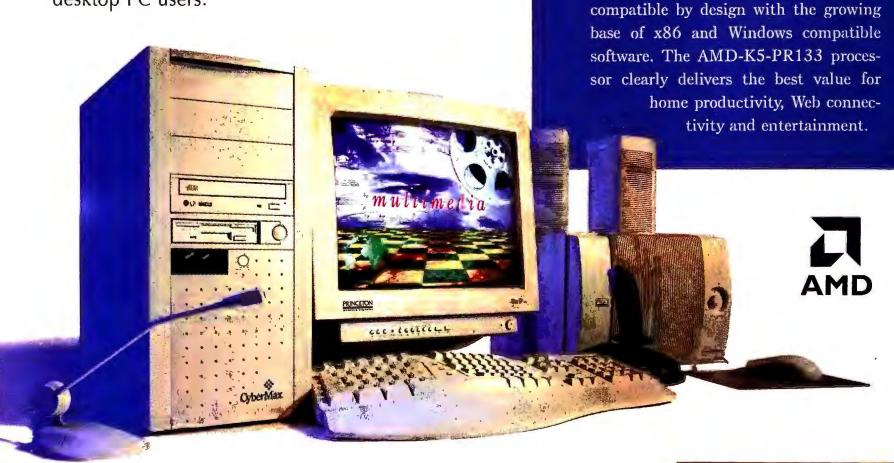


AMDA

With the AMD-K5™-PR133 processor,

CyberMax provides its customers a

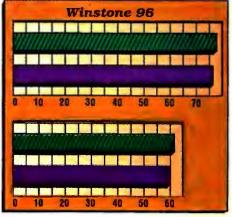
viable alternative: the freedom to choose a Microsoft® Windows® & Pentium-compatible processor solution that offers superior value. The AMD-K5-PR133 processor delivers equivalent performance of a 133-MHz Pentium (chart below), making it the *best* performance value for today's desktop PC users.



The P-Rating of an AMD-K5 processor is determined in an "apples to apples" system-level comparison. PC system manufacturers utilize this methodology, for consistent, objective rates on Pentium-relative performance for Windows applications. And the P-Rating helps end users understand true processor performance equivalences while making their PC buying decisions. For example, if an AMD-K5 processor offers the equivalent performance of a 100-MHz Pentium, it receives a P-Rating of "PR100".

AMD-K5-PR133 CPU (76.8) 586 at 133 MHz (76.6)

AMD-K5-PR100 CPU (62.0) 586 at 100 MHz (60.0)



**Looking for Value?** 

can

III

Computing takes on a whole new dimen-

sion with systems powered by the AMD K5-PR133 processor. AMD has cleverly designed processors with pinout compat-

ibility for future 586- class PC upgrades; and the AMD K5 processor is

The results are in! The AMD-K5 CPU series outperformed its 586 processor opponents in recent Winstone 96 testing.

## 

## Max A9-PR133

- ▶ AMD K5™-PR133 Microprocessor
- ► STB VELOCITY 3D Video Graphics w/4MB EDO VRAM (Supports res. 1600 x 1200 x 64K, Upgradable to 8MB)
- ▶ 16MB EDO RAM, 256K Pipeline Burst Mode Cache
- 2.5 Gigabyte HDD, 3.5" High Density Floppy
- 8x CD-ROM, Ensoning Wavetable Sound Card
- Altec Lansing ACS-40 w/ACS-250 subwoofer, Microphone
- The Family Office Multimedia CD Bundle
- 33.6Kbps Fax/Voice/Spker phone Mdm w/CyberSpace Pack
- 17" Princeton Graphics 28do (16.1"VA) NI Color Monitor
- 104-Kev keyboard, Microsoft

   PS/2 Mouse
- Microsoft Windows®95 w/ Microsoft Plus!
- Vertical Tower Case w/ 2 fans
- Limited 3yr Warranty with In-Home Service

Business Lease for.....\$ CALL

## ◆ AMD K5™-PR133 Microprocessor

- ◆ 128-BIT STB LIGHTSPEED Video Graphics 2MB MDRAM
- ◆ 16MB EDO RAM, 256K Pipeline Burst Mode Cache
- ◆ 2.0 Gigabyte HDD, 3.5" High Density Floppy
- ♦ 8x CD-ROM, Ensoniq Wavetable Sound Card
- ◆ Altec Lansing ACS-45 speakers, Microphone
- The Family Office Multimedia CD Bundle
- 33.6Kbps Fax/Voice/Spker phone Mdm w/CyberSpace Pack
- ◆ 15" Princeton Graphics EO 28dp (13.8" VA) NI Color Monitor
- ♦ 104-Key keyboard, Microsoft® PS/2 Mouse
- ◆ Microsoft Windows®95 w/ Microsoft Plus!
- Vertical Tower Case w/ 2 fans
- Limited 3yr Warranty with In-Home Service

AMD K5-PR100.....\$1499 Business Lease for.....\$ CALL

- ◆ AMD K5™-PR100 Microprocessor
- ▶ 64 bit PCI Video Graphics Card W/2MB DRAM
- ♦ 16MB EDO RAM, 256K Pipeline Burst Mode Cache
- ♦ 1.6 Gigabyte HDD, 3.5" High Density Floppy
- 8x CD-ROM, Ensoniq Wavetable Sound Card
- Altec Lansing ACS-40 speakers, Microphone
- The Family Office Multimedia CD Bundle
- 33.6Kbps Fax/Voice/Spker phone Mdm w/CyberSpace Pack
- ◆ 15" Princeton Graphics EO 28dp (13.8" VA) NI Color Monitor
- ◆ 104-Key keyboard, Microsoft® PS/2 Mouse
- ♦ Microsoft Windows®95 w/ Microsoft Plus!
- Vertical Tower Case w/ 2 fans
- Limited 3yr Warranty with In-Home Service

AMD K5-PR133.....\$1449 Business Lease for.....\$ CALL

Max A8-PR100 \$1399 Max A7-D133 \$1299

- ◆ AMD 133MHz Am5<sub>x</sub>86<sup>™</sup> processor
- ♦ 64 bit PCi Video Graphics Card W/2MB DRAM
- ◆ 16MB EDO RAM, 256K Cache
- 1.6 Gigabyte HDD, 3.5" High Density Floppy
- ◆ 8x CD-ROM, Ensoniq Wavetable Sound Card
- Altec Lansing ACS-40 speakers, Microphone
- The Family Office Multimedia CD Bundle
- ◆ 33.6Kbps Fax/Voice/Spker phone Mdm w/CyberSpace Pack
- ◆ 15" Princeton Graphics 28dp (13.8" VA) NI Color Monitor
- ◆ 104-Key keyboard, Microsoft® PS/2 Mouse
- ♦ Microsoft Windows®95 w/ Microsoft Plus!
- Desktop Case w/ 2 fans
- Limited 3yr Warranty with In-Home Service

Business Lease for.....\$ CALL

Hewlett Packard Deskjet 680C Color Printer.....Add \$379

Standard on all systems: 2 high speed serial (16,550), 1 parallel (bl-directional) and 1 game port

## The Family Office Multimedia CD Bundle

Corel WordPerfect Suite 7, Novell PerfectHome, Compton's Reference Collection, Compton's Interactive Encyclopedia, Multimedia MBA, Resume Designer, Quicken Special Edition, Corel PrintHouse, Compton's Ocean Explorer, Turn Around Turtle, Pandora's Box, Windows 95 Primer, Corel Internet Mania (Pre-installed w/CD back-ups)



CyberMax's AMD K5-PR133 processor-based systems now feature the brilliant video of STB's VELOCITY 3D Windows and Multimedia Accelerator. This video graphics card supports

full Microsoft Direct 3D, Z buffer and Bilinear textures, and can handle resolutions up to 1600 x 1200 x 65K colors. It even racked up an impressive 46 million WinMarks in the latest lab tests. Experience the VELOCITY 3D difference!



striking gold."

**April 1996** 

"...CyberMax computer may be

the multimedia PC equivalent of

PC WORLD Aug 1996

"The (STB 128bit) LightSpeed posted the highest PC WorldBench graphics score of any board we have tested."

## Circle 74 on reader service card

CyberMax accepts Visa, MasterCard, Discover, American Express and prepaid checks. Purchase orders from government agencies, universities, and Fortune 500 companies can also be accepted. All returned items must have an RMA number and must be in original packaging. The cost of returned eight is not included with any money back guarantee, shipping charges are not refundable. Prices and product descriptions are subject to change without outco. Microsoft, and Windows 95 are registered trademarks of Microsoft Corporation. Pentium and the Intel Inside Logo are registered trademarks of Intel corporation. AMD and Am486 are registered trademarks of Advanced Micro devices. Inc. On-site service may not be available in certain remote areas, and is available only if determined to be necessary by our technicians, GE 4 year warranty is optional. Products may differ from image shown.

## Why CyberMax?

In the eight years CyberMax has been in the computer business, we've learned what it takes to build a system that bears the marks of quality and reliability.

Product planning actually begins in the labs of our advanced Research and Development facilities, which also serve as beta test sites for such companies as Advanced Micro Devices, Cyrix, Microsoft and Novell. We then build all of our systems with name brand components, and preinstall a generous helping of the industry's leading software titles. Finally, we subject every PC to our intense 16 point, 72-hour quality control check.

Factor in custom configuration availability, top notch service and a money back guarantee, and there's only one solution when shopping for your personal computer needs. Look to CyberMax.

## **Volume Purchase Program**

The more you buy, the more you save at CyberMax. When you order 5 or more systems, you're eligible for our Volume Purchase Discount, as well as reduced Federal Express shipping and handling charges. And if you're a smaller reseller, we'll accumulate your purchases and apply the discounts as you qualify. At CyberMax, every purchase counts!

## **Service Guaranteed!**

All CyberMax systems come with a 3-year limited warranty on parts replacement, plus one year on-site service, a 30day money-back guarantee, and toll-free technical support. If ever you have a question or concern, our trained professional support staff will assist you promptly.



For an additional three years of on-site service, we also offer the optional GE Protection Service Plus Plan. CyberMax gives you service you can count on!



1-800-437-4596

http://www.cybmax.com

Systems shipped via





Canada 1 800 345 8939

133 N. 5th St., Allentown, PA 18102 (610) 770-1808

## HP Boosts LaserJet Speed, Bundles Navigator

PRINTER

boosted its low-end LaserJet aimed at small businesses and home offices. Not only does the LaserJet 5L Xtra have improved printing speeds, but HP has bundled a collection of productivity applications and a copy of Netscape Navigator Personal Edition 2.0 as well.

The 5L Xtra includes many of the 5L's features at the same \$479 list price. The 600-by-600-dots-per-inch 5L Xtra retains 1MB of memory and utilizes HP's Resolution Enhancement technology and PrintSmart software. The Xtra features an economy mode

that lets you print draft copies with 50 percent less toner, and its no-wait fuser technology reduces first-page-out time.

But the new model diverges from the old in print speed. Although rated, like the 5L, at 4 pages per minute, in our tests the 5L Xtra outperformed the 5L, almost halving its output times in many cases. A simple 5-page Excel 7 spreadsheet took 192 seconds to print on the 5L, but only 83 seconds on the 5L Xtra. Since the two models have no hardware differences, the 5L Xtra's speed advantage appears to be due to new drivers. Most of the Xtra's print times were

comparable to the more expensive HP LaserJet 5P, which has a 6-ppm engine. Still, the 5L Xtra predictably lagged behind its 8-ppm competitors, with times twice those of the NEC SuperScript 860 (which is priced the same) and the Okidata OL810e. We noticed no print quality difference between the 5L, which topped other printers in almost every category, and the Xtra.

In addition to Navigator, the disc includes Avery LabelPro 2.0, Family Health Tracker, Greetings for Windows, Bitstream TrueType fonts, and HP's Personal Information Manager. To aid printer setup,

the CD-ROM includes a video that demonstrates the 5L Xtra's features and shows a walk-through of software installation.

The 5L Xtra's increased speed, along with the included software, makes it the perfect low-cost laser printer for a home office that is just getting off the ground.

-Mark Glaser

## LaserJet 5L Xtra

PRO: Improved print speeds; bun-

dled software.

CON: Still prints at 4 ppm.

VALUE: Buy it if you're just starting

a home business.

Hewlett-Packard Company

800/752-0900

http://www.hp.com

List price: \$479

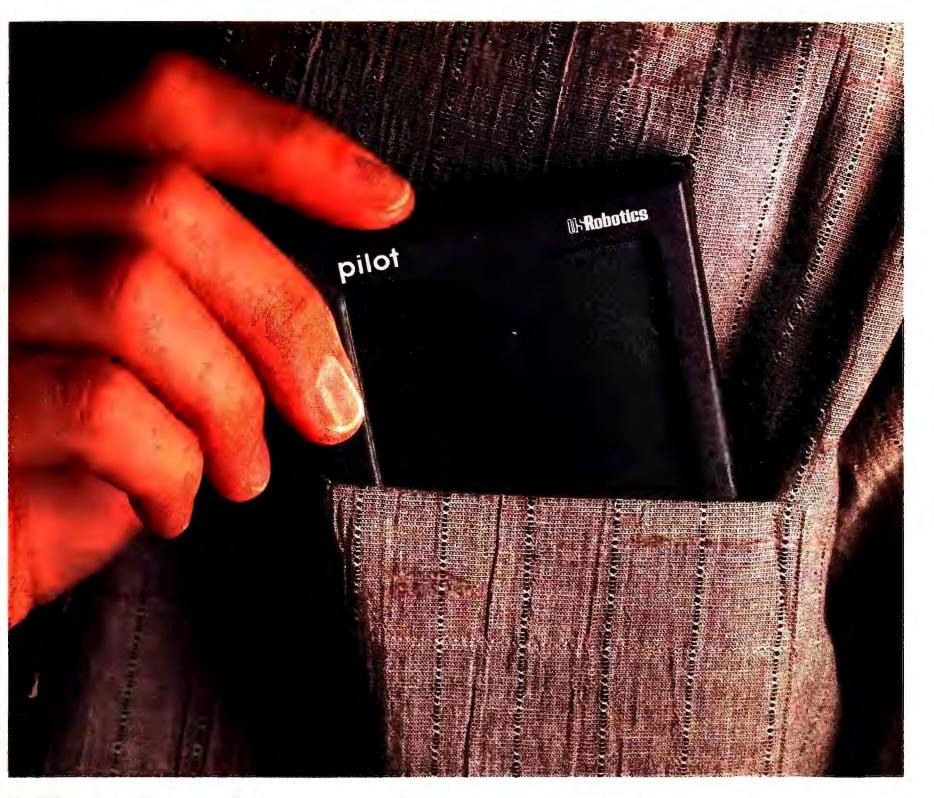
READER SERVICE NO. 793



## TELL ME MORE!

**FREE** information on the products featured or advertised in *PC World* can be requested using the postage-paid Reader Service Card found in this issue.

**PC WORLD** 



# Think of it as the most important part of your PC, to go.



Presenting Pilot, the easy way to take the important personal info on your PC with you wherever you go.

Enter addresses, phone numbers, and appointments just once—on your Pilot or your PC. Drop Pilot into its

cradle, then press the HotSync™ button. That's all it takes to keep your Pilot and PC in sync.

Pilot is compatible with the Windows software that you use for personal information management, including Lotus Organizer, Schedule+, Now Up-to-Date, and Sidekick. And at only about 4.5" tall, 5.5 oz, and \$299,\* it fits any pocket and pocketbook.



To learn where to get one, call 1-800-881-7256. To arrange a demo, visit our web site, http://www.usr.com/palm. You'll see that when it comes to staying organized, Pilot is really the only way to go.

EGGHEAD.



COMPLISA



Robotics

## Microsoft Windows NT Workstation 4.0

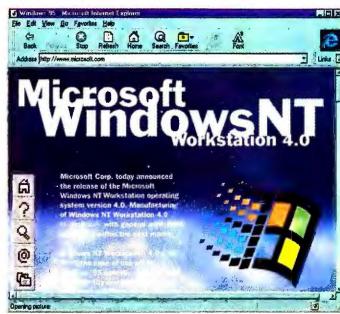
## has the ease of It has the power



## Windows 95. of Windows NT.

omputers everywhere drooling.





The new Windows NT® Workstation 4.0 operating system has been designed to be the most powerful desktop operating system. And because all that power is controlled by the Windows® 95 interface, it's much easier to use. The total 32-bit power of Windows NT Workstation means reliability, security, and easy access to the Internet and tranet. It's reliable because all applications run in their own memory space — so that new game beta won't crash last week's work. It's secure because integrated features let you lock your system all the way down to the file level, so you can count on applications and data being safe.

It's Internet-ready because it's loaded with built-in features like TCP/IP, the Microsoft Internet Explorer browser, and integrated Peer Web Services, which lets you create a small intranet for your workgroup. And because it's all controlled by the Windows 95 interface, you can customize your system to work and look however you like. So does all this mean Windows 95 is history? Absolutely not. Windows 95 may still be your best choice, depending on your existing hardware and applications. We suggest you dive headfirst into our Web site to compare and contrast operating systems to see which 32-bit desktop is best for you.



## QUICK TAKES

## Picture This: Fractal's Draw Program Paints

GRAPHICS IS THERE ROOM for a new Windows drawing program

when we already have excellent choices such as Corel-Draw, Adobe Illustrator, and Macromedia FreeHand? The answer is "yes" when the program is Expression, an innovative graphic illustration package from Fractal Design.

Expression combines traditional vector-based drawing techniques, such as Bezier curve editing, with its own unique tools that let you produce a painted look.

Unlike a paint program, Expression treats each element you add to the canvas as a separate object, one that is fully editable at all times. For example, with a paint program's tools you can simulate graffiti on a wall, but the result is often a bit-map image that's hard to edit, and you end up completely redoing it. With Expression, however, you can create graffiti art and then easily edit each individual object, changing its stroke thickness, fill pattern, and color.

Expression's innovative toolbox includes more than 350 built-in brushstrokes. Some strokes include individual graphic elements, such as a starry sky; this creates the unusual effect of drawing an

## Expression

PRO: Versatile drawing tools. CON: Complex interface and tools. VALUE: A pretty picture all around.

Fractal Design

800/846-0111

http://www.fractal.com/

List price: \$449

READER SERVICE NO. 794



WITH UNIQUE TOOLS such as its Stroke Warehouse and its Paint Style palette, Expression lets you produce paintlike effects.

object or an area with clip art.

Like CorelDraw and other professional-level illustration packages, Expression is a powerful and often complex program, intended more for experienced artists and designers than for graphics novices. Expression takes as much time to learn and master as other top-notch drawing programs do. But it is a excellent choice for graphic artists.

-Richard Jantz

## **Clever Calculations**

This software for advanced number crunchers has long been popular among the Greek-alphabet set, but with the latest release its developers hope to broaden Mathematica's appeal beyond pocket-protector types. Mathematica 3.0 lets you customize its interface so it works the way you do. It has enhanced how it looks at input so it can make intelligent decisions about what you want without a lot of explanation from you. And it has a built-in typesetting system so all those pesky symbols used in mathematics-integral, square root, and 700 or so others-will appear on your display and print out as they would if you wrote them on a quad pad. Price may put off some would-be users, though: Mathematica 3.0 retails for \$1295. Wolfram Research; 217/398-0700, 800/441-6284, http://www.wolfram.com.

READER SERVICE NO. 796

## PC Maintenance Stop for Web Travelers

WOULD YOU PAY about a dollar a week to ensure that your PC is virus-free and running smoothly? If so, consider subscribing to TuneUp.com, the first Internet service to provide online PC preventive maintenance. For \$3.95 a month, you can log on to its Web site (http://www.tuneup.com), download the latest antivirus software, install it on your hard drive, and have an espresso while it checks under your PC's hood for viruses.

TuneUp.com subscribers can download Symantec's PC TuneUp (which features Norton AntiVirus and Norton

Utilities for Windows 95), updated printer drivers, and other software, as well as access TuneUp's staff for expert online help. There's no limit to your visits—daily, weekly, or monthly. Other services, such as online data backup and storage, are available for an additional charge.

I visited the site while it was still under construction. The diagnosis for my PC was good: It was virus-free. TuneUp did find efficiency problems on my hard disk which it fixed.

TuneUp.com's commitment to provide monthly virus protection updates could be its most sought-after feature.

Most antivirus packages do not provide updates this frequently. Just about anyone who downloads files from the Internet is a prime candidate for regular antivirus checkups.

-Richard Jantz

## TuneUp.com

PRO: Monthly virus protection updates; maximizes hard drive space.

CON: Nothing worth mentioning.

**VALUE:** Useful service costs less than lunch.

TuneUp.com, Inc.

415/691-9411

http://www.tuneup.com

Subscription price: \$3.95 per month

# Have These Five Common Windows 95 Problems



topped You?

## The mysterious program

**crash.** Your system doesn't crash completely, but you still lose your data.

## The unresolved software conflict.

You install a new graphics program. It replaces your video configuration with one for Windows 3.1. No more video.

The semi-botched

installation. Your new app installs perfectly. But when you try to run it, you see a "Missing DLL" message.

## Plug & Play... Not!

You've installed new hardware, but it doesn't work.

The non-disappearing application. You uninstalled an application properly. But it's

still listed in the program menu.

## Stop Software Conflicts Before They Stop You!

New Vertisoft Fix-It<sup>TM</sup> automatically finds and fixes thousands of software conflicts and hardware configuration problems before they can crash your system.

Vertisoft Fix-It's sophisticated knowledgebase of over 1,000 Windows 95, 3.1 and DOS

Circle 190 on reader service card

Fix-It crashproofs your PC and fixes problems with a click!

Conflict Detector

Finds and connects application and hardware configuration problems

Problem Preventer

Finds and connects application and hardware configuration problems

Problem Preventer

Finds and connects problems

Prelimitabilitation in spector

Finds and connects probable conflicts before installing any application.

Crash) Defender

Authorized probable recovery computer's configuration, compared a postuport of the probable recovery computer's configuration, compared a postuport of the probable recovery computer's configuration, compared a postuport of the probable recovery computer's configuration.

Crash) Defender

Authorized probable recovery contact information about your computer's configuration.

Support Directory

Displays expect contact information for probable con

applications lets it find and fix whatever's out of whack – like these system stoppers:

- Missing program files
- Incorrect configurations
- Conflicts between applications, hardware and Windows 95
- Windows system problems
- Hardware device problems

Plus, it's unique Preinstallation Inspector finds and fixes conflicts before you install applications.

Vertisoft Fix-It also watches over your system alerting you to new problems, catching conflicts, and backing up changes made to your

| Features  | Vertisoft<br>Fix-It | First Aid<br>95 Deluxe™ |
|---|---------------------|-------------------------|
| Detailed Knowledge-Base of over 1,000 applications  | YES                 | NO                      |
| Uses award-winning Remove-It® technology to remove erroneous software or hardware installations | YES                 | NO                      |
| Ensures system registry and configuration file integrity  | YES                 | NO                      |
| Integrates with Win 95<br>device troubleshooters  | YES                 | NO                      |
| Complete crash protection for 16 and 32-bit programs  | YES                 | limited                 |

Programs like Norton Utilities™, WinProbe™ and WinCheck It® detect hardware errors only.

system so you can easily remove changes that cause problems. It even automatically intercepts application crashes so you can save your data.

And on-line updates to its knowledge-base make it easy to keep Vertisoft Fix-It upto-date.

# TRY F 132-16\*\* FREE Call 1-800-683-6696

Offer Code: 01300

Call now and we'll rush you Fix-It FREE! Pay only a \$7.50 shipping and handling fee. If Fix-It doesn't crash-proof your PC, return it within 30 days and owe nothing more. If you



like it, pay only \$49.95 – that's \$30 off the suggested retail price! Also available at your local retailer.

OFFER EXTENDED UNTIL 12/15/96



Fix-It Stops Your Windows Problems Before They Start... Automatically!

## **NeTpower Ships NT Workstations**

## WORKSTATION

FURTHER strengthening its alliance with Intel, NT workstation vendor NeTpower has refreshed its line of uniprocessor Pentium Pro systems and introduced dual-processor PPro machines for high-end business and technical tasks.

The major enhancements to the uniprocessor Calisto line, which first shipped last February, include Intel's 82440FX PCI chip set with accompanying support for ECC memory; a TrueFX graphics card with support for 3-D graphics and 24-bit color; and a lower entryethernet.

NeTpower's Symetra workstations support two PPro-200 CPUs with 512K secondary cache. The \$6695 baseline Symetra includes one PPro CPU, 32MB EDO ECC RAM, the TrueFX graphics card, a 1GB Fast & Wide SCSI hard drive, a 17-inch monitor, an 8X CD-ROM drive, 10/100 BaseT ethernet, and two Universal Serial Bus ports. A second PPro-200 costs \$2050.

For decent prices, robust configurations, and interfaces

level price. For \$4995, the baseline Calisto includes a single PPro-200 CPU with 256K secondary cache, 32MB EDO ECC RAM, the TrueFX card, a 1GB EIDE hard drive, a 17-inch monitor, an 8X CD-ROM drive, and 10/100 BaseT

**NeTpower Symetra NT** workstation PRO: Dual processor capability. CON: \$2050 for second Pentium Pro-200. **VALUE:** Most attractive to ex-UNIX List price: starts at \$6695 NeTpower, Inc. 800/801-0900 http://www.netpower.com READER SERVICE NO. 797

**NeTpower Calisto NT** 

need upgrading to SCSI.

List price: starts at \$4995

PRO: Low price for NT system.

CON: EIDE storage subsystem may

VALUE: Good NT starting system.

workstation

and processors in common with regular Windows PCs, NeTpower's machines deserve consideration by budget-conscious managers, power users, and MIS directors.

-Shane Rau



THE SYMETRA PENTIUM PRO dual-processor NT workstation is aimed at users seeking an alternative to RISC-based UNIX systems.

## Browser Add-Ons Are a Mixed Bag

UTILITY SOFTWARE developers never miss a chance to exploit a niche market, and the Internet is rife with opportunities. Two new utilities, DataViz's Web Buddy and Starfish Software's Internet Utilities, strive to fill holes left by the popular Web browsers. Web Buddy handles Web site translation, while Internet Utilities attacks the sloppy nature of bookmarks.

Web Buddy is sort of a cyberspace vacuum cleaner. You can use it to suck pages or even whole Web sites from the Internet onto your hard drive. Once on your disk, you can view the pages offline and save connect charges.

Web Buddy can convert your saved Web pages into snappy word-processing documents without losing the fonts, graphics, and overall look of the original Web page. This feature wasn't quite perfected in the beta version I saw, but the developer said its problems would be cleared up when the program's final version is released.

Internet Utilities extends the idea behind Starfish Software's Dashboard product to Internet browsing with the Control Center, which can be placed anywhere on your screen. Using its customizable tabs, you can better organize your bookmarks or favorite Web sites. A usage meter keeps track of your time online. A utility for zipping and unzipping files by dragging and dropping them onto the Control Center's interface may be the coolest feature.

On the other hand, this approach can lead to screen clutter. Sure, the software lets you customize the Control Center's size; but as you hide items to clean it up, you also reduce the program's usefulness because objects out of sight soon become objects out of mind.

Both Web Buddy and Internet Utilities provide some helpful add-on functions to a Web browser. But the problem

with niche applications is that a good idea soon becomes a standard feature in a general application.

—John Mello 🕨

## Web Buddy

PRO: Captures Web pages easily.

CON: Limited need.

VALUE: Easy sharing of Web pages.

## DataViz

800/733-0030

http://www.dataviz.com

Street price: \$49

READER SERVICE NO. 798

## Internet Utilities

PRO: Tracks online time.

CON: Dashboard clutters screen.

VALUE: Better bookmark monitor.

## Starfish Software

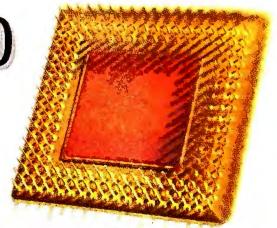
408/461-5800

http://www.starfishsoftware.com

Street price: \$39



## AUTOMATICALLY GET MORE SPEED AND MEMORY, THE ALL-NEW



Now Run Your System More Efficiently with MagnaRAM 97, the 32-bit Memory Optimizer from Quarterdeck!

## Accelerate Windows 95!

Want more speed? You need sophisticated, powerful Windows 95 memory optimization. MagnaRAM works behind the scenes to boost your memory and cut the time it takes to load your 32-bit programs. MagnaRAM's memory compression keeps more data in faster RAM,

instead of swapping it out to your hard drive. And when swapping does occur, MagnaRAM stores and retrieves information more quickly than Windows can by itself. You'll get snappier overall performance, and the power you need to blast through your work. every time. With TurboLoad, you'll get down to business as quickly as possible.

## **Get More Memory for Windows!**

The top scientists in the field of memory management (the same people who brought you QEMM®) have done it again! MagnaRAM's unique CacheBack™ cache

> management system automatically recovers underused memory from the hard drive cache under Windows 95 and Windows for Workgroups. The upshot? Even more memory to work with! And for Windows 3.1 users, MagnaRAM's

memory optimization means more usable memory — and that gives Windows 3.1 extra room for more data and larger programs. MagnaRAM kicks in when Windows runs out of gas precisely when you need it the most!

MagnaRAM 97 is safe and easy to use. Buy it today, and see what your PC can really do.



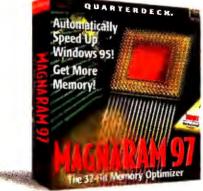
The all-new MagnaRAM 97 control panel displays real-time performance improvements at a glance

## EXCLUSIVE

## **Start Programs Faster with Revolutionary TurboLoad™!**

Slash the time it takes to load your 32-bit applications in Windows 95.\* MagnaRAM's innovative TurboLoad feature monitors the way those 32-bit programs load, and ensures they'll get into memory faster... next time and





## The more memory you have, the more MAGNARAM 97 can do for you!

Visit your nearest store or call (800) 683-6696 to order.

Ask for code 01055. Check out Quarterdeck's Web Site @ http://www.quarterdeck.com/











MICTO CENTER





Circle 185 on reader service card

## The Hits and Misses of Search Engine Utilities

NOW THAT THE World Wide Web is such a big thing, myriad client-side browser utilities have cropped up—supposedly designed to improve the online experience. But like most software categories, the class of utilities intended to enhance the performance of

## More Like This

PRO: Translates plain English into search-ese.

CON: Only searches one engine at a

VALUE: A search tool you shouldn't be without.

Knowledge Discovery Ltd.

http://www.morelikethis.com/

List price: \$35

READER SERVICE NO. 800

**EchoSearch** 

PRO: Um...

CON: Blind downloads, expensive.

**VALUE:** Not worth your time and effort.

Iconovex

800/943-0292

http://www.iconovex.com/

List price: \$49.95

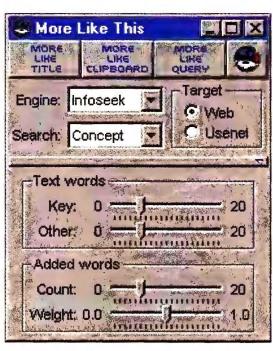
READER SERVICE NO. 801

search engines is populated by both useful and useless products.

Knowledge Discovery Ltd. has hit on something with More Like This, an oddly named little program that significantly exceeded our expectations. More Like This operates on the assumption that people think about information terms than computers do, which is why

so many smart queries go unanswered by good infobots. More Like This acts as a translator, adapting the terms and syntax of a query to get maximum results.

The More Like This interface is about the size of a stick of gum, and it's so easy to use that you can keep it minimized and operate it with the right mouse button directly from your Windows 95 tray. In



searches in different MORE LIKE THIS usefully searches the Web by concepts as well as by words.

addition to performing simple keyword searches, it handles more complex tasks. "More Like Clipboard" uses text in the Windows clipboard as the query text, allowing you to cut or copy from any Windows document and instantly turn that into a search. "More Like Title" reads the title bar of a Web page you may be looking at, then goes out and searches for similar pages.

## LESS LIKE MORE

BUT WHERE More Like This succeeds in being a helpful add-on, Iconovex's \$49.95 EchoSearch fails miserably. After you enter a query, Echo-Search relays it to whichever engines support the particular syntax you used (or whichever engines you specify). Thus, if you enter Boolean terms (AND, OR), EchoSearch links to search pages that handle Boolean queries.

Any decent search tool would return a preview list of possible pages, as a search engine does. Not EchoSearch: Once it finds the number of replies you've specified, Echo-Search proceeds to download every page. The software has no preview mechanism and doesn't flag large downloads. After 20 minutes of thumbtwiddling, EchoSearch interprets the downloaded pages, compiling them into a list for you to browse. Unfortunately, though, the pages are not ranked by relevance, but-get this-alphabetically. Back to the drawing board is too good a destination for EchoSearch. Try the delete key.

-Richard Overton

## IBM AntiVirus Offers Internet Immunization

UTILITY COMPUTER viruses keep coming—more than 8000 at last count, with new ones every month. The popular antivirus utilities are essentially alike. The newest versions, including IBM's AntiVirus 2.5, serve as the first line of defense against viruses that attach to e-mail messages and other files you download from an online service or the Internet.

(For a look at the McAfee and Symantec products, see October's New Products.) At \$49, AntiVirus 2.5 is a bargain—it comes with versions for DOS, OS/2, Windows 3.1/95/NT, and Novell Netware in the same package. It also includes protection against those pesky and increasingly common Word and Excel macro viruses. The other notable new feature of AntiVirus 2.5 is com-

plete, integrated Internet protection. It works with all Web browsers and e-mail packages.

AntiVirus 2.5 labors unobtrusively and continuously in the background until it finds a virus. If you're especially cautious, you can also schedule automatic scans of your PC's memory and hard disks. This can be useful since many computer viruses, like organic ones, mutate these days. You can keep up on the latest viruses by downloading free updates to AntiVirus 2.5 from IBM's Web site.

—Stan Miastkowski

## AntiVirus 2.5

PRO: Fast, works with multiple operating systems.

CON: No automatic update like Norton AntiVirus 2.0.

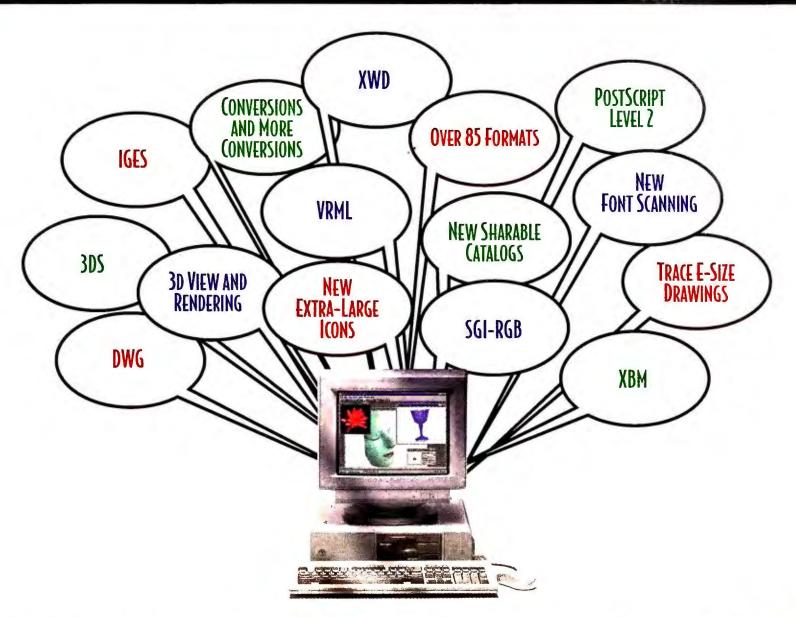
VALUE: Great value for the price. IBM

800/742-2493

http://www.brs.ibm.com/ibmav.html List price: \$49



#### QUARTERDECK®

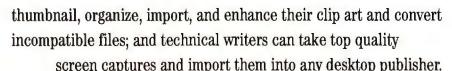


### CONVERT IT WITH HIJAAK PRO!

HiJaak PRO 4.0 is the professional 32-bit graphics toolkit for users working with Windows 95. It features top quality, fast image

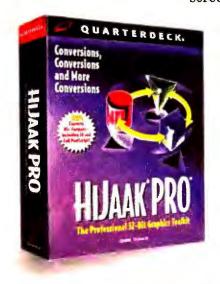
conversion, trace, and screen capture in over 85 raster, vector and metafile formats. It supports graphics view, print, find, enhance, thumbnail, catalog, browse and scan.

HiJaak PRO now also supports full PostScript Level 2 and five of the most common 3D formats: DXF, DWG, IGES, 3DS and VRML. HiJaak PRO makes it easy to accomplish any graphics task by providing shortcut menu access to HiJaak's most common graphics functions. Using HiJaak PRO, engineers can scan, trace, and catalog their legacy blueprints; graphics designers can



View 3D formats with user-selectable Point of View, and render 3D images in wireframe, flat, or gouraud shading. Using MDI, HiJaak PRO enables viewing of multiple images simultaneously. With the new font scanning utility feature, fonts that do not automatically register with Windows can be found and utilized. And with new support for extra large icons, you get thumbnails of images which are rich in detail and easy to see in the Windows 95 Explorer.

Call us at 1-800-683-6696 and ask for code 01200, or check out our website at http://www.quarterdeck.com/



Visit your nearest store or call (800) 683-6696 to order. Ask for code 01200.









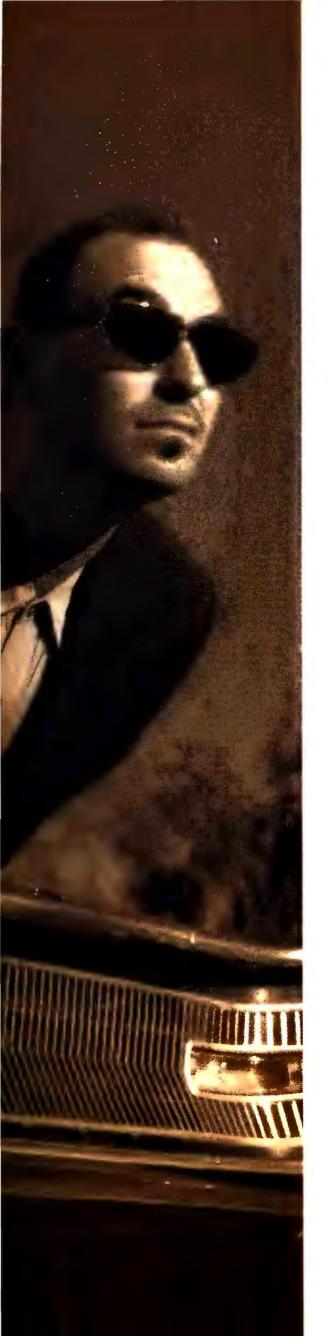
MICTO CENTER

## TO GET ANYWHERE NOWADAYS, YOU'VE GOT TO PUT YOURSELF OUT THERE.



for information on your nearest dealer, call 1-800-Hitachi (448-2244) Website address; www.HitachiPC.com

pentium



The New Hitachi E Series.

powered by an Intel Pentium

Processor, up to 133 MHz.

## Introducing the HITACHI E SERIES.

It's pretty clear what the rules are now: 1. If you stand still, you lose. 2. Your office isn't some set place. It's wherever you have to be to do your job. 3. Being away is no excuse for not being on top of it. A daunting state of affairs. Unless you're properly equipped—with Hitachi Mobilized Computing<sup>™</sup> technology.

The latest manifestation of the concept is the new Hitachi E Series notebook. Each arrives wired for the world. Since futzing with computers is not what you want to

of communications software comes entirely pre-configured.

do in the far reaches, our array

And the integrated 28.8 U.S. Robotics

modem, being an industry standard, connects you glitch-free to anywhere via the Net, online services, or two-way fax.

Meanwhile, we never ask you to sacrifice utility for mobility. The slim E Series case is packed with critical features. The screen is 11.3" and driven by one of today's fastest graphic accelerators for dazzling presentations. The hard drive pops out for security and upgrades. And the floppy drive swaps for a second battery, doubling power duration.

Yet, for all of the above, there is one thing about the new Hitachi E Series that's not out there: The cost. With a price starting at just \$1999,\* it is a notably excellent value. Thus adhering to standing rule 4, don't blow your money.

There was a time in business when you were expected to drag your way to the top. The idea of Mobilized

Computing is to just cruise there.

\*Estimated street price. Dealer prices may vary. ©1996 Hitachi PC Corporation (USA). All rights reserved. The Hitachi E Series, Mobilized Computing and Remote Control are trademarks of Hitachi PC Corporation (USA), which may be registered in some jurisdictions. The Intel Inside Logo & Pentium are registered trademarks of Intel Corporation. All other marks are owned by their respective companies.

Remote Control

Circle 109 on reader service card

#### United Versus American: Airline Software

BOOK-IT-YOURSELF software seems like a natural: You do all the work electronically. United Airlines was first carrier to market, with its United Connection: then American Airlines introduced Personal AAcess. Each program offers a bonus 500 frequent flyer points each time you buy tickets online. (American will stop this benefit at the end of 1996.)

United Connection needs 8MB to 12MB of hard disk space, but packs most of its data online. For this reason, United Connection can't give quick information such as mileage between cities. The form in which you must input flight information is particularly rigid: either airport codes or full city name. You can't mix formats. After a flight is selected, if it's on United, you can check the seating chart for your aircraft and choose a seat.



BULKHEAD, PLEASE: United Connection shows you the layout of the plane, making it easier to find available seats in desirable spots.

The FareShop feature finds the cheapest fare for your itinerary. But you can't print a list of all available flights to a particular destination. Customizing user preferences is a bit tricky, since the menu is called "System Options."

I don't recommend this product. Online data transfers seemed slower than an airport check-in line, and the rigidity of United Connection's functionality was frustrating.

#### **AA'S LIMITED AACCESS**

THE LAST THING American Airlines' software provides is access. From its anemic documentation to its lame technical support online and over the phone, Personal AAccess

proved consistently inept.

Like United's program, the 10MB AAcess does most of its work with data stored on servers, so it's hard to get information quickly. And requests for the lowest prices were returned with full, not supersaver rates—when the software didn't crash. Houston, we have a problem.

-Michael S. Lasky

#### United Connection

PRO: Easy to use.

CON: Slow downloads; rigid format.

VALUE: Not worth the time.

United Airlines, Inc.

800/854-2112

http://www.ual.com

Price: \$24.95

#### READER SERVICE 0. 802.

#### Personal AAccess

PRO: None that we can find.

CON: Balky, confusing, inflexible.

VALUE: Not worth a cent.

American Airlines, Inc.

800/222-2377

http://www.americanair.com

Price: \$6.95 shipping and handling; must be an AAdvantage member.

READER SERVICE NO. 803

#### StreetFinder 1997 Edition: A Winner by a Mile

BUSINESS TRIPS can turn into treks that leave you longing for the days when Mom or

#### StreetFinder 1997 Edition

PRO: Gets you uptown, downtown, and out of town easily.

CON: You'll get back to the office in time for the staff meeting.

VALUE: Beats other products by a country mile.

Rand McNally

800/671-5006 ext. 450

http://www.randmcnally.com

Street price: \$50

READER SERVICE NO. 804

Dad drove the car and your only job was to keep sandwich crumbs off the backseat. To avoid travel foul-ups, invest in Rand McNally's StreetFinder 1997 Edition CD-ROM.

StreetFinder 1997 has accurate, detailed, and easy-to-print maps. You just input an address and check the map to find your way. Unfortunately, you can't enter two street addresses and ask for point-topoint directions. For disc space reasons, none of the similarly priced mapping CD-ROMs do this yet.

Still, StreetFinder 1997 for Windows 3.1 and 95 is a smart investment. For about \$49, you can view current information on hotels, restaurants, and attractions. Extensive business listings (about 1 million of them) in 37 categories let you find the necessities, such as the nearest dry cleaner, barber, or bank with an ATM machine. None of the competing products provide comparable listings.

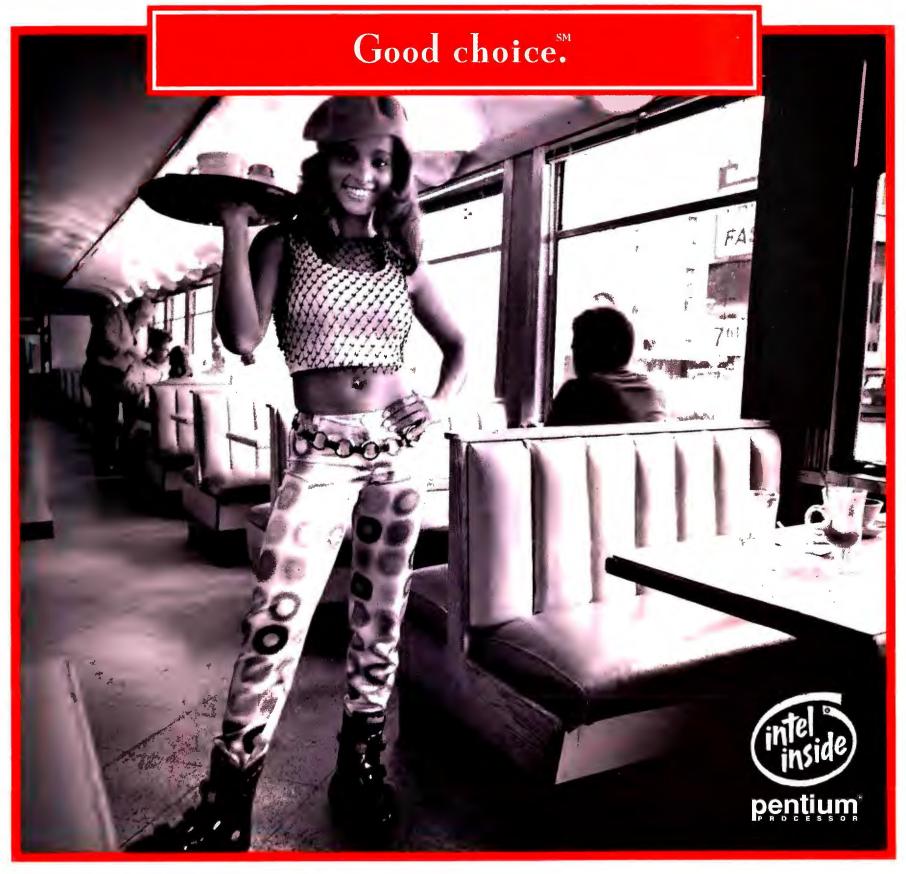
The new walking guide feature lets you create customized walking directions to

your office or other location.

To help keep you current, StreetFinder 1997 incorporates links to the Rand McNally Web site and selected travel sites. At the Rand McNally site, you'll find updates about road construction, weather reports, and notes on seasonal events.

For those occasions when you want to mix recreation with business, StreetFinder 1997 coordinates with Rand McNally's TripMaker 1997, a \$39 product for road-trippers that includes details on scenic drives and fun spots such as national parks.

-Laurianne McLaughlin



At Phil's Cafe, "Monday's Chef's Special" is the best choice. Now, we know that buying a computer is not quite as simple as choosing Phil's Special. By choosing Quantex, you're choosing a system loaded with the very best components and state—of—the—art technology. We're confident you'll find that Quantex is the right choice.

**Stellar performance.** At Quantex, we build powerful systems from an incredible range of high—end, brand—name—only components. Choose Quantex and precision performance is yours.

Precise engineering. Every Quantex system is meticulously engineered to work right out of the box. ISO 9002 certification of our manufacturing facilities is proof of our continued

conformance to the strictest of standards. Every system is 100% Novell certified too. Choose Quantex and you choose reliability.

State-of-the-art technology. When there's a dramatic

breakthrough in PC technology, Quantex knows about it first. For you, this means staying ahead of the pack. Choose Quantex and take the technology lead. Make the right choice. Give us a call today.





Let us amaze you with the first Video Phone PC for the home by Quantex. You pick up the telephone and dial your grandson in Scattle. He answers So far, nothing new. Now, you both

boot up your Quantex Video Phone PC with Intel ProShare™ technology which connects your two computers over a standard phone line. Before you can blink twice, his smiling face is displayed in the "Guest Window" on your PC screen. Presto! Simultaneous audio and video. Instant family reunion! An amazing phenomenon to share with your college—bound kids, distant friends, relatives and even your colleagues.

**Sound like incredible magic?** It is. And the magician is Quantex, working side—by—side with Intel to bring you the first Video Phoning available on a home PC! Previously available only to large businesses,

Video Phone is now standard fare with the Quantex QP5/VM-1 System. Video and voice over a single, plain old telephone wire. No installation struggles, and meticulously engineered for your Quantex

machine to give you true "plug and play" performance.

Amazing, don't you agree?

Tune in for Intercast™ technology brought to you by Quantex. With this new technology, not only can you watch TV on your PC, but you can actually interact with the programming through the engaging world of the Internet. Always the technology leader, Quantex adds the sophisticated



Grandparents enjoying their new Quantex Video Phone PC

Intercast experience to our already impressive QP5/VM-1 System making it a complete multimedia package. Integrating the latest technologies into systems is what we do best.

#### Upgrade specials

| MS Natural Keyboard (Upgrade from the 104-Key Keyboard). , , \$39                  |
|--|
| MS Sidewinder 3D Pro Digital Joystick  |
| ■ HP Color Deskjet 680c Printer (Covered by manufacturer's warranty only.) . \$319 |
| Altec Lansing ACS-400 Surround Sound Speakers                                      |
| w/ACS-250 Subwoofer  |
| (Upgrade from PCs with Altec ACS-40 Speakers)                                      |
| ■ Upgrade from 16MB EDO Memory to 32MB EDO Memory\$99                              |
| ■ 12X EIDE CD-ROM Drive  |

#### Strap yourself in for NEW! 3-D dazzle by FEATURING VIDEO PHONE

Quantex! Picture exquisitely vivid, true-color images, "reach out and touch it" depth, flawless resolution, smooth as silk video playback, and you're talking 3-D dazzle from Quantex. Our 3-D offering delivers a breathtaking arcade gaming experience and will enhance all your Windows 95° 3-D-based applications. Add in the new Altec™ Lansing 40 or 45 speakers and the new ENSONIQ™ VIVO-90 32-bit wavetable synthesizer with a mind-blowing 90dB of digital audio for the highest quality sound, and you're cookin' in a whole new dimension.

Tired of being limited to connecting only a handful of crucial peripherals? You should be! With only a precious few serial ports, and an ever increasing amount of new peripherals, the current systems simply can't accommodate. Introducing Universal Serial Bus (USB), the new standard for connecting up to 127 desktop peripherals such as keyboards, monitors, cameras, touchpads, etc. Quantex's "USB ready" systems are among the first to take advantage of this new enabling technology. Quantex is also pioneering the use of the new FAT 32 technology, which accommodates virtually any size hard drive without partioning. Now let your entire system, including your hard drive, push the limits of potential, further.

Biggest. Best. Brightest. We bring them to our customers, first. Quantex. Good Choice.





#### QP5/133 VM-1

- Intel® 133MHz Pentium Processor
- 16MB EDO Memory / 512KB Pipelined Burst Cache
- 2.1GB EIDE Mode 4 Hard Drive
- 3.5" 1.44 MB Floppy Drive
- Diamond Stealth 3D 2000 w/4MB EDO DRAM
- MAG 15" .25dp Digital Monitor (14.0" viewable) w/SONY Trinitron Tube
- Intel DSVD 28.8 Kbps Fax/Modem
- Toshiba 8X 135ms EIDE CD-ROM Drive
- Ensoniq VIVO-90 32-Bit Wavetable Synthesizer
- Altec Lansing ACS-45 Speakers w/Subwoofer
- 104-Key Keyboard With MS PS/2 Mouse
- MS Windows '95 With MS Plus
- Family Software Bundle (Preinstalled)
- Special VideoPhone and Intercast Bundle
- Video Phone Camera
- Intel Video Capture Card w/TV Tuner
- 3-year limited Warranty

| QP5/166 | <b>VM-1</b> | \$2149 |
|---------|-------------|--------|
| QP5/200 | <b>VM-1</b> | \$2249 |

#### ■ 16MB EDO Memory / 512KB Pipelined Burst Cache ■ 1.6GB EIDE Mode 4 Hard Drive

- Intel 133MHz Pentium Processor

- 3.5" 1.44MB Floppy Drive
- STB Powergraph 64-Bit 3D w/2MB EDO DRAM
- MAG 15" .25dp Digital Monitor (14.0" viewable) w/SONY Trinitron Tube
- 33.6 Kbps Fax/Modem w/Voice Mail and Speakerphone
- Microsoft Phone Telephony Software 1.0
- Toshiba 8X 135ms EIDE CD-ROM Drive
- Ensonig VIVO-90 32-Bit Wavetable Synthesizer
- Altec Lansing ACS-40 Speakers
- Mini-Tower Case
- 104-Key Keyboard With MS PS/2 Mouse
- MS Windows '95 With MS Plus
- Family Software Bundle (Preinstalled)
- 3-year limited Warranty

| QP5/120 | M-2 | \$1 | 599 |
|---------|-----|-----|-----|
| QP5/150 | M-2 | \$1 | 749 |

#### QP5/166 M-3 \$2149

- Intel 166MHz Pentium Processor
- 16MB EDO Memory / 512KB Pipelined Burst Cache
- 2.5GB EIDE Mode 4 Hard Drive
- 3.5" 1.44MB Floppy Drive
- STB Lightspeed 128-Bit w/2MB MDRAM
- MAG 17" Digital Monitor (16.1" viewable)
- 33.6 Kbps Fax/Modem w/Voice Mail and Speakerphone
- Microsoft Phone Telephony Software 1.0
- Toshiba 8X 135ms EIDE CD-ROM Drive
- Ensonia VIVO-90 32-Bit Wavetable Synthesizer
- Altec Lansing ACS-40 Speakers
- Mini-Tower Case
- 104-Key Keyboard With MS PS/2 Mouse
- MS Windows '95 With MS Plus
- Family Software Bundle (Preinstalled)
- 3-year limited Warranty

| QP5/133 | M-3 | <br> | <br>   |   | , | \$      | 9. | 4 | 9 |
|---------|-----|------|--------|---|---|---------|----|---|---|
| QP5/150 | M-3 | <br> | <br>٠. | • |   | \$<br>2 | 0  | 4 | 9 |

#### **Family** Software Bundle

- Novell PerfectHome
- Quicken SE
- Comptons Interactive Encyclopedia
- Comptons Zoo Explorer
- Comptons Reference Collection
- BodyWorks 5.0
- Me & My World Multimedia Dictionary
- Meddermedia's Official Internet World™ Internet Yellow Pages
- The Modern Age Books Windows95 Primer
- America Online, Prodigy, CompuServe-(one month trial each)
- NetCruiser Plus (Over 400 hrs of free Internet access for one month)
- Microsoft Internet Explorer 2.0

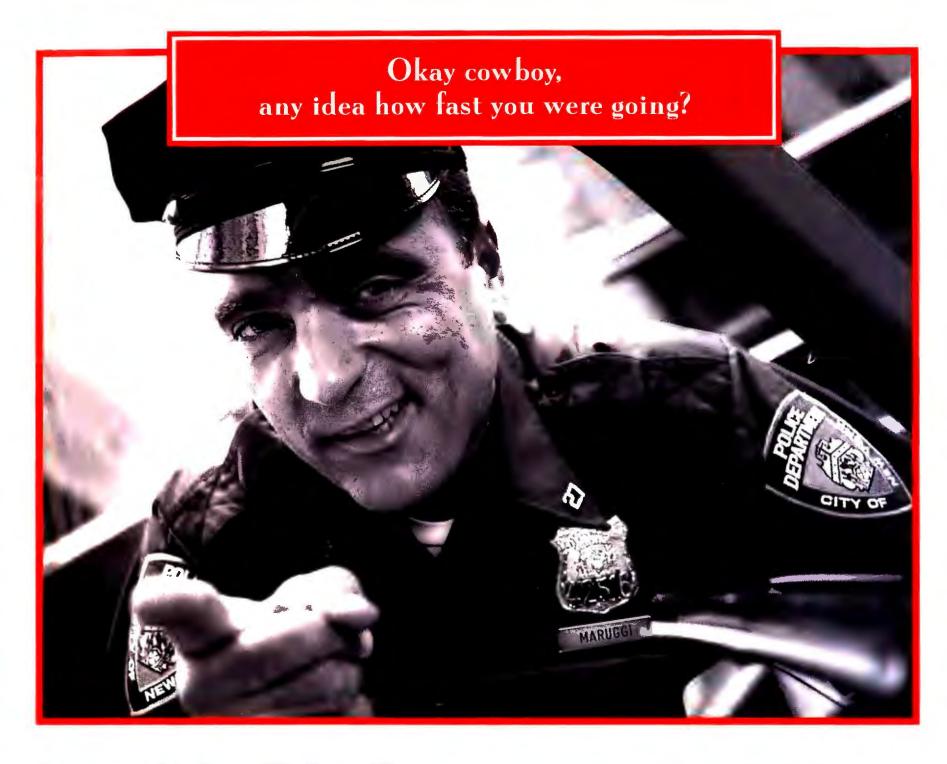
#### QP5/200 M-4 S2399

- Intel 200MHz Pentium Processor
- 32MB EDO Memory / 512KB Pipelined Burst Cache
- 3.2GB EIDE Mode 4 Hard Drive
- 3.5" 1.44MB Floppy Drive
- Diamond Stealth 3D 2000 w/4MB EDO DRAM
- MAG 17" Digital Monitor (16.1" viewable)
- 33.6 Kbps Fax/Modem w/Voice Mail and Speakerphone Add Motorola ISDN Terminal Adapter for \$249
- Microsoft Phone Telephony Software 1.0
- Toshiba 8X 135ms EIDE CD-ROM Drive
- Ensonig VIVO-90 32-Bit Wavetable Synthesizer
- Altec Lansing ACS-45 Speakers w/Subwoofer
- Mini-Tower Case
- 104-Key Keyboard With MS PS/2 Mouse
- MS Windows '95 With MS Plus
- Family Software Bundle (Preinstalled)
- 3-year limited Warranty

| QP5/133 | M-4 |   |  |  |  |   | 5  | 2 | U | 9 | 9 |  |
|---------|-----|---|--|--|--|---|----|---|---|---|---|--|
| QP5/166 | M-4 | • |  |  |  | • | \$ | 2 | 2 | 9 | 9 |  |



GOOD CHOICE

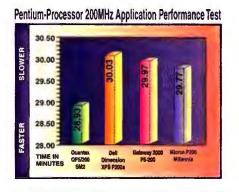


Fasten your seatbelt, the 200 MHz Pentium® Processor-based PC by Quantex blows by the competition! Quantex has done it again. Our 200MHz Pentium® processor-based PC is fast.

As a matter of fact, it's the fastest out of a field of the top 6 PC manufacturers! Quantex is proud to bring you its "Fastest of the Fast" featuring Intel's champion — The 200 MHz Pentium chip. This star—studded machine flies through any challenge you can invent — a monster QuattroProtim file containing your 5—year business plan, this year's annual report with full—color graphics, or your new business pitch in dazzling multimedia.

How do we do it time and again? Simple. Meticulous engineering. Only the best components, carefully combined to

maximize the performance of the whole. Then test, Refine. And test, again. We do it better than anybody. Review our stats in the recent PC World "shoot-out" and compare.



\*Based on the combined test times of the following applications: Word 7.0, Excel 7.0, Picture Publisher 6.0, Paradox 5.0, WordPerfect 6.1 and 1-2-3 release 5. Tests conducted by PC World, July, 1996 issue.

Quantex. Still winning the race for speed with the NEW! 200 MHz Pentium processor—based PC.

#### Quantex goes the extra mile with STB's<sup>®</sup> Lightspeed 128-Bit Video<sup>tm</sup>.

When you choose Quantex, you choose top-ofthe-line technology. Instead of some plain vanilla video card, we go the extra mile to bring you the fastest 128-bit Windows® and multimedia graphics

accelerator in the world, according to WinBench® '96! The Lightspeed 128-Bit Video Card—PC World's "Best Buy," August '96—is based on the award—winning ET6000™ chip set. This impressive video accelerator

#### Upgrade specials

harnesses the power of Multibank™ DRAM and an 800MB per second transfer rate. The STB Lightspeed 128-Bit Video produced a staggering Graphics Winmark '96 score of 44.2 blowing the others away. It handles multiple video windows with ease, and delivers the performance you need for today's challenging business and entertainment software. So, for your most demanding applications, instead of chugging along in a Model-T, you can fly at the speed of light!

Back-Up Your Crucial Data In Style with the NEW! PD Drive from Panasonic. As always,

Quantex offers the best components from the leaders in technology. The PD Drive from Panasonic is the most popular and versatile back-up and retrieval device on the market today. Its capacity is a whopping 650MB (equal to 464 3.5" floppies). The PD has a 30-year life expectancy -6 times longer than traditional media. And, catch this, it allows up to 500,000 rewrites! The recent PC Magazine's Editors Choice award proves it's the best back-up device on the market. And, oh by the way, did we mention it also plays your favorite CD's? Choose Quantex and give your valuable data the back-up it deserves.

#### The Professional's Choice:

First in speed.

First in components.

Quantex. Good Choice.





#### **QP5/120 SM**

- Intel 120MHz Pentium Processor
- Intel 430VX PCI Chip Set
- 16MB EDO Memory / 256KB Pipelined Burst Cache
- 1.6GB EIDE Mode 4 Hard Drive
- 3.5" 1.44MB Floppy Drive
- STB Powergraph 64-Bit w/2MB EDO DRAM
- MAG 15".28dp Digital Monitor (13.9" viewable)
- 33.6 Kbps Fax/Modern w/Voice Mail and Speakerphone
- Microsoft Phone Telephony Software 1.0
- Toshiba 8X 135ms EIDE CD-ROM Drive
- Ensonig VIVO-90 32-Bit Wavetable Synthesizer
- Digitally Controlled Stereo Speakers
- Mid-Tower Case
- 104-Key Keyboard With MS PS/2 Mouse
- MS Windows '95 With MS Plus
- Professional Software Bundle (Preinstalled)
- 3-year limited Warranty

| QP5/133 | 3 SM |   |   |   | .\$1 | 649 |
|---------|------|---|---|---|------|-----|
| QP5/150 | ) SM | • | • | • | .\$1 | 749 |

#### **QP5/166 SM-2 S2**

- Intel 166MHz Pentium Processor
- Intel 430VX PCI Chip Set
- 32MB EDO Memory / 512KB Pipelined Burst Cache
- 2.5GB EIDE Mode 4 Hard Drive
- 3.5" 1.44MB Floppy Drive
- Diamond Stealth 3D 2000 w/4MB EDO DRAM
- MAG 17" Digital Monitor (16.1" viewable)
- 33.6 Kbps Fax/Modem w/Voice Mail and Speakerphone
- Microsoft Phone Telephony Software 1.0
- Toshiba 8X 135ms EIDE CD-ROM Drive
- Ensonia VIVO-90 32-Bit Wavetable Synthesizer
- Altec Lansing ACS-45 Speakers w/Subwoofer
- Mid-Tower Case
- 104-Key Keyboard With MS PS/2 Mouse
- MS Windows '95 With MS Plus
- Professional Software Bundle (Preinstalled)
- 3-year limited Warranty

| QP5/133 | SM-2 | <br>\$2099 |
|---------|------|------------|
| QP5/200 | SM-2 | <br>\$2399 |

#### **Professional** Software Bundle

- Corel WordPerfect Suite: Corel: WordPerfect 7, QuattroPro 7, CorelFlow 3, Presentation 7, Screen Saver, SideKick 95,150 Fonts, Dashboard 95, Envoy 7, Netscape (AT&T WorldNet Services): 10,000 Clip Art Images
- Corel: Internet Mania, Print House
- Quicken SE
- Comptons: Interactive Encyclopedia, Reference Collection
- Resume Designer
- Meddermedia's Official Internet World™ Internet Yellow Pages
- The Modern Age Books Windows95 Primer
- Key Master Maps
- America Online, Prodigy, CompuServe-(one month trial each) NetCruiser Plus (Over 400 hours of free Internet access for one month)
- Microsoft Internet Explorer 2.0

#### QP5/133 SM-1 \$1799

- Intel® 133MHz Pentium Processor
- Intel 430VX PCI Chip Set
- 24MB EDO Memory / 512KB Pipelined Burst Cache
- 2.1GB EIDE Mode 4 Hard Drive
- 3.5" 1.44MB Floppy Drive
- STB Lightspeed 128-Bit w/2MB MDRAM
- MAG 15". 25dp Digital Monitor (14.0" viewable) w/SONY Trinitron Tube
- 33.6 Kbps Fax/Modern w/Voice Mail and Speakerphone
- Microsoft Phone Telephony Software 1.0
- Toshiba 8X 135ms EIDE CD-ROM Drive
- Ensoniq VIVO-90 32-Bit Wavetable Synthesizer
- Altec Lansing ACS-45 Speakers w/Subwoofer
- Mid-Tower Case
- 104-Key Keyboard With MS PS/2 Mouse
- MS Windows '95 With MS Plus
- Professional Software Bundle (Preinstalled)
- 3-year limited Warranty

| QP5/166 | SM-1 | <br>\$1999 |
|---------|------|------------|
| QP5/200 | SM-1 | <br>\$2099 |

#### QP6/200SM-3 S2749

- Intel 200MHz Pentium Pro Processor
- Intel 440FX Chip Set
- 32MB EDO Memory / 256KB Internal L2 Cache
- 3.2GB EIDE Mode 4 Hard Drive
- 3.5" 1.44MB Floppy Drive
- STB Velocity 3D Graphics Accelerator w/4MB VRAM Upgrade to Matrox MGA Millennium w/4MB WRAM for \$50
- MAG 17" Digital Monitor (16.1" viewable)
- 33.6 Kbps Fax/Modem w/Voice Mail and Speakerphone Add Motorola ISDN Terminal Adapter for \$249
- Microsoft Phone Telephony Software 1.0
- Toshiba 8X 135ms EIDE CD-ROM Drive
- Ensoniq VIVO-90 32-Bit Wavetable Synthesizer
- Altec Lansing ACS-40 Speakers w /ACS-250 Subwoofer
- ATX Tower Case
- 104-Key Keyboard With MS PS/2 Mouse
- MS Windows '95 With MS Plus
- Professional Software Bundle (Preinstalled)
- 3-year limited Warranty

QP6/180 SM-3 ......\$2649

For information on non-multimedia Pentium workstations, consult with your sales representative.



GOOD CHOICE.





Wish you could find a computer company who cares about you after the sale? At Quantex every computer we sell is backed by one of the best support programs in the business. We call it our "Quantex Care Package." touting a NEW! 3-year limited warranty (call or write for a free copy) on all Quantex systems, one—year

on-site service\* (4 year on-site warranty from GE is optional), a comprehensive 30 Day Money Back Guarantee, a one-year limited express parts replacement warranty, and over 150 highly skilled reps available to serve you, toll-free. This is a company you can count on

#### So, if you're ready to get down to business, we sure are.

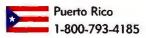
No fluff. No camouflage. No cows (Ve promise.) We know what you want, and we offer it in a reliable, fully-tested system that addresses your needs. At a competitive price. Period.

Give us a call today. We'll process your order in a snap, or if you want to know more about the finer details of any specific system, we can do that, too. Phone just about anytime-9am 'til midnight weekdays, and 9 am-6 pm Saturday. Quantex. We care about you. Good choice.

© 1996 Quantex Microsystems, Inc. All Rights Reserved. 400B Pierce Street, Somerset NJ 08873. Sales Hours: M-E, 9 am - 12 am - Sat, 9 am - 6 pm (ET) All sales are subject to Quantex limited warranties and terms and conditions of sale. For details on our warranty or money-back guarantee call or write us MAG monitor covered by manufacturer's 3-year warranty. Three-year limited warranty includes first year, limited parts and labor. Second and third years, parts-only limited warranty. \*On-site service may not be available in certain remote areas, and is available only if determined necessary cians. Software titles are subject to change and cannot be substituted. All prices and configurations are subject to change without notice or obligation and do not include shipping or sales tax. tems must have a conspicuous RMA number issued by Quantex and be In original packaging 30-day money-back policy does not include return freight or original shipping/handling charges Quantex is not responsible for errors in typography or photography Pentium, Intel. Intercast and the Intel Inside logo are registered trademarks of Intel. Microsoft, and Windows are registered trademarks of

Microsoft Corporation. All other company trademarks are tradenames of each respective company







SPECIAL REPORT

HE WEBAND YO

# Web Publishing

- 112 Ten Web Elements We Love to Hate
- 114 Resources for Web Publishers
- 116 Beyond Web Publishing 101

#### Also inside:

Tips for setting up your Web site, design do's and don'ts, and resources and tools to check out.

How to set up a great Web site, from finding the right ISP to monitoring traffic and links.

By Yael Li-Ron

ILLUSTRATIONS BY DOUG ROSS

SO IT'S COME TO THIS. You're the only caterer in town without a World Wide Web address on your menu. Maybe you've exhausted all your sales leads and you need to introduce your services to clients around the country. Or maybe you've just had a baby and you want to share photos with relatives all over the world.

It's time you got a Web site.

## Made Easier

FORTUNATELY, ANYBODY WITH basic word processing skills can create a Web site, and just about anybody can afford to do so. If you've already got Internet access, chances are you're halfway to being a Web publisher.

But if building a Web page is worth doing, it's worth doing right. You have to evaluate your needs. How lavish do you want your site to be? How often will you update it? Would pictures help get your point across?

And once you've built your site, you need to nurture it. How will visitors find you in that sea of information known as the Internet? And if they do find you, how will you know they visited?

Follow the steps outlined below, and you'll be exploiting the riches of the Web in no time. If you're looking for a robust publishing tool, see our review of Web authoring packages, "Web Software for the Rest of Us," in this issue.

#### Step 1: Make the Right Connection

BEFORE YOU CAN START publishing on the Web, you need to have Internet access, either through a commercial online service such as America Online, or through an Internet service provider such as Netcom.

Commercial online services let you publish Web pages easily and at no extra cost. America Online and CompuServe offer wizardlike programs that guide you through the process. AOI's version produces cookie-cutter Web pages that all look pretty much alike, while Compu-Serve's is more flexible. Prodigy offers a robust set of authoring tools to help make your site stand out.

With Internet service providers, you create the site using your own set of tools and then send the finished product to your ISP. But there is a host of questions you should ask when selecting an ISP for this purpose.

Look for a provider that can give you the server space you need. If you have ambitious plans for your site, go with a provider that offers a lot of space. Typically an ISP will give you 1MB to 25MB of space as part of the monthly fee.



Also check to make sure your ISP has a high-speed T1 or T3 connection so visitors to your site won't have to wait too long to see your pages. The provider should also support ISDN just in case you and the bulk of the Web-surfing world decide to make that shift.

If you have Web access but don't have your own Internet account, log on to PC World Online and use our ISP Finder (http://www.pcworld.com/nov96/isp .html) to locate a provider in your area. You can also refer to our how-to article on finding the right ISP ("The No-Nonsense Guide to Internet Providers," July). Many online services and national providers offer a free trial period, so take them up on it.

#### Step 2: Choose the Right Tool

WEB PAGES CAN BE as simple as straight text or as complex as an interactive multimedia game. But at the heart

#### Ten Web Elements We Love to Hate

NOW THAT ANYBODY AND THEIR SCHNAUZER can have a Web page, there are thousands of truly appalling sites on the Web. Here are the most pain-inflicting Web elements arounduse them at your peril.

- 1 THE DRAMAMINE EFFECT. Ticking, blinking, moving, scrolling. These cool new effects are all over the Web. But don't use too many, and don't put them too close together-unless you want to nauseate your visitors.
- 2 STILL UNDER CONSTRUCTION AFTER ALL THESE YEARS. Nothing says "slacker" louder than a perpetual Under Construction sign. If you can, avoid using that notorious yellow icon altogether.
- 6) GIVE YOUR LANGUAGE IT'S DO RESPECT. Not everybody is a writer, but that doesn't mean you should subject your visitors to poor language. Run your Web page through a spelling and grammar checker. When in doubt, have a friend critique your language.
- O AND THE BANDWIDTH PLAYED ON. Most Web crawlers use slow connections, 28.8kbps modems if they're lucky. Don't overload your page with large graphics that take forever to load, or you'll paint yourself into a deserted corner of cyberspace.
- 6 http://www.been-there-done-that.com. By now everybody's seen Yahoo, and they've all visited the White House. If you must have a list o' links, come up with unique ones.
- 6 THE BROKEN ARROW. Check the links on your page as often as you can to make sure they're not "broken." People won't forgive too many instances of 'Error 404: Not Found'.
- **O** KEEP IT BRIEF. If you must post your latest 28,000-word manifesto online, package it in small chunks. Provide links to the different areas of a document on the opening page and let people click their way into it, one portion at a time.
- 1 SOMEWHERE ALL OVER THE RAINBOW. If you're color challenged, conduct an informal beta test: Invite colleagues and friends to look at your slick color scheme (green text on a dark purple background) and gauge their aspirin intake afterwards.
- 1 THE FLASHER. Does the world really need to see pictures of your significant other and your schnauzer? If you're about to expose yourself, set up a warning page telling visitors that by selecting the following link, they'll find out more about you than they need to know.
- MILL THE NOISE. Now that Web pages can play background music, some people think that the surfing experience isn't complete without their favorite rendition of "Louie, Loule" (sung by the significant other and accompanied by the schnauzer). Wrong.

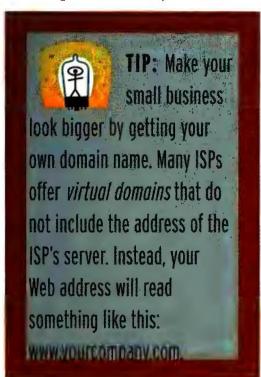


After you've mastered using your word processor as a Web authoring tool, you'll probably want to step up to a full-fledged publishing tool. Programs such as Microsoft's FrontPage and Netscape's Navigator Gold provide you with better flexibility because they support many advanced features. These programs also come with additional tools for posting and managing your Web pages. Many Web authoring packages are available, each with its own pros and cons. For a rundown on which of them may best

of each page on the Web lies a simple foundation called Hypertext Markup Language. Despite its name, HTML is not really a programming language. It's a collection of tags in what is just a text document; the tags tell Web browsers how the text and graphics in your page are supposed to look and act. For instance, <a href="books.htm">Books</a> displays the word Books with a link to another Web page.

Most of us already have a Web authoring tool that shields us from HTML-it's our word processor. Today, the major Windows 95 word processors (Word 7.0 for Windows 95, Word Pro 96, and Corel WordPerfect 7.0) include add-ins for turning documents into Web pages.

For beginners, word processors and their add-ins make the best Web authoring tools—not because they're especially full-featured, but because they're free and simple to learn. If you use one of





CREATING A WEB PAGE in Word 7.0 (with the Internet assistant add-in) is as easy as creating a document. The difference from regular word processing is in the Save As menu (not shown) and a few unique buttons on the toolbar.

these word processors, you already know how to use its Web tool because the toolbars and menus are nearly identical. Just create a document in your word processor the way you normally do, keeping in mind that you're creating it for the graphically rich Web. When you're done, save it as an HTML file.

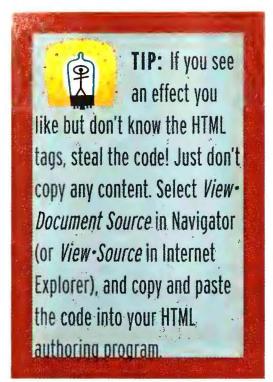
What types of pages can you build with your word processor? Any page that includes text, graphics, tables, and other Web features, including forms and buttons. In theory, you could even create PC World Online's home page. The parent.hood site featured in this month's review of Web authoring tools took 30 minutes to make using Microsoft Word's Internet assistant (not counting the time it took to create the graphic).

suit your needs, see "Web Software for the Rest of Us" in this issue.

#### Step 3: Add Content and Stir

SIMPLY PROVIDING your company's profile, your favorite hobbies, or pictures of your dog on the Web is just a start. Chances are you can enhance your site with loads of important information already in your files.

If you have a business, you might want to post catalogs and price lists online. Such data is normally found in spreadsheets and databases, and there are several tools for easily converting these files to HTML. Most obvious are HTML addins designed for application suites, such as Microsoft's Internet assistants for



the Office 95 apps. The Excel Internet assistant takes a cell range and converts it into an HTML table, along with some of the formatting, including cell colors. Access's assistant converts a table or query to HTML. These assistants are free from Microsoft's Web site (http:// www.microsoft.com/msdownload).

Another great tool is PC World's free Universal Spreadsheet Converter, which converts input from any brand of spreadsheet to HTML tables. Visit http:// www.pcworld.com/cgi-bin/tabdemo.pl to try it out.

Keep in mind that most tables created with HTML conversion tools are static, so users can't modify them in any way, and whenever the data changes you need to post another version of the table online. If you're an Excel user and need a more dynamic, interactive solution, consider posting the Excel file itself online and encouraging your visitors to download the free Excel viewer from Microsoft's Web site. With this viewer, your visitors can manipulate the table from within their Web browser or wait to view it when they're offline.

If you're running a business, you'll want to start thinking about how potential customers can interact with your site. For example, you may want visitors to fill in a form with information that's posted automatically to a database you can draw on for your marketing campaigns.

You'll need a specially written program

to do these things. Web programs are created in either Computer Gateway Interface scripts, Java, JavaScript, VBScript, or some other high-end programming language. You'll probably want to hire a programmer to create such programs, and if you decide to use CGI, make sure your ISP allows CGI scripts (few do).

#### Step 4: Make It Lively

THE SAME PEOPLE who'd sit through a lengthy newspaper article and savor every word will ignore that article if it's posted online. On the Web, time is literally money, and most of us have the attention span of a mosquito.

Liven up your text with graphics, clever designs, and a few moving parts. But be careful. Like makeup, these ornaments should be used sparingly. Pile too many on, and your page will look like Tammy Faye Bakker on a bad hair day. See "Ten Web Elements We Love to Hate" for tips on avoiding that look.

Here are a few bare necessities for adding pizzazz to your Web page.

GRAPHICS SOFTWARE: There are lots of sites on the Web where you can find free graphics to include in your Web site (see "Resources for Web Publishers"). But if you want to create your own graphics, you'll need to invest in a package that supports JPEG and GIF, the most popular Web graphics formats. Even if you can't draw a stick figure to save your life, some of these programs are clever enough to do it for you, making you look like a pro.

Among the best of breed are JASC's PaintShop Pro 4.0, a program that rivals competing high-end graphics products; Adobe's PhotoDeluxe, which is perfect if you've never used a paint program before because it literally paints for you; and Corel's CorelWeb.Graphics

#### Resources for Web Publishers

NEW WAYS TO IMPROVE YOUR WEB SITE are always popping up, including updates to HTML. Here are some of our favorite Web resources, plus a few sites that let you download free graphics.

#### **WEB SITES**

| Doctor HTML                      | http://imagiware.com/<br>RxHTML/                                      | A thorough HTML syntax checker, which also checks for broken links and spelling errors. |
|----------------------------------|---|---|
| Introduction to HTML             | http://www.cwru.edu/help/<br>introHTML/toc.html                       | An interactive tutorial for<br>beginners and intermedi-<br>ate users.                   |
| The Web Designer                 | http://web.canlink.com/<br>webdesign/nl.htm                           | Everything you need to know about creating and maintaining a Web site.                  |
| The Background<br>Sampler        | http://home.netscape.com/<br>assist/net_sites/bg/<br>backgrounds.html | Background GIFs for your<br>HTML documents.   |
| Randy's Icon and<br>Image Bazaar | http://www.iconbazaar.com   | Lots of free, cool graphics and icons for your site.                                    |

| ***************************************   | ennennennenggangenennetgenggenenggenenggengskingsanglacestandsockendereda |
|---|---|
| Web Publishing With Word, Asha  | An easy-to-follow tutorial for using                                      |
| Dornfest, Sybex, 800/227-2346, 1996,  | Word's Internet assistant as your   |
| \$24.99   | HTML authoring program.   |
| HTML for Dummies, Ed Tittel and Steve<br>James, IDG Books, 800/762-2974, 1996,<br>\$29.99 | Might as well have fun while you're learning HTML.                        |
| How to Use HTML 3, Scott Arpajian,  | Step-by-step instructions cut down  |
| ZD Press, 800/688-0448, 1996, \$24.99   | the learning curve in no time.  |

## Simply ensationa



You'll notice it right away.

A sleek, new cabinet housing a high-resolution 15-inch (13.6-inch viewable diagnonal) multimedia monitor. This elegantly designed enclosure is only half the beauty of this model, however. The VSx-5 has a crisp .28mm dot pitch, an image resolution of up to 1280 x 1024 pixels, and speakers that will blow you away.

Best of all, it's priced to give you the best price/performance ratio available. For more information, call us today.

Once you see it, you'll agree that the newest member of our Visual Sensations™ family is simply sensational.

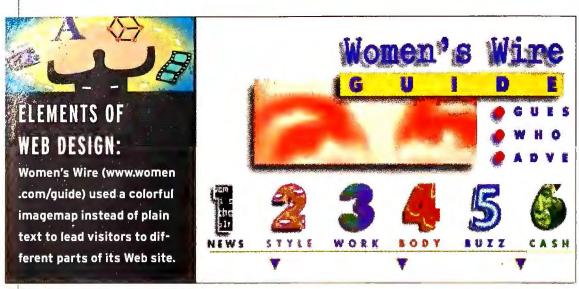
> For full product information check out our web site at http://www.kdsusa.com, For faxed documents, call our Fax Back service at (800) 551-2589.





12300 Edison Way, Garden Grove, CA 92641 (714) 379-5599 • FAX (714) 379-5595 O 1996 KOREA DATA SYSTEMS CO. LTD

Circle 170 on reader service card



Suite, a package of utilities especially for Web designers.

■ CorelWeb.Graphics Suite \$199; Corel; 800/772-6735

READER SERVICE NO. 785

■ PaintShop Pro 4.0 \$69; JASC; 800/622-2793

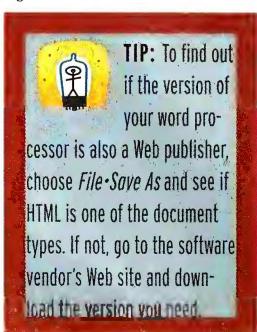
READER SERVICE NO. 786

■ PhotoDeluxe \$85; Adobe; 800/888-6293

READER SERVICE NO. 787

GRAPHICS HARDWARE: Some sites, such as a real estate page or a missing children bulletin board, call for actual photos, not just graphics. If that applies to your site, consider investing in a scanner or digital camera.

Polaroid's PhotoPad and Epson's PhotoPlus are compact scanners that connect to your computer's parallel port and turn your photographs into electronic files at the touch of a button. A scanner is a good idea for small Web sites that feature only a few photos because scanners are less expensive than digital cameras.



If you want to skip going to your local Fotomat, digital cameras like Epson's PhotoPC and Kodak's DC20 Camera store photos in RAM. Consider using a digital camera if your Web site calls for many photos that need constant updating. You'll end up saving money on film and processing, and you won't have to wait to get your pictures developed.

■ Epson PhotoPlus \$199, PhotoPC \$499; Epson; 800/289-3776

■ Kodak DC20 Camera \$350; Eastman Kodak; 800/235-6325

READER SERVICE NO. 789

■ Polaroid PhotoPad \$299; Polaroid; 800/ 662-8337

READER SERVICE NO. 790

☐ ANIMATION SOFTWARE: With all the talk of using Java and other add-ons to bring Web pages to life, you should know that there's an easier way to animate your Web pages. Animated GIFs are a series of static graphics files shown in rapid succession to create the illusion of an animation. These animations are much smaller than AVI or QuickTime video files, and are becoming the Web's animation standard. One of the most popular GIF animators is Alchemy Mindworks' \$25 GIF Construction Set. Another is Pedagoguery Software's \$28 Gif.gIf.giF. Both are available as shareware on PC World Online.

If you like the idea of Java but don't like the taste, try Anawave Software's

#### **Beyond Web Publishing 101**

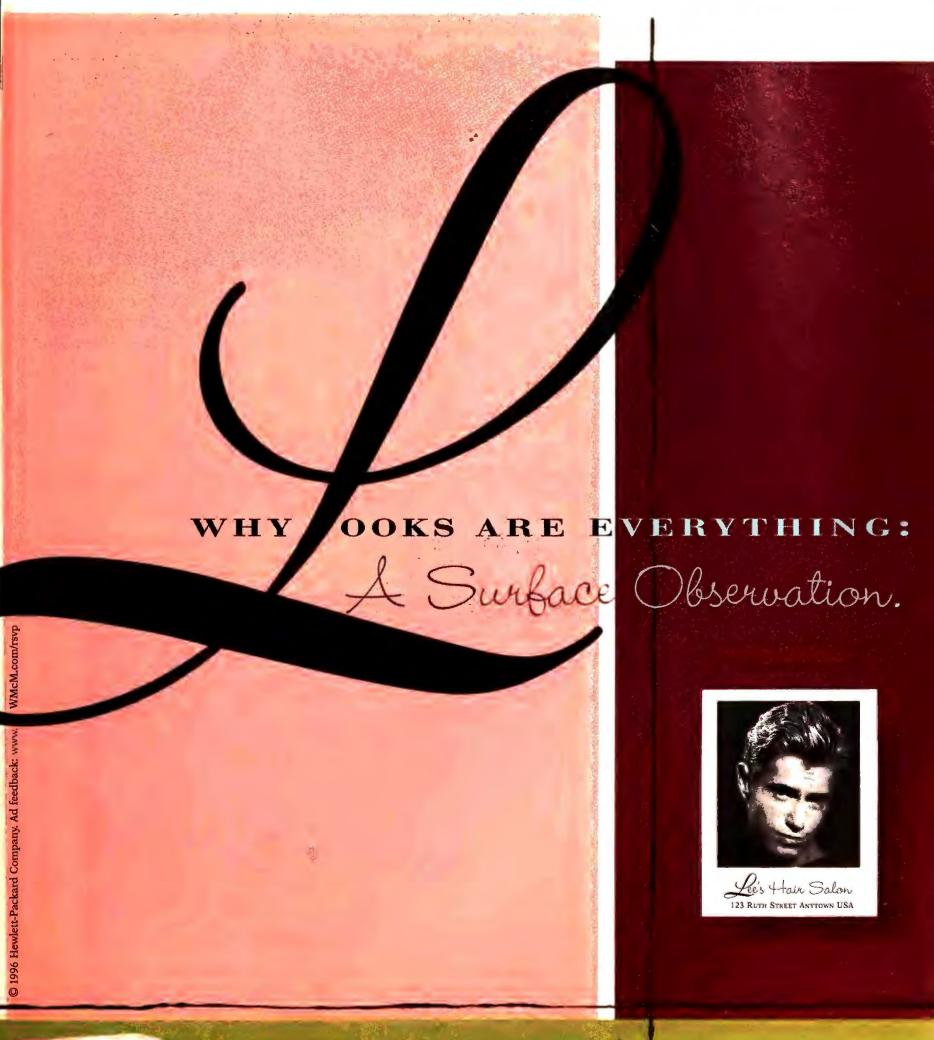
SOME OF THE MOST TALKED-ABOUT technologies of the nineties are evolving on the Web: Java, ActiveX, and VRML. Their cutting-edge effects can mean the difference between dull, static pages and exciting, appealing ones, but they're for advanced Web publishers.

JAVA: Sun Microsystems' programming language for the Internet is platform independent, which means applications created with Java (usually referred to as applets) can run on any system: Windows, Mac, or UNIX. You can use Java to add database functionality to your site (for transactions, for example), for animation, or for other interactive elements.

But Java is primarily the domain of programmers who use software like Symantec's Café and Microsoft's Visual J++ to create their applets. One powerful application that doesn't require a programming background is AimTech's Jamba, an expensive (\$495) but slick animation tool. Many Java applets are available free on the Net. Check PC World Online for links to some of the best.

- ACTIVEX: Microsoft's answer to Java is based on a similar concept: an ability to create small Web programs that work across all platforms. ActiveX builds on existing Windows technology and is widely supported by developers. You can create ActiveX controls in any programming language or environment, including Visual Basic, C, and Delphi. But like Java applets, they require programming expertise. Many ActiveX controls can be downloaded from the Web.
- VRML: Virtual Reality Modeling Language creates 3-D worlds that visitors can navigate with their mouse. VRML is currently popular among 3-D gamers on the Web, but it's appearing in business settings, such as online shopping, where you can click on a product you want to buy and move it around to see it from all angles. You can create VRML "worlds" with tools such as Caligari's Pioneer (http://www.caligari.com) or Virtus's 3-D Website Builder (http://www.virtus.com). VRML doesn't require programming skills because the development tools are visual, but a graphics design background will go a long way.







Hewlett-Packard makes all your photographic printouts easy on the eyes. HP Laserlet Toner Cartridges work with your LaserJet printer to insure the nuances of printed photographs are crisp, sharp and pleasing to look at. Because when it comes to photographs, looks are everything. Call 1-800-LaserJet, ext. 2064.

Egor Animator 2.0, a program that generates animations using a simple wizardlike interface. Like animated GIFs, Egor's animations are made up of a series of graphics, but they're saved as Java applets that you embed in your Web page. (For an explanation of Java and other hot Web technologies, see "Beyond Web Publishing 101.")

■ Egor Animator 2.0 \$50; Anawave Software; 800/711-6030

READER SERVICE NO. 791

□ IMAGEMAP SOFTWARE: Static graphics serve little purpose on the Web beyond dressing up dull text pages. To take full advantage of the Web's interactivity, turn your graphics into imagemaps that contain hyperlinks to other Web pages or to particular files. For example, when someone clicks in different places on an imagemap of an orchestra, it can play audio clips of various instruments.

Use a program that allows you to link images to files by pointing and clicking. CorelWeb.Graphics Suite and other programs create imagemaps easily. But if you don't want a full-blown graphics package, go with Group 42's WebImage or Boutell.Com's Mapedit, both of which are available as shareware from PC World Online.

□ SOUND CLIPS: The easiest way to add sound to your Web page is with simple HTML tags. For example, <a href="clinton.wav">Listen to the President (90K).</a> lets a visitor to your Web site download and listen to a sound bite from the president. You can also link a sound clip to an imagemap. Remember to keep these sound clips brief, however, because your guests will lose patience if they're constantly waiting for sound files to download. You can use the Sound Recorder that ships with Windows to capture and edit audio.

One way to cut download times is to compress the .wav file. Voxware (http:// www.voxware.com) offers a free utility called ToolVox that compresses .way files at a 53:1 ratio. You need to add a link to Voxware's site so your visitors can download the free ToolVox Player.

#### Step 5: Raise the Curtain

AFTER YOU'VE BUILT your site, store it on your hard disk while you get the bugs out. Place all the necessary files—HTML documents, graphics files, sound clips, and so on-in one directory. If there are lots of files, you might want a subdirectory for things like graphics. View the HTML document with your browser to make sure that everything looks right, tweaking anything that doesn't. Most browsers have a File-Open menu for viewing local files. Look at the site with several browsers to ensure that people can enjoy all your special effects regardless of what browser they use.

If you want an expert opinion on your HTML documents, people on the Web

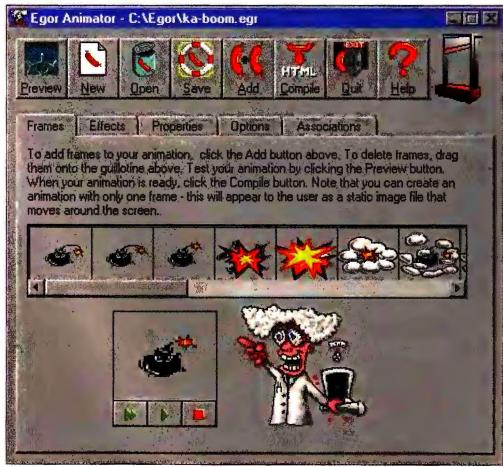
are willing to help. The World Wide Web Consortium lists a variety of sites that can help analyze your HTML documents (http://www.w3.org/pub/WWW/Tools).

When you're satisfied with all the elements of your Web site, post your creation by transferring your Web pages and all related files to the ISP's server.

You'll need instructions from your provider. In addition, unless your Web authoring package comes with a special tool for posting Web pages, you'll need a file transfer protocol tool. The best one around is Winsock FTP, which is available as shareware on PC World Online for both Win 3.x and Win 95. You can also get the free Web Publishing Wizard for Windows 95 from Microsoft's site (http://www.microsoft.com/windows/ software/webpost/). This wizard takes your files and moves them to your site, whether it's located on an ISP's server or on a commercial online service.

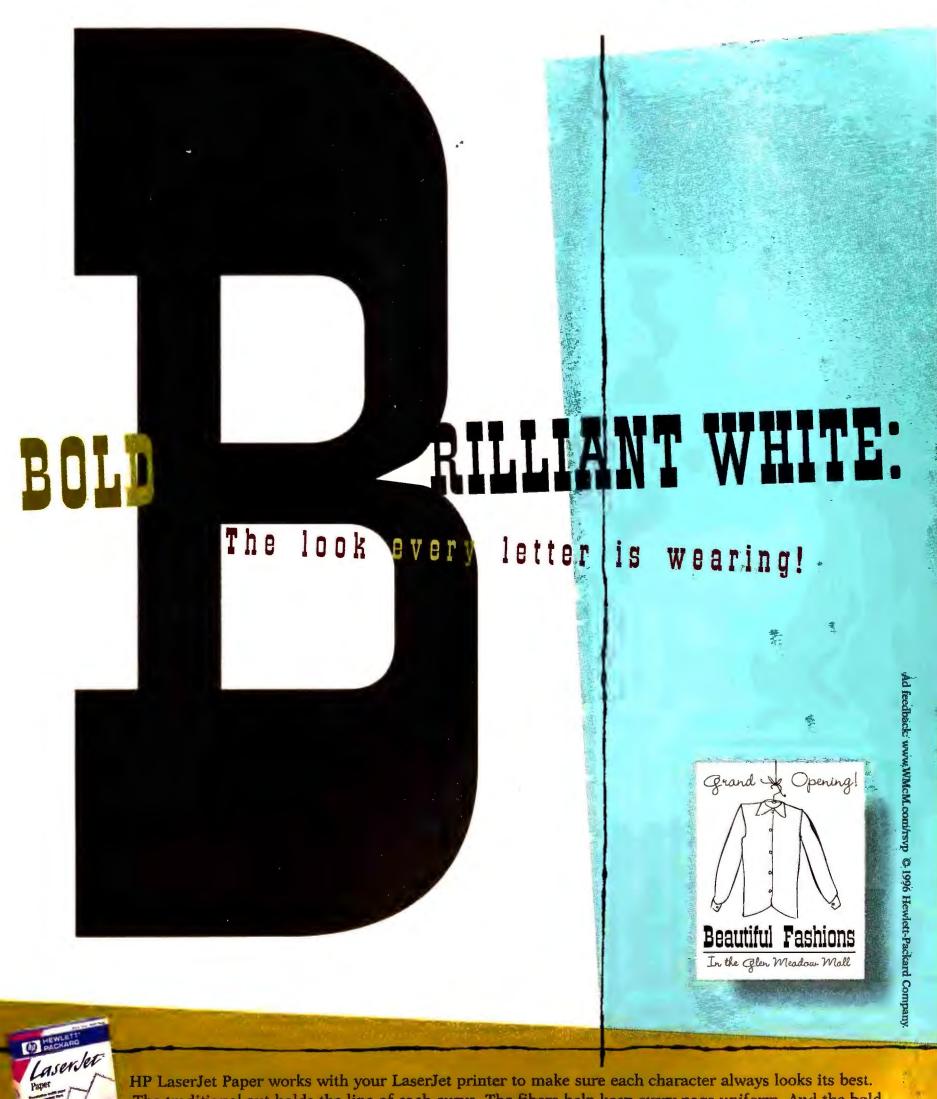
#### Step 6: Get Noticed

AFTER ALL YOUR EFFORT, how will anybody find your creation? Fortunately, search engines like Yahoo and InfoSeek constantly monitor the Web and



IT'S ALIVE! Just tell Egor to place several images in a sequence; you then set options such as size, delay between frames, color, and so on. The program generates the Java applet and the relevant HTML code you'll need to embed in your document.





The traditional cut holds the line of each curve. The fibers help keep every page uniform. And the bold contemporary white is sure to coordinate with all letters. The end result is crisp, sharp and breathtaking. Call 1-800-LaserJet, ext. 2063.



Page make it easy to track all your links.

Finally, to keep track of activity on your site, get a program like Boutell.Com's Wusage or e.g. Software's WebTrends. These programs take log files from your ISP's server and turn them into charts and reports. Activity logs tell you how many visitors you've had and what they do at your site. Use this information to analyze your site's performance and tweak parts of it that don't attract attention. Both Wusage and WebTrends are available from the vendors' sites (http://

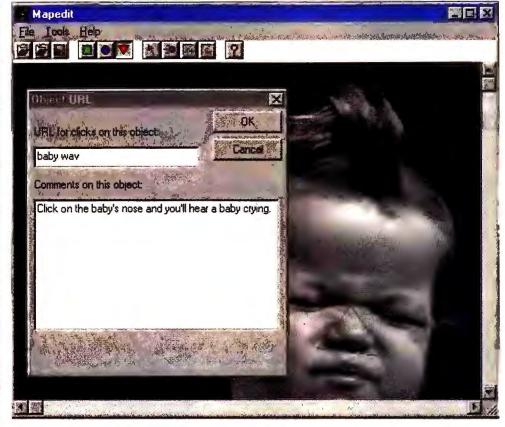
update databases used by millions of people who are looking for new stuff.

But if you wait to be noticed, odds are nobody will find you among the millions of other Web pages out there. The solution is to submit your site address to search engines. Just go to sites like Yahoo or InfoSeek, select the Submit URL feature, and tell them who you are and what your Web address is.

To save time, use one of the wholesale URL submission sites that post your information to as many search engines as possible. The service is free. Try Submit-It (http://www.submit-it.com) and PostMaster (http://www.netcreations .com/postmaster/index.html).

Another way to get noticed is to join a service such as the Internet Link Exchange (http://www.linkexchange .com). This free service manages reciprocating links among its members. When you sign up, you'll get various ads on your site that link to other sites, and ads promoting your site will be placed at other locations.





TO DESIGNATE ANY PART of an image as a hypertext link, bring up Mapedit (or a similar program), mark the area for the hot spot, and type in the URL for the link. When you save the file, the program generates the HTML code that identifies the Image as an imagemap.

#### Step 7: Don't Just Site There

ONCE YOUR SITE IS WORKING, you need to make sure you always have fresh information and design elements, or nobody will visit your Web site twice.

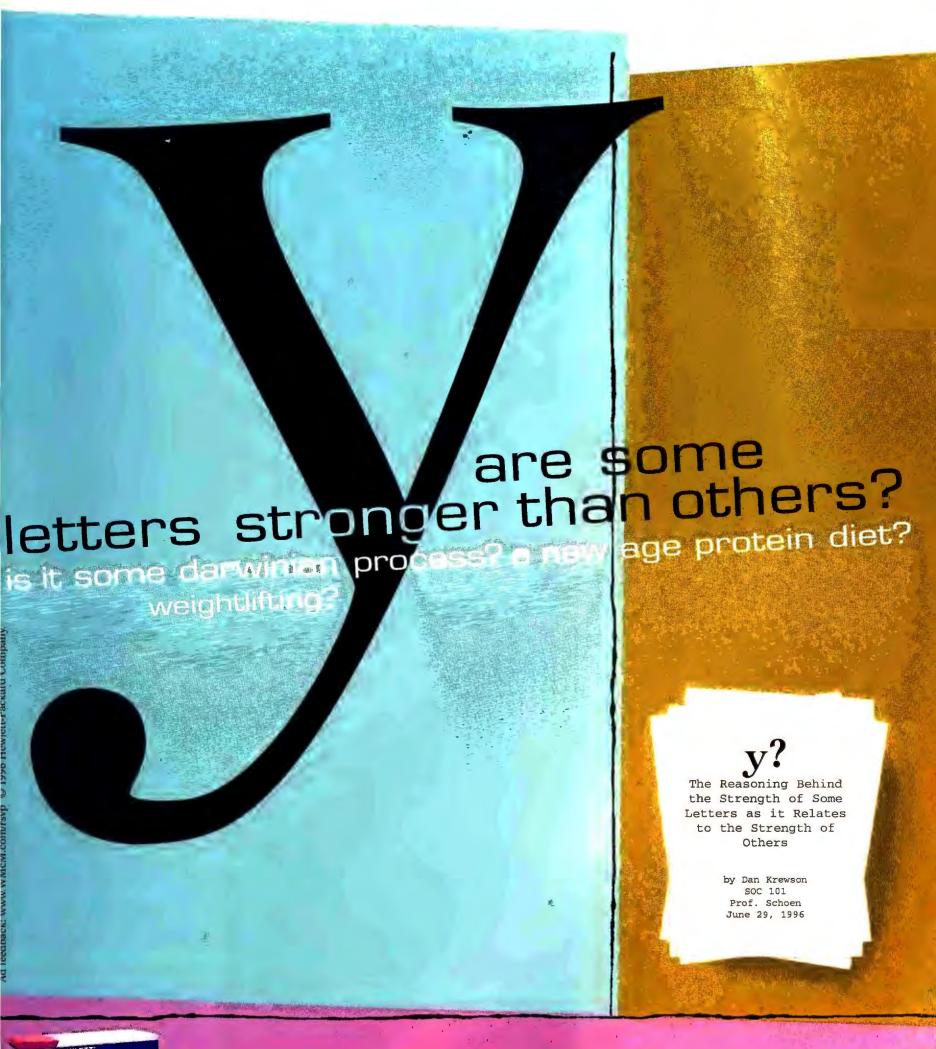
Most important, you need to monitor the links in your Web site to make sure they're up-to-date. For example, if your site includes a link to another company's site and that company goes out of business, you need to make sure you don't send visitors down a dead-end street. If the number of links is small, you can keep tabs on them manually. If not, authoring tools such as Microsoft Frontwww.boutell.com and http://www .egsoftware.com, respectively).

Most ISPs give you counters that you can place on your site to monitor the number of visitors. If you don't like the look of your ISP's counter, log on to Mr. Web Counter's site (http://www.digits .com/create.html), where you'll get the same service from a third party for free.

Yael Li-Ron is senior online editor for PC World Online.









Why do some letters have an advantage over others? The answer is Hewlett-Packard. When you put an HP LaserJet Toner Cartridge in your LaserJet printer, you get letters that are strong and sharp and have something important to say. And that's about the highest level of achievement you can attain as a letter. Call 1-800-LaserJet, ext. 2064.

THERE IS A PART OF YOU THAT REMEMBERS (VAGUELY)

HOW IT FEELS

TO BE PASSIONATE ABOUT YOUR WORK.

TO FIND A CHALLENGE AROUND EVERY CORNER.

TO CONSTANTLY SEARCH OUT FASTER, SMARTER
WAYS TO GET THE JOB DONE.

THERE IS A PART OF YOU THAT
STILL NEEDS TO DO EXTRAORDINARY THINGS.

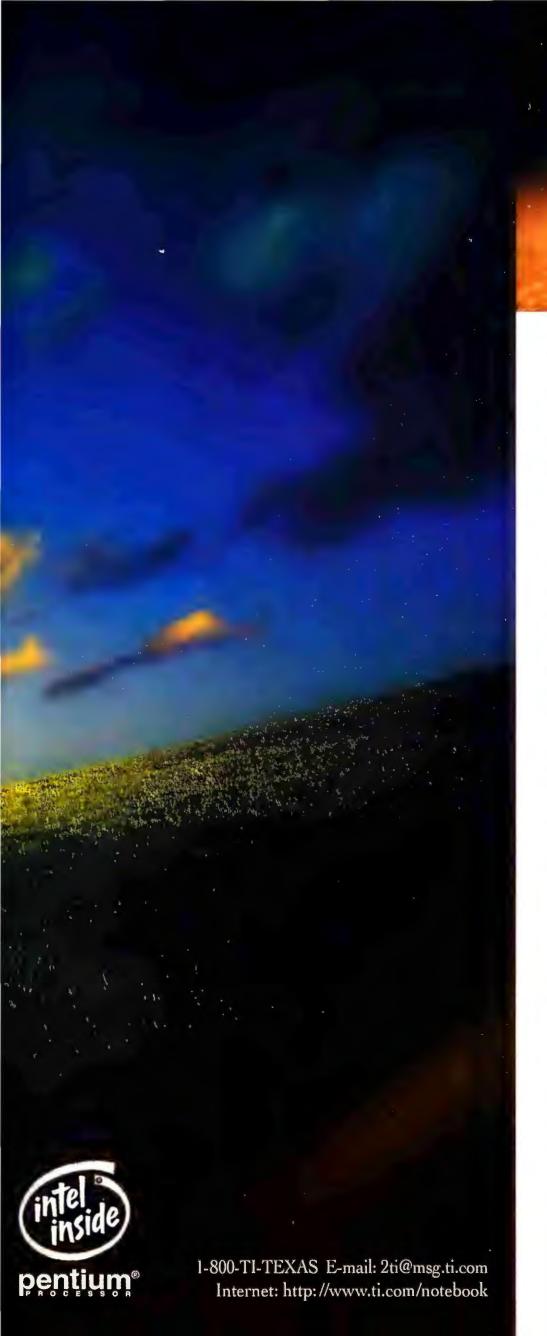












To rekindle the spark between you and your work, we created the TravelMate® 6000 series. A unique 6-way modular bay offers unparalleled storage and memory capabilities, thus giving you greater freedom and flexibility. Add to that

#### TRAVELMATE 6000 SERIES

- Weight: 5.9 lbs.
- o 6-way modular bay
  with floppy & optional
  6X CD-ROM, high
  capacity diskette drive,
  2nd Lithium ion battery,
  2nd HDD, weight
  reduction module
- Energy-saving,
   super high aperture
   TFT screen
- o Zoomed Video port
- o 120, 133 or new
  150MHz Pentium®
  processor with PCI bus
  (internal and external)

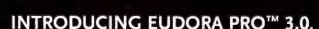
a screen that's significantly brighter yet consumes less power, along with a wide range of optional docking stations, and you've got the world's lightest, high performance modular notebook.\* And one that's fully supported by our new line of livegear™ accessories. Making the

TravelMate not just an extraordinary piece of technology. But 5.9 pounds of pure inspiration.



## THE INTERNET'S MOST POWERFUL E-MAIL SOFTWARE STRIKES AGAIN.





With 10 million users, Eudora® products have made a huge impact on the Internet. And now there's something even more powerful: Eudora Pro 3.0, written to official Internet standards.

Eudora Pro 3.0 has improved message filtering

—S.F. and mail management tools that help you sort large volumes of e-mail in seconds. Advanced drag-and-drop capabilities let you easily attach files and manipulate text. Live hot links auto-matically open your Web browser and other Internet applications.

"Eudora Pro is as good as it gets." —NetGuide

"Eudora Pro is to e-mail what Netscape is to Web browsers."
—S.F. Chronicle phone and fax numbers. You can even stylize text to make messages look like word-processed

documents. And since Eudora Pro 3.0 is so easy to use, switching your company's e-mail software is a breeze.

To find out more, just call 1-800-2-EUDORA, ext. 86083. Or send us e-mail at eudora-sales12

@qualcomm.com. Or visit our Web site at www.eudora.com/690

to download Eudora Pro 3.0 and use it FREE for 30 days. Why should Mother Nature be the one with all the power?



FREE 30-DAY TRIAL!











And an expanded Address Book lets you store addresses and

Information regarding the number of Eudora Light and Pro users provided by the Third MIDS Internet Demographic Survey, December 1995, and IDC. Eudora is a division of QUALCOMM. QUALCOMM Enterprise Software Technologies, 6455 Lusk Blvd., San Diego, Ci 92121-2779, USA. © 1996 QUALCOMM Incorporated. All rights reserved. Eudora is a registered trademark of the University of Illinois Board of Trustees licensed to QUALCOMM Incorporated. All other trademarks are property of their respective owners.

HE WEBAND YOU SPECIAL REPORT

## Web Software for



26 Suite Web Design

128 Straight HTML: Building Pages by Hand

132 Macromedia Hackstage Designer

Microsoft FrontPage 13

Netscape Navigator Gold 3.0

SoftQuad HoTMetal Pro 3.0 Four graphical authoring packages claim to make Web page creation easy. But after putting them to the test, our reviewer says it just ain't so.

By Scott Spanbauer

ILLUSTRATIONS BY DOUG ROSS

WOULD YOU BULLET a paragraph with '<LI>'? Display a picture with 'IMG'? Paint your house #855E42? Whatever else you can say about it, Hypertext Markup Language—used to create and describe Web pages—can't be called intuitive. That's why you should consider creating your World Wide Web site with a ▶

## the Rest of Us

program that lets you work on a graphical view of your page and see your changes as you make them.

To see how these programs stack up, I put four graphical HTML editors through the real-world test of creating a mock commercial Web site, then uploading the resulting files to a UNIX-based Web server. The programs I tested were Macromedia's Backstage Designer, Microsoft's FrontPage, SoftQuad's HoT-Metal Pro, and a prerelease version of Netscape Navigator Gold. I picked these four because all allow you to create fairly complex pages by manipulating text and graphics, without getting your hands dirty with HTML. Three other programs-Adobe PageMill, Claris Home Page, and Forman Interactive's Internet Creator—were not ready in time for this article; and another, Visual Web from Tomorrow's Horizons, proved too buggy to review. Although the four programs we tested could handle most of the work, none merited a Best Buyall were flawed in some respect. In fact, your best bet is to buy more than one.

These programs aren't quite WYSI-WYG (what you see is what you get), because there's no way to be sure exactly how a page will appear on every computer it may be viewed on. Also, these products lack the drag and drop capabilities of a desktop publishing program or a good word processor. For instance, in Microsoft Word, you can adjust the width of a table cell by dragging the dividing line; but in Microsoft Front-Page, you must bring up a dialog box and enter the number of pixels.

#### Other Options

YOU CAN USE OTHER TOOLS to create Web pages. If your needs are simple, your word processor will probably handle the job just fine, although it's bound to lack features found in a dedicated program. At the other extreme, there are plenty of sleek editors for writing your own HTML code. These tools are great for experienced Web page developers who know the tags for creating bulleted text and the assorted syntax. But studying code isn't the easiest way to gauge

#### No Such Thing as a Perfect Web Authoring Program

ALTHOUGH ALL FOUR of the reviewed programs make it easier to create Web pages, especially for beginners, no one program offers a complete set of tools worthy of "Best Buy" distinction. In fact, each seems to lack at least one significant feature, meaning you may have to use a combination of tools. My recommen-



dation is to start with FrontPage, the easiest of all the programs to use, then bring in HoT-Metal Pro, the most powerful of the four, when you hit FrontPage's limitations. But keep a text editor handy, as well as a separate FTP program for posting your files to a server.

whether your design flourishes are getting in the way of the text—or if your text is getting in the way of your design flourishes. For more information, see "Suite Web Design Tools" and "Straight HTML: Building Pages by Hand."

To test the tools, I tried to re-create the same sample Web site in each one. The original site, created by PC World Senior Editor Yael Li-Ron, was for Parent.hood, a fictitious business where you could buy a Mercedes stroller or a book on the All-Sugar Infant Diet. The home page alone contained two pictures—one an image map where clicking the baby's nose made it cry—plus links to the other three pages and real Web resources, a hidden table that gave me control over object placement, and a scrolling message at the bottom of the screen (created with a generic JavaScript applet Yael had taken off the Web). Other pages included a

#### Suite Web Design Tools

IF YOU USE THE CURRENT VERSION of Microsoft Office, Lotus SmartSuite, or Corel Word-Perfect Office, you already have a relatively WYSIWYG environment for creating Web pagesand one you're familiar with. It may not have every feature of a dedicated Web development tool, but it'll have all you need for simple pages.

Most of the applications that come with the Windows 95 versions of SmartSuite and Word-Perfect Office can convert their files to the HTML format. Depending on when your Microsoft Office 7.0 CD-ROM was manufactured, you may already have Web capabilities built into Word; to find out, select File Save As and see if one of the 'Save as type' options is 'HTML Document'. If you don't see the option, you can download a Word add-in, as well as add-ins for Excel, PowerPoint, and Access, from Microsoft's Web server (http://www.microsoft.com). New versions of Microsoft Office and Lotus SmartSuite, with considerably more Web-authoring power, may be out by the time you read this.

These programs are particularly adept at converting existing files into Web pages. For instance, the word processors will convert document formatting to the best of HTML's abilities (HTML can't handle, say, specific fonts or overhanging indents), and the spreadsheets will turn their files into HTML tables (though 1-2-3 version 5.01 has no Web support whatsoever). The presentation programs will convert a series of slides into a Web site that walks a user through the presentation-with each slide appearing as a graphic on its own page.

WORDPERFECT For creating basic Web pages from scratch, the best tools in these suites are the word processors. Corel WordPerfect 7.0 is by far the closest thing to a real Web page creation tool in any of the suites. An Expert walks you through the creation of a new Web page, letting you enter links, title your page, pick colors, and so on (by default, the Expert

more conventional table, a scrolling message done with Microsoft's proprietary <Marquee> tag, a long form built into a numbered list, and an "Under Construction" notice that relieved me of having to build an entire site. To see how well each program re-created the test site, go to PC World Online (http://www .pcworld.com/nov96/samplepages); and while there, check out Yael's explanation of the HTML code she used to build her site (http://www.pcworld.com/nov96/ seehtml.html).

#### How'd They Do?

IF YOU'RE WILLING TO TYPE in your tags by hand, every text editor-even Notepad—will support every HTML feature. But if you're building your pages graphically, you'll want every special formatting trick available from a menu or dialog box. To test the programs as thoroughly as possible, I attempted to recre-

ate the Parent.hood site in each one without resorting to writing code. No single program had all the features I needed, although ! some—notably HoTMetaL Pro—were much better than others.

Part of the problem is that many "standard" HTML features aren't actually part of the standard. The current official HTML 2.0 standard, approved by the Internet Engineering Task Force, doesn't include features such as tables and scrolling text that have become expected in Web pages. A program, therefore, can claim to support every feature in HTML and still leave out some of the most common and useful ones. A new standard, 3.2 (a proposed 3.0 spec failed to gain wide support), is in the works. For an overview, see the WWW Consortium's HTML Web page (http://www.w3.org/ pub/WWW/MarkUp).

Here's how the programs performed on the major tests I put them to:

☐ FORMS If you want your readers to give you their names or select an option,

www.me/html all about me

assumes that you're creating a personal page, dividing it into such sections as 'My Hobbies and Interests' and 'My Personal Background'). Once the Expert is gone, buttons on a toolbar make it easy to add links, change colors, select fonts, and so on. WordPerfect will even let you create image maps, but

fancier capabilities, like frames, are beyond its reach.

WORD FOR WINDOWS Adding the Internet Assistant to Microsoft Word (the file is wrdia20z.exe) will give you a serviceable tool for simple pages, but it's limited. No wizard walks you through the initial process, and if you don't think to give your file a header to help identify it, it won't have one. The Internet Assistant also can't handle frames or image maps.

**WORD PRO** Of the three word processors, Word Pro is the weakest HTML tool. It's easy to convert an existing document to HTML via the File Save command, but unlike its competitors', Word Pro's interface doesn't change to make Web page creation easier. For instance, where WinWord and WordPerfect display recognizable buttons for creating links when you're working on an HTML file, in Word Pro you must select Create \*Click Here Box to create links.

If you're making only simple pages, go ahead and use your word processor. But for anything more complicated, get a real Web tool. —Lincoln Spector

you'll need to create forms, a standard part of HTML but complex to do by hand. Only one program-Navigator Gold-doesn't do forms. The others let me create the standard form fields in the Parent.hood site easily enough. But no programs could also treat the test form as a numbered list, requiring me to resort to hand-coding to finish the page.

☐ TABLES Though not part of the approved spec, tables have become a de facto HTML standard. At first glance, a Web page table appears to be just what it sounds like, a grid for displaying data in rows and columns. But designers have learned to use tables as a way around some HTML limitations. For instance, precise horizontal spacing is almost impossible in HTML. But with a table, you simply add columns to move your elements over. The result looks great.

Creating tables by hand is one of the more complex tasks in HTML. You first create an empty table, then the first row, then each cell and its content. Each element also needs both open and close HTML tags—each cell, each row, and finally the entire table. One tag out of order or missing can turn your page into gibberish. Three of the four reviewed programs let you create tables by using a menu command and customize cell size, cell width, border size, and content alignment from a properties dialog box. Backstage Designer, however, doesn't support tables at all.

☐ GRAPHICS All of the programs I looked at have simple tools for making your page display an image in either the .gif or .jpg file format. Technically, a picture is never an integral part of a Web page, but you can make it look like one by using a transparent .gif, which lets your page's background color or pattern "bleed" through the transparent color in an image. This arrangement would, for instance, permit a red bullet on a white background to appear red, whether the page's background is white, gray, black, or bit-mapped. Only FrontPage and HoT-MetaL Pro can give your pictures that transparent look.

On the Web a picture points to a thousand words, since you can use your

graphic as a link to another page. This is a neat but difficult trick, and authoring programs offer mixed support for it. Image maps constitute an advanced variation on these simple links: They let you designate multiple "hot spots" within an image, each linking to a different destination. Only Navigator Gold won't help you create image maps at all, although FrontPage's implementation is useless if your server (like most) isn't running Windows 95 or NT.

#### Getting Your Hands Dirty

AS YOU'VE PROBABLY guessed by now, at some point with any of these programs you're likely to give up on all those WYSIWYG features and hand-type the code. You can always do this dirty job by closing the file in the HTML authoring program, then opening it again in the text editor of your choice. If you use FrontPage or HoTMetal Pro, this is exactly what you'll have to do, because they don't come with a text editor of their own. Navigator Gold also lacks a text editor, but it gives you a convenient way to open the current file in the editor of your choice. Backstage Designer incorporates a simple editor that gets you down to ASCII in a couple of clicks—it's nothing exceptional, but at least it's there.

#### Posting to a Server

WHEN YOU'RE DONE laying out a page in a word processor, you click the Print icon and wait for the final result to appear on paper. Would that publishing to the Web were so easy! Instead, you have to copy all of your files from your own computer to the server; and dragging and dropping in Windows Explorer isn't going to do the trick, either. Chances are your Web server is a UNIX system and requires you to use a UNIX standard called File Transfer Protocol to move a file to it. Obviously, a Web design tool that has a built-in FTP tool can make your life much easier.

With each program, I tried to upload the re-created test site to a Web server. How the programs performed this step ranged from so-so to useless to not-at-all. You'll do best to handle this process

#### Straight HTML: Building Pages by Hand

WANT A FAST, INEXPENSIVE TOOL that gives you complete control over every element of your Web page? Consider a straight HTML editor that exchanges WYSIWYG features for direct access to the code that defines your page. There are probably more HTML editors on the Net than weeds in my vegetable garden. These four, although far from perfect, are my favorites. And they're all available as try-before-you-buy shareware.

- 👼 FLEXED V1.3F The features that lift FlexEd above the mundane are its pop-up dialog boxes for manipulating tag attributes. Double-click a tag, and you'll get full control over its formatting options. Two stumbling blocks: nonstandard editing keys and sparse help menus. FlexEd v1.3f registration \$25; Infofiex Pty Ltd., http://www.infofiex.com.au/flexed.htm
- GOMER HTML EDITOR VERSION 1.4 I fell in love with Gomer immediately, thanks largely to the thorough way it helps you start a new document. In addition to walking you through an HTML page's most basic setup, Gomer reminds you at the beginning to set background, text, and link colors, a task you'd otherwise have to remember to perform later. But Gomer's cramped toolbar and helper dialog boxes could use a redesign. Gomer HTML Editor version 1.4 registration \$15; Stoopid Software; http://www.clever.net/gomer/index.html
- REVOL WEB WORKER FOR WINDOWS 95 VERSION 1.3 With its lack of descriptive terms and context-sensitive help, Revol Web Worker is best for coders who already know their way around HTML. But if you're advanced enough for it, its comprehensive toolbar and drop-down tag menus make for smooth working. Revol Web Worker for Windows 95 Version 1.3 registration \$19; Jon Lister, http://webzone.ccacyber.com/www/jlister/revol.htm
- WEBEDIT 2.0 32-BIT PROFESSIONAL WebEdit is my all-time favorite, thanks to the wellorganized layout of its drop-down tag menus, its time-saving split-screen preview mode, and its in-depth help. Straightforward wizards and templates make it a good choice for beginning coders. I like the multicolored tag coding, but I'm disappointed that WebEdit only highlights tags when a document loads: Any file you build from scratch doesn't have highlighting until you close and reopen it. This is by far the most expensive editor here, but sometimes you really do get what you pay for. WebEdit 2.0 32-bit Professional registration \$79.95; Nesbitt Software Corp.; http://www.nesbitt.com — Amy Helen Johnson



CODE AND IMAGE, side by side: With WebEdit, you preview your page on one side of the screen while editing your HTML code on the other.

#### The Vision

AUSTIN BUILDS CONFIDENCE

Global Community: Austin Takes You Around the World

Our commitment to quality and innovation is world-class. Because Austin is a division of IPC Technologies, one call to Austin

Computer, taps you into the many benefits of a diversified global organization with interests in notebook PCs, desktop systems, and departmental servers. As your company's computing, communications, or networking needs expand and evolve, you can rely on Austin's global perspective – and 14 years of experience – to deliver an

integrated computing solution.





#### Shades of Fierce Technology

Austin projects eye-catching confidence with a comprehensive product line that includes high-end notebooks, reliable desktop systems, and bullet-proof departmental servers. We invite closer scrutiny, because all Austin systems are configured for performance and priced for value. And each machine is backed by superior service and support.

Make contact with Austin.

#### **Bright Future**

We're certain that our personal attention and higher level of craftsmanship will make the difference for your business today And, as you grow, you can continue to depend on Austin. Our performance is proven in the PC industry — we've won the **5-Star**Service Award from PC Computing and the Industry Information Technology Award from Government Computer News.

Call now and put Austin's commitment to work for you. Seeing is Believing.



#### Austin's Family of Products

- Austin Edge<sup>™</sup> Series Notebook Systems: Includes the PC Magazine Editors' Choice Edge CD with Intel<sup>®</sup>s 430MX ™PCI Set and support for internal CD-ROM, and the multimedia Edge Duet<sup>™</sup> with Docking Station.
- Austin PowerPLUS™ Desktop Systems, and Austin Élan™ Workstations:
   Our profile for success features Pentium® technology PowerPLUS desktops and Pentium Pro technology Élan workstations each with custom configuration options
- Austin Affinity<sup>™</sup> Departmental Servers:
   Quad Pentium Pro processors with 12 hot-swap drive bays and enhanced cooling for mission-critical reliability



TO ORDER CALL: **800-331-1501** 

2121 Energy Drive, Austin, Texas 78758 512-339-3500 • FAX 512-454-1357 GSA# GS 3F 4029D http://www.austindirect.com

Government Sales: 800-833-4472 Fortune 1000 Sales: 800-622-5506 Canadian Sales: 800-338-1565 International Sales: 512-339-3547

#### Austin Edge Notebooks



#### Austin Edge CD - 133

133 MHz Intel Pentium Processor mtel 430MX PC1 Set 16MB EDO RAM (expandable to 40MB) 256K Pipeline Burst L2 Cache 1.35GB Hard Drive 11.3" TFT 800 x 600 Color Display 32-Bit PCI Windows Accelerator - 2MB 6X CD-ROM Drive

16-Bit Stereo Business Audio, Built-in Mic, Speakers & External Line-In/Out 28.8 Fax/Modem w/ Speakerphone Lithium-Ion Battery

Integrated Glide Point® Mouse Weight with Battery: 6.8 lbs. One-Year Parts & Labor Warranty

\$3,759

Busmess Lease: \$132 / month

#### Austin Edge Duet - 133 with Docking Station

#### Base Unit:

133 MHz Intel® Pentium® TCP Processor mtel 430MX PCI Set 16MB EDO RAM (expandable to 48MB) 256K Pipeline Burst L2 Cache 1.35GB Hard Drive 11.3" TFT 800 x 600 Color Display 32-Bit PCI Windows Video Accelerator - 1MB 16-Bit Stereo Business Audio, Built-in Mic, Speaker & External Line-In/Out 28.8 Fax/Modem w/ Speakerphone Lithium-Ion Battery Integrated Glide Point® Mouse

#### Portable Docking Station:

Base System Weight with Battery: 4.7 lbs

6X CD-ROM Drive Retractable Stereo Speakers w/ Subwoofer Built-In 10Base-T Ethernet Docking Station Weight: 2.0 lbs One-Year Parts & Labor Warranty

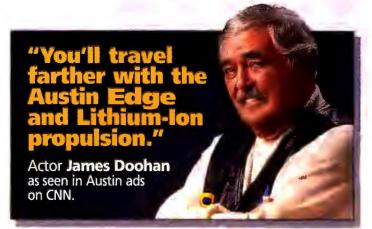
> *\$4,299* Business Lease: \$150 / month

#### **Big Power in** a Small Package

The feature-rich Austin Edge Duet is the newest member of the Austin Edge family, home to PC Magazine Editors' Choice award-winning Edge CD. Backed by the same tier-one technology as the Edge CD, the Edge Duet delivers a superb combination of portability and desktop functionality. Plug the Duet onto the 6X CD ROM Docking Station for a full-featured multimedia desktop.

#### **An Award-Winning Record**

Quality is our watchword, and our mission is absolute customer satisfaction. We've developed an impressive value equation that incorporates state-of-the-art technology, the highest-quality, industry-standard components available, and award-winning service & support!



©1996 IPC Technologies, Inc.
All rights reserved Intel, the Intel Inside logo, and Pentium are registered trademarks of Intel Corporation Microsoft and Windows are registered trademarks of Microsoft in the U.S. and other countries. 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. Special offers are good for a limited time only. Call for specific details. Actual configuration shipped may vary from products shown. Screens simulated for advertising purposes. We are not responsible for errors in typography or photography

Business Lease term reflects 36-month contract. Leasing arranged for Austin by MarketPlacement, Inc.

#### Austin Power Desktops



#### See the Austin Difference

Call Austin and experience our stellar attention to detail and phenomenally fast response. Expect Reliable Systems, Custom Configuration, and Quick-Ship promptness without extra charges. Whether you're outfitting the workforce with the value-priced PowerPLUS desktops or the high-end Élan Workstations, you'll find we stand behind every system we ship.

#### A Vision of Your Success

Each Austin Élan Workstation gives you a selection of innovative features, like the 200 MHz Pentium Pro processor and 128-bit PCI acceleration with 2MB of MRAM, as well as an 8X CD-ROM and 16-bit Audio. Windows 95 is preinstalled (or upgrade to Windows NT), and hard-drive capacity choices range up to 4GB. With impressive features like these, the

Austin Élan is clearly the stand-out price performer in today's PC workstation market.

#### Austin PowerPLUS 133

133 MHz Intel Pentium Processor (also available in 100-, 120-, 150-, 166-, or 200 MHz configurations) Intel 430HX PCI Set Intel TC430HX Motherboard 16MB EDO RAM (expandable to 128MB) 256KB L2 Pipeline Burst Cache 1.2GB Enhanced IDE Hard Drive 64-Bit PCI Video Accelerator - 2MB DRAM 8X IDE CD-ROM Drive, 16-Bit Audio, 40W Stereo Speakers 28.8 Fax/Modem 15" .28mm NI SVGA Monitor 104-Key Keyboard & Mouse Energy-Star Compliant Windows '95 Pre-Installed Three-Year Parts & Labor Warranty. One-Year On-Site Service

\$1,769

Call to Upgrade to PowerPLUS 150—
add \$100

Business Lease: \$66 / month

#### 40W Stereo Speakers 3.5" 1.44MB Diskette Drive Mid-Tower ATX Chassis 15" 28mm NI SVGA Monitor

Austin Élan Workstation 200

200 MHz Intel Pentium Pro Processor with

16MB EDO RAM (expandable to 256MB)

128-Bit PCI Video Accelerator - 2MB MRAM

8X IDE CD-ROM Drive, 16-Bit Audio,

integrated 256K Pipeline Burst Cache

Intel 440FX PCI Set

Intel VS440FX Motherboard

3GB Enhanced IDE Hard Drive

Mid-Tower ATX Chassis 15" .28mm NI SVGA Monitor 104-Key Keyboard & Mouse Energy-Star Compliant

Windows '95 Pre-Installed Three-Year Parts & Labor Warranty,

Business Lease: \$80 / month

\$2,139

One-Year On-Site Service

Call to upgrade to Windows NT Workstation — add \$275

## Call for Austin's latest catalog — your best one-stop direct PC resource! You'll find more about Austin's Affinity Pentium Pro Servers. http://www.austindirect.com

Circle 23 on reader service card



TO ORDER CALL: **800-331-1501** 

2121 Energy Drive, Austin, Texas 78758 512-339-3500 • FAX 512-454-1357 GSA# GS 3F 4029D http://www.austindirect.com

Government Sales: 800-833-4472 Fortune 1000 Sales: 800-622-5506 Canadian Sales: 800-338-1565 International Sales: 512-339-3547 with a separate program, and I can recommend two that make the job easier. The first is Ipswitch's excellent WS-FTP (http://www.ipswitch.com), a shareware product that helps hide FTP's unfriendly syntax. The other is Micro-soft's free Web Publishing Wizard, which you can download from the company's Web site (http://www.microsoft.com/windows/ software/webpost/default.htm). Unlike WS-FTP, the wizard doesn't let you choose which files get uploaded-it simply transfers everything in the directory you specify. To its credit, however, Microsoft's wizard also makes it easy to publish your files on America Online or CompuServe, which have proprietary transfer systems.

With luck, someday someone will market a Web page design program that handles every trick of HTML and Web publishing. Of course, the program will be out of date five minutes later.

The program proved easy to use.

To modify an element's settings,

all I had to do was double-click

the element and change the

settings in a dialog box. But

Backstage Designer's inability

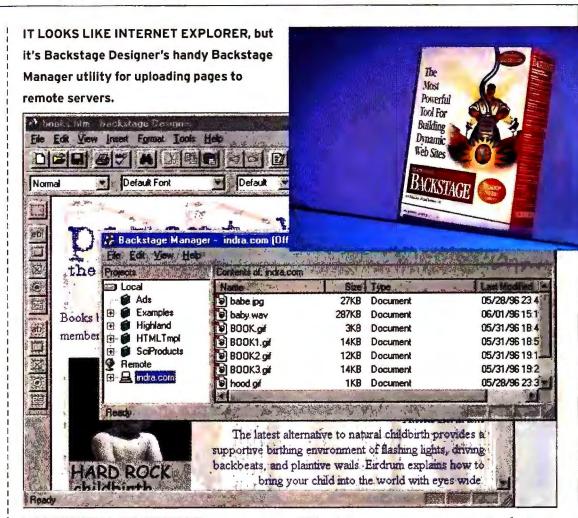
to handle tables is unforgivable.



Look for more information on Web authoring tools and find the files mentioned in

this article at http://www.pcworld.com. Contributing Editor Scott Spanbauer (http://www.indra.com/~scott) is the author of The No B.S. Guide to Windows 95 (No Starch Press, 1996, 800/420-7240). Amy Helen Johnson writes about the Internet, application development, and databases. Yael Li-Ron is a senior editor and Lincoln Spector a senior associate editor for PC World.

For more information on all products in this article, circle reader service no. 906.



#### **MACROMEDIA BACKSTAGE** DESIGNER

PRO: Supports Java, ActiveX, and Shockwave applets; helps you publish to a UNIX server; large clip-art library

CON: No table support

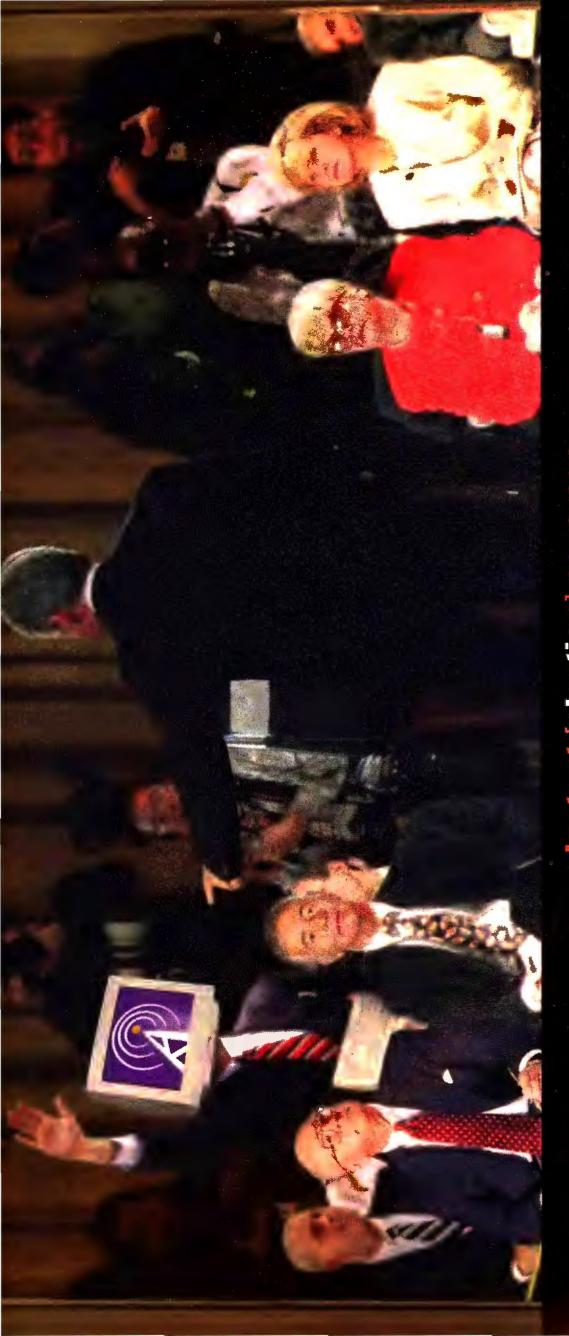
BACKSTAGE DESIGNER makes it easy to dress up your pages with all sorts of animated bells and whistles. But it leaves out one of the most common and useful HTML elements: tables.

The program proved easy to use. To modify an element's settings, all I had to do was double-click the element and change the settings in a dialog box—as long as the element wasn't a table. Backstage Designer's inability to handle such a basic part of HTML—albeit one not yet incorporated into the official standardis unforgivable. By aligning a graphic next to a block of text, I managed to approximate the effect of Yael's table, but it was a considerably bigger hassle to achieve a less satisfying result.

On the other hand, Backstage Designer can take you well beyond the capabilities of HTML. If you want to add interactive bar graphs or dancing bears to your pages, the program will let you embed Java applets, ActiveX controls, and Macromedia's own Shockwave files. What's more, you can use Backstage Designer's own proprietary extensions to tailor pages to individual readers. For instance, a page could track search terms a reader requested in previous visits, then greet them with a list of related pages the next time they log on. But the extensions that make this possible work only if your site resides on a Windows 95 or NT-based Web server.

Backstage Designer comes with a huge library of clip art and a competent utility for creating image maps. But the accompanying documentation doesn't say much about how image maps work. Backstage Designer also has a utility for moving your site onto a server, but it seems better suited for a Windows server than a UNIX one. For instance, once I moved my pages to the server, they couldn't find their accompanying image files. It turned out that Backstage Designer had inserted a slash at the beginning of the file name in every image link—a must in the program's Windows Web server scheme, but a confusing error in UNIX. I had to remove all the slashes manually. Backstage Designer \$79; Macromedia, Inc.; 800/457-1774; http://www.macromedia.com

READER SERVICE NO. 685



Instant [election] coverage

newswire. And it's completely customizable, so you can get exactly the news you want. PointCast was awarded the-minute election coverage, news, sports, weather, stocks and more straight to your computer screen. With its animated If it's happening out there, it's happening on your desktop. PointCast is the Internet news network that broadcasts up-to-"Best Internet Application of 1996" by CNET and given "must-have' status for in-the-know computer owners" by headlines, vibrant graphics and scrolling stock ticker, PointCast turns your computer into a dynamic, multi-colored The Wall Street Journal. Download PointCast free at www.pointcast.com or pick it up at your local retailer.

[ www.pointcast.com ]

Have you seen it?





#### **MICROSOFT FRONTPAGE 1.1**

PRO: Easiest HTML editor to use; offers great view of your Web site's structure; transparentbackground tool

CON: No UNIX server support; proprietary image map format; can't edit HTML source

FRONTPAGE IS BY FAR the easiest to use of the four programs, but its power tools are limited to Microsoft's NT-based server and Windows 95.

The editing window shows your page accurately at every step of the way and lets you work on multiple pages simultaneously without littering the Taskbar with icons (as happens with Navigator Gold). As with Backstage Designer, adding new elements is a matter of selecting menu commands or clicking buttons. But manipulating existing elements in Front-Page is easier than in Backstage Designer, thanks to Windows 95-style context menus that pop up when you right-click an object. You can jump directly to character and paragraph-formatting windows; cut, copy, or paste at the selected location; or follow a link as you would in a Web browser.

FrontPage made one particular graphic trick a real breeze. Using a wonderful "magic wand," I was able to make image backgrounds transparent after I'd already placed them on the page. It's a nice convenience when you realize that a picture you've placed needs to blend in with its surroundings-and it's a trick none of the other programs did. If every feature worked as simply as this one, you'd already have created Web pages for everyone in the family, including the dog.

But FrontPage has its own ideas about how to do what everyone else considers common tasks. I created an image map easily, but found that it didn't work once the site was posted to my Internet server. A quick look at the source code revealed non-HTML tags that work only with Windows-based Web servers. Use anything else, such as a standard UNIX server, and you'll have to create image maps manually. Unfortunately, you can't directly edit HTML source code from inside FrontPage, so I had to close the file, track it down on the hard disk, make the changes with a text editor, and

#### WEB AUTHORING FEATURES COMPARISON

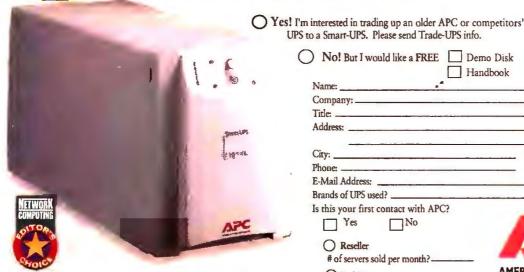
| STANDARD FEATURES                   | Macromedia<br>Backstage Microsoft<br>Designer FrontPage 1.1 |                             | Netscape<br>Navigator Gold<br>3.0 beta | SoftQuad<br>HoTMetaL Pro          |  |  |
|-------------------------------------|---|-----------------------------|--|-----------------------------------|--|--|
| Street price                        | \$79  | \$149 '                     | \$79 *                                 | \$159                             |  |  |
| Minimum RAM (MB)                    | 8   | 8                           | 8                                      | 8                                 |  |  |
| Runs on Windows 3.1/95 and NT       | 0/0   | 0/•                         | •/•                                    | 0/0                               |  |  |
| Graphical HTML creation             | •   | •                           | •                                      | •                                 |  |  |
| Single edit and preview window      | denoted the second  | ( Je . 1)                   | O                                      | •                                 |  |  |
| External browser preview            | O   | 0                           | O                                      | •                                 |  |  |
| Allows HTML source editing          |   | 0                           | •                                      | 0                                 |  |  |
| Verifies HTML code                  | 0   | 0                           | O 3                                    | •                                 |  |  |
| Spelling checker                    |   | •                           | 0                                      | •                                 |  |  |
| Forms                               | •   | AND INCOME OF THE PROPERTY. | 0                                      | •                                 |  |  |
| NONSTANDARD HTML TAGS SUPPORTED     |   |                             |  |                                   |  |  |
| l'ables                             | 0   | •                           | •                                      | •                                 |  |  |
| Background colors/images            | •/•   | •/•                         | ●/●                                    | •/•                               |  |  |
| rames                               | 6   |                             | Ó                                      |                                   |  |  |
| Marquees                            | 0   | 0                           | 0                                      | Adhir                             |  |  |
| mage maps                           | •   | •                           | Q\$                                    |                                   |  |  |
| Centered and right-aligned text     | •   | - Moderate                  | MAN WELLING IN                         | No                                |  |  |
| Fonts                               |   | O.                          | 0                                      |                                   |  |  |
| GRAPHICS TOOLS                      |   |                             |  |                                   |  |  |
| Creates image maps                  | •   | •                           | Ö                                      |                                   |  |  |
| ncludes image editor                | 0   | 0                           | 0                                      | Parautasian propinsi dilapon di   |  |  |
| reates transparent backgrounds      | o.;   | •                           | Q                                      |                                   |  |  |
| Number of media clips               | 1200  | 16                          | -                                      | 1000                              |  |  |
| PUBLISHING AND WEB SITE MAINTENANCE |   |                             |  |                                   |  |  |
| upports UNIX servers                | •   | Q                           | •                                      | 0                                 |  |  |
| erifies links                       | 0   | 0                           | O                                      | O C                               |  |  |
| DVANCED FEATURES                    |   |                             |  |                                   |  |  |
| ava/JavaScript support              | •/0   | 0/0                         | 0/0                                    | 0/0                               |  |  |
| ActiveX                             | •   | O                           | O                                      | V Particular with Control Control |  |  |

and nonprofit organizations.

#### Upgrade Now! APC's Trade-UPS™ Plan boosts Web server power protection



Now you con easily trade in your old UPS for enhanced APC protection. Plus, discover the myths and musts of web server protection. See how Smart-UPS® seemlessly integrates with ond provides graceful shutdown for mojor web plotforms, including Windows NT and Solaris. Get your FREE hondbook or demo disk today! \*



"APC provides the most complete, manageable and controllable UPS in our review."

PC World 11/96

01996. APC. All rights reserved. Smart-UPS, Trade-UPS and SmartSlot are trademarks of American Power Conversion. BSU004

| to a Smart-UPS. Please send Trade-UPS info. |                                       |
|---|---------------------------------------|
| No! But I would like a FREE Dem. Hand       | dbook                                 |
| Name:                                       | from our PowerPage                    |
| Company:                                    | http://www.apcc.com                   |
| Title:                                      | · · · · · · · · · · · · · · · · · · · |
| Address:                                    |                                       |
| City:                                       | State: Zip:                           |
| Phone:                                      |                                       |
| E-Mail Address:                             |                                       |
| Brands of UPS used?                         |                                       |
| Is this your first contact with APC?        |                                       |

\* We regret we cannot fulfill incomplete requests

# of servers sold per month?

O Reseller

O End User

# of servers on site?

email: apctrade-up@apcc.com http://www.apcc.com

AMERICAN POWER CONVERSION 888-BUY-APCC ext. 8014

401-788-2797 fax / Worldwide: (+1)401-789-0204 / 800-347-FAXX PowerFax Literature 132 Fairgrounds Rd., W. Kingston RI 02892 USA



FIRST-CLASS MAIL PERMIT NO. 36 WEST KINSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE



DEPT. **P3**132 FAIRGROUNDS ROAD
PO BOX 278
WEST KINGSTON RI 02892-9920

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



# Our new Smart-UPS insures the web hits you want... and prevents those you don't

Protect

Whether you're using the Web to sell, to support, or to surf, once you make the investment in a homepage you've made a

commitment to your customers. A commitment to be there when they need you for product info, technical support, or sales.

Having your server go down due to a power hit is like hanging a "Come Back Later" sign on your store's front door. Some customers will come back, but others never will.

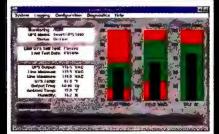
Protect your investment in the web with the power protection that protects more networks than all other brands combined: APC.

Our new enhanced Smart-UPS line is perfect for net servers like Sun's Netra and Compaq's Proliant." Our award-winning PowerChute plus software is available for major web platforms, including Windows" NT and Solaris." PowerChute plus provides automatic notification of power problems and safe shutdown of applications whether you're there or not. Plus, FlexEvents" provides custom notification (email, paging) and more.

With Smart-UPS you get SmartBoost automatic voltage regulation, CellGuard intelligent battery

management (for maximum battery life), hot-swappable user-replaceable batteries and SmartSlot "custom configuration.

Check out our web solutions today. After all, there's one kind of "big hit" on your web site you don't want to tell your boss about.



Download o demo of PowerChute plus ot http://www.opcc.com

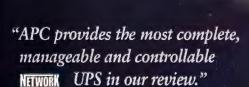




















APC's award-winning Smart-UPS units are available in convenient rack mount models. The Smart-UPS XL series is recommended for long runtime applications. For maximum protection, ask about our new NetShelter" premium rack enclosures for all your servers and internetworking equipment.

APC's PowerShield", ISDN UPS provides critical protection for ISDN



© 1996 American Power Conversion. Other trademarks are property of their owners. ASU0001.





AMERICAN POWER CONVERSION

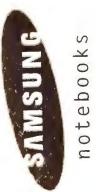
888-BUY-APCC ext. 8014

401-788-2797 fax / Worldwide: (+1)401-789-5735 / 800-347-FAXX PowerFax Literature 132 Fairgrounds Rd., W. Kingston RI 02892 USA

email: apcinfo@apcc.com http://www.apcc.com

Circle 17 on reader service card





then resume editing in FrontPage. Oddly, FrontPage doesn't support Microsoft's own scrolling <Marquee> HTML extension and ActiveX applets.

FrontPage also comes with a couple of applets that give you complete control over multiple, complex Web projects. Like a digital Jeeves, the FrontPage Explorer copies embedded graphics to the directory you're creating your site in, lets you follow links from page to page while editing, and keeps a to-do list of unfinished pages. The Web Server lets you browse your in-progress pages with third-party browsers as you work.

FrontPage doesn't give you any help publishing pages to a remote server that isn't running Windows (why am I not surprised?). To get your pages published, you first have to export them from Front-Page's idiosyncratic directory into a single directory; from there you upload them to your Internet provider's server, using an FTP utility. FrontPage 1.1 \$149; Microsoft, 206/882-8080; http://www .microsoft.com

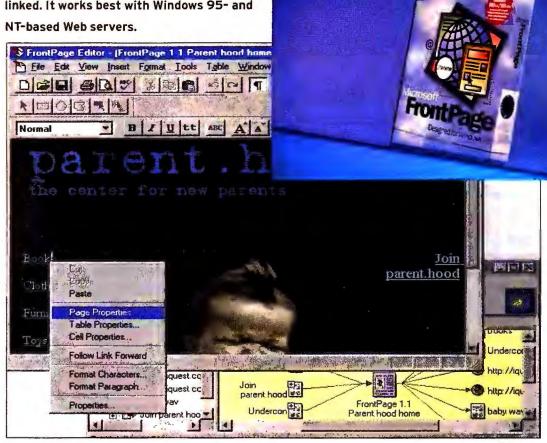
READER SERVICE NO. 686

#### **NETSCAPE NAVIGATOR GOLD 3.0**

PRO: Easy table creation; UNIX server support CON: No image maps or form tools; confusing multiple-window interface; documentation is stored on Netscape's server

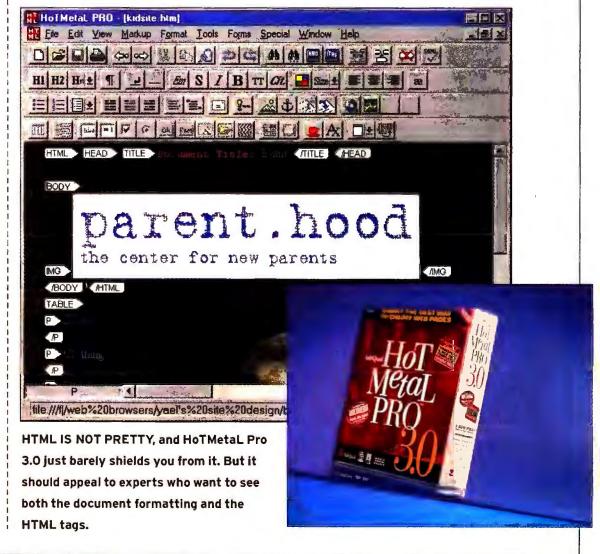
NETSCAPE's browser-cum-authoring program is about as graphical as they come. As with Backstage Designer and FrontPage, when you change a text or background color, insert a graphic, or add a rule, you'll see the results at once. And as with FrontPage, you right-click an object to see all its options. The program doesn't properly display text that wraps around graphics in edit mode, but a genuine Netscape browser preview is just a click away. Like its more popular browser-only sibling, Navigator Gold is free to educational and nonprofit users. This review is based on a prerelease copy of Navigator Gold 3.0. (International Data Group, the parent company of PC World, has a minority interest in Netscape Communications.)

I had no trouble re-creating the test pages almost exactly (inserting our samMICROSOFT'S FRONTPAGE lets you see exactly how your pages and other files are linked. It works best with Windows 95- and

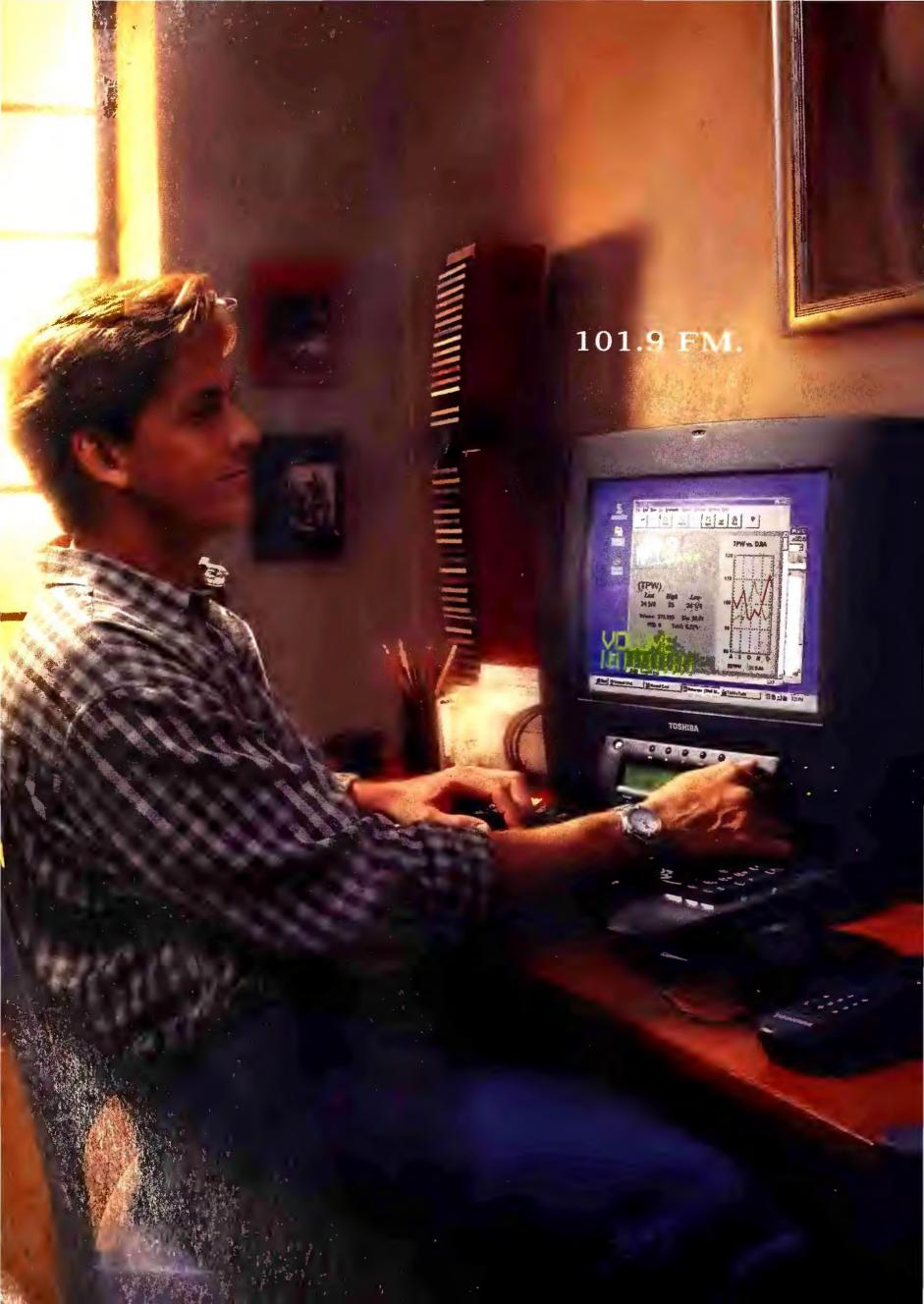


ple JavaScript code was a breeze), but the program stopped me in my tracks when I tried to create image maps and forms, neither of which it supports at all. You'll either have to hand-code these or use another program like HoTMetaL Pro to

add them later. Two other missing features didn't stop me from re-creating the test site but are conspicuous by their absence, nonetheless: Navigator Gold is the only program that lacks a spelling checker, and it doesn't help you







#### Introducing the new Infinia with InTouch.

performance home PC from Toshiba

that lets you move from function

to function with the touch



Jump from CD to TV to radio to answering machine, each with the touch of a button.

Tune in to Infinia, the new highof a button. It's

designed to be right at

home in your home – from its

while you listen to the radio. Update your sales database as you watch the big game on TV, or talk to your dad in another city on the speaker-

phone. In fact, Infinia offers so many advanced features, you won't believe your eyes. Simply turn

easy-to-use features to its sleek midnight-gray

design. Then, there's the InTouch™ Module. A

remarkable new device which makes computing

easier than ever before. With just a button, for



Infinia offers a fast 200MHz Pentium processor, and huge 3.0GB hard drive.

example, you can go from CD, to TV, to radio, to telephone or answering machine. It's that

simple. Trade stocks online

8X CD-ROM, 3D video and beautiful stereo sound enhauce multimedia performance.

the page and see for yourself.

Plus, it's from Toshiba, the number one name in portable computers. To learn more about the

Infinia, visit the

Toshiba website at

Infinia is supported by Toshiba's InTouch Center every day, 24 hours-a-day.



http://computers.toshiba.com or simply call us toll free anytime, any day at 1-800-457-7777.

When you're ready for a different computer.





#### InTouch Module with LCD Display

The sleep button with Instant On brings Infinia from an energy-saving doze right back to when you left off—with no boot time. Function buttons like previous channel, next, mute, and quit give you control according to the mode you're using.

An LCD display indicates which mode is currently active.

A blinking message light alerts you to new telephone messages.

Mode buttons give you easy access to your answering machine, speakerphone, CD,

FM stereo and TV.

All Models

The volume control easily adjusts the loudness of all modes.

An infrared receiver accepts commands from Infinia's hand-held InTouch Remote.

#### Infinia 7200

- · 200MHz Pentium® processor
- 32MB EDO DRAM, expandable to 128MB
- 3.1 billion byte (=3.0GB) hard drive
- InTouch™ Module with LCD display and InTouch Remote
- Television tuner and FM radio card included
- Full-motion live video capture and display
- Cable TV reception in stereo
- · Wave Table MIDI sound

#### Infinia 7160

- 166MHz Pentium® processor
- 16MB EDO DRAM, expandable to 128MB
- 2 billion byte (=1.9GB)
  hard drive
- 1nTouch™ Module with LED display
- Television tuner and FM radio card optional

#### Infinia 7130

- 133MHz Pentium® processor
- 16MB EDO DRAM, expandable to 128MB
- 1.6 billion byte (=1.5GB)
  hard drive
- InTouch™ Module with LED display
- Television tuner and FM radio card optional

#### Hardware

- 256KB pipeline burst SRAM level 2 cache
- 8X CD-ROM
- 145ms average random seek
- 1200KB/s transfer rate
- Tray type load and eject
- 128KB buffer
- DVD-ready\*
- 28.8Kbps data|fax|voice modem, (software upgradeable to 33.6Kbps)
- Full-duplex speakerphone
- Digital answering machine
- Internet-ready
- S3 ViRGE™ 3D graphics accelerator
- 2MB 50ns EDO DRAM
- 16-bit SoundBlaster® Pro compatible audio system with SRS® 3D sound
- · Full-length expansion slots
- Three 32-bit PC1 slots
- Three 16-bit ISA slots
- Two 5.25" and one 3.5" available expansion bays
- · Sleep button with Instant On
- Two Universal Serial Bus (USB)
  ports and one MID1/joystick port
- · Speaker-out and line-in jacks
- · Keyboard and mouse

#### Software

- · Windows® 95 with Microsoft® Plus!
- · Microsoft® Works 4.0
- Microsoft® Encarta® 1996 Encyclopedia
- · Microsoft® Money
- · Dow Jones Personal Journal®
- · Quicken® SE
- · America Online®
- · CompuServe®
- Netscape Navigator™
   Personal Edition
- · Prodigy®
- Plus many more educational and entertainment titles

#### Service/Support

- · One year in-home warranty
- Supported by Toshiba's InTouch Center – 24 hours, 7 days a week

#### Optional Color Monitors

- 17" (16.23" viewable image)
- 15" (13.78" viewable image)
- · .28mm dot pitch
- Built-in stereo speakers (includes sub-woofer on 17")
- One-touch tilt base for easy adjustment
- · Integrated microphone
- · Microphone and headset jacks

# In Touch with Tomorrow TOSHIBA



create frames, one of Netscape's own HTML innovations. This feature was not used in our test site, however.

Like Backstage Designer, Navigator Gold helped me publish my finished pages to my Internet provider's UNIX server; unlike with Backstage Designer, however, I didn't have to go back and remove a bunch of slashes afterward. But both apps proved to have the same UNIX compatibility problem: They require that you enter the explicit path of your home directory on your Web server. And unlike a more full-featured FTP tool such as WS-FTP, Navigator Gold's publishing tool can't create directories on the remote system.

One last gripe: The help files are located on Netscape's server, which means you'd better be near a phone or have an Internet connection when things go wrong. If all you need is a simple, intuitive way to create basic pages, Netscape's low-cost program is hard to pass up. But if your requirements are just the least bit complex, Gold might as well be made of tin. Navigator Gold 3.0 \$79; Netscape Communications Corp.; 415/937-2555; http://home.netscape.com READER SERVICE NO. 687

#### **SOFTQUAD HOTMETAL PRO 3.0**

PRO: Broadest HTML tag support; HTML code checker; good image editor

CON: Quasi-WYSIWYG interface; cumbersome URL conversion before publishing; can't edit HTML source

HOTMETAL PRO can handle just about any HTML task—once you've figured out how to use it. This powerful tool's interface was a little daunting at firstfour rows of buttons and a preview window with a little tag icon everywhere an HTML tag exists. Once I got the hang of it, though, I appreciated the way it displayed my tags in an otherwise graphical document view. For Web authors who know and love their HTML, this could be the best of both worlds—you can easily turn off the tags for a near-WYSIWYG view of your document.

The drawback is that you need to know HTML. Unlike with purely graphical programs, there's nothing to stop you



from inserting HTML tags where they're ¦ not allowed, such as after the page's closing HTML tag-an error I committed on my first page. But thanks to HoTMetaL Pro's HTML verifier command, which checks for coding snafus, I was soon error-free. Like FrontPage, HoTMetaL has a multiple-document interface, so you can simultaneously create all pages of a Web site. The editor window doesn't

HoTMetaL Pro added an extra pair of quotes to the JavaScript applet, generating an error. It was easy enough to deduce once I opened the page in a text editor, but HoTMetal Pro doesn't provide a way to edit or even view your source code.

display background images, but you can configure the toolbars to launch up to four different browsers to see how your page will look in a variety of settings.

HoTMetal Pro was the only program

that let me enter the two major types of scrolling text (<Marquee> and Java). For Navigator-supported scrolling text, HoT-MetaL brought up a dialog box to paste in the JavaScript code. But there was a glitch: HoTMetaL added an extra pair of quotes to the JavaScript applet, generating an error. The problem wasn't visible in HoTMetaL's on-screen tags. What happened was easy enough to deduce once I opened the page in a text editor, but HoTMetaL doesn't provide a way to edit or even view your source code.

When it came time to post my site to a server, HoTMetaL gave me no help at all-not even a limited Windows-to-Windows transfer utility. The best it could offer was a command that converted explicit file paths (c:\myfiles\ images\babe.jpg) to relative ones that any computer could understand (babe.jpg). But I had to repeat the command over and over again—a tedious chore. And if HoTMetaL had simply copied all relevant files to a single directory as the site was created —something the other three programs can do-the whole dumb task wouldn't have been necessary. HoTMetaL Pro 3.0 \$159; Soft-Quad Inc.; 416/544-9000; 416/544-0300 (fax); http://www.softquad.com

READER SERVICE NO. 688

# Won't the boys in Redmond b



Now the only news they'll get faster is news they make themselves. Introduc NewsCatcher, the world's first wireless receive

up-to-the-minute news for your PC. NewsCatcher monitors AirMedia Live Internet Broadcast Network 24 hours a 365 days a year, and then feeds it to you. Just plug it into y Windows 95 PC, and late-breaking news, sports, en tainment and other information will be delivered directly



Everything you need to get started (receiver, cable, and software) is included with your NewsCatcher purchase. You'll

even get an entire year of free service. But first, get yourself to a computer store. For the NewsCatcher retailer nearest you, call (800) 227-0697, x0204. Or, you can visit us at our Website; www.globalvillage.com/nc4/



ional service at an additional charge, s1996 Global Village Communication, Inc. All rights reserved. Global Village Communication, Inc. and NewsCatcher are trademarks and the Global Village Communication and Armedia and Armedia Live is a trademark of Ex Machina.
Windows is a registered trademark of Microsoft Corb, Not attiliated with Global Villages. Inc., a developer and tranchiser of custom online services in Medica. MA.





Is it worth pouring money into an old PC to bring it up to date? Sometimes.

Here's the SCOOP on when to upgrade and how to spend your upgrade dollars Wisely.

# Jpgrades 1981

YOUR 486 PC—a computer barely functioning under the load of today's system-hungry software. We can rebuild it. We have the technology. We can make it better...stronger...faster! But is it worth turning your old workhorse into the \$6 million bionic computer? It's a question millions of users face every day.

If you bought your computer more than two years ago, odds are you have a 486 with 4MB to 8MB of RAM. Back then, Windows 95 was merely a gleam in Bill Gates's eye, and the Web was something you cleared off the basement wall. Try to surf the Internet and run Windows 95 today on that 486—or even a Pentium-75—and you'll spend most of your waking hours staring at an animated hourglass.

Fortunately, memory and CPU upgrades can turn your aging machine into the Bionic PC. But which option is best for you?

ILLUSTRATION BY CHRISTIAN NORTHEAST

## The good news is, most RAM is

dirt cheap these days. A year ago, 8MB of

RAM cost more than \$300; now the same amount is less than \$100.

More RAM? A faster processor? Both? Or do you need a whole new system?

To answer these questions, we replaced the original CPUs in two 486-66 machines with Pentium-class processors from Evergreen Technologies, Gainbery Computer Products, Intel, and Kingston Technology, running our PC WorldBench test suite on the systems before and after the swap. Similarly, we installed Intel Pentium OverDrive processors in a pair of 75-MHz machines and two P-100sboosting the CPUs' internal clock speeds to 125 MHz and 166 MHz, respectively and then gauged the results.

To see if adding RAM boosts performance more than installing a faster CPU, we also tested the 486s with 8MB and 16MB and ran all four Pentiums with 8MB, 16MB, and 32MB. Finally, we com-

The best

upgrade is ..

(Pentium or

bined RAM upgrades with new CPUs, then measured the performance bang against the extra cost. Our findings:

- ◆ For 486s, the combination of upgrading the RAM to 16MB and upgrading the CPU yields the best results. Our upgraded 486-66 PCs gained an impressive 48 percent speed boost, performing on a par with the average P-75 with 8MB of RAM. Depending on your 486's age and memory configuration, a RAM-and-CPU upgrade runs anywhere from \$210 to \$480.
- ◆ For Pentiums with 8MB of RAM, adding an extra 8MB is the best option. When we boosted system RAM to 16MB, test scores rose by about 29 percent. Not bad for an upgrade costing less than \$100.
- ◆ For Pentiums with 16MB of RAM. the best upgrade is...none at all. Neither more RAM nor a Pentium OverDrive trip



boosted test scores enough to justify the \$350 to \$610 price tag.

But performance isn't the whole story. To find out whether upgrading your CPU is as easy as the vendors claim, we brought in several unsuspecting PC users and asked them to install the new proces-

> sors while we watched. We also conducted blind "taste tests" with selected users to gauge whether they could tell the difference between systems with extra RAM, a new CPU, or no upgrade at all. See "The 125-MHz Question." The results may surprise you.

#### Why? a whole new system Your motherboard is old, the hard disk is slow and low in capacity, and the graphics card is on its last legs. If you're

better) planning to use Windows 95, there are no shortcuts for you. 486 with 8M8 to add 8MB of RAM If you have 8M8, odds are both your memory banks are full, of RAM (30-pin which means you'll have to discard your existing SIMMs and SIMMs) get 16M8 worth of new ones. 30-pin SIMMs are hard to find and more expensive than their 72-pin counterparts. 486 with 8MB to add 8MB of RAM The combination of 16MB of RAM and a CPU upgrade delivers the most bang for your buck. Our upgraded of RAM (72-pin and a new SIMMs) 486-66 test systems performed on a par with the average processor Pentium-75 with 8M8. 486 with 16M8 a CPU You won't get any performance boost from of RAM upgrade kit upgrading to 32MB. Pentium with to add 8MB

of an OverDrive processor upgrade.

minimal performance boost.

The extra RAM delivers three times the performance boost

More RAM will provide minimal gains for Windows 95 users.

An OverDrive chip would be too expensive to justify the

Which Upgrade Is for You?

#### **RAM: THE SUPERIOR UPGRADE**

THE BIG WINNER in our battery of tests wasn't the star of a multimillion-dollar ad campaign but the unglamorous yet sturdy RAM chip. Upgrading from 8MB to 16MB increased speed 22 percent on average for 486s and just over 29 percent for Pentiums.

This shouldn't surprise most users. If you've ever tried to load a word processor, a spreadsheet, and a Web browser into 8MB of memory, you

8MB of RAM

Pentium with

16MB or more

of RAM

486SX

or lower

of RAM

none (save

your money)

have probably listened to the hard drive buzz incessantly as the system slowed to a crawl. That's because Windows has used up all available RAM and is accessing virtual memory, a section of the hard disk where it stores data and instructions that won't fit in RAM. The more memory you have, the fewer trips Windows makes to

the hard disk, and the faster your computer system performs.

So, if 16MB is good, 32MB must be much better, right? Wrong. When we upgraded our P-75s and P-100s from 16MB to 32MB, we boosted Windows 95 performance by only 3.4 percent. Unless you're crunching enormous spreadsheets

> · or running apps that need 32MB

or more—Windows NT, computer-aided design packages, and image or video editing software—stick to 16MB.

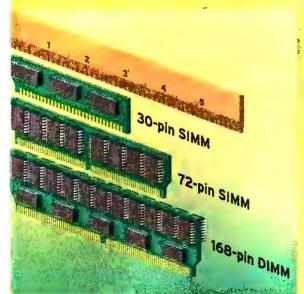
The good news is, most RAM is dirt cheap these days. A year ago, 8MB of RAM cost more than \$300; now you can find the same amount for less than \$100. The bad news? This windfall applies only to the 72-pin variety of RAM that comes in 486s and Pentiums sold since

# RAVSIMMplified

SIMMs? DIMMs? DRAM? EDO? SCHMEDEO? AAARGH!!! Figuring out which type of memory you need isn't as simple as, say, finding AA batteries for your uses SIMMs (single in-line memory modules) or DIMMs (dual in-line memory modules). A SIMM or DIMM is a plug-in board with a number of RAM

> chips that fits into a socket on the motherboard. SIMMs come in 30-pin or 72-pin varieties, while the newer DIMM design has 168 pins. If you have a 486 PC, chances are high you're using SIMMS with either 30 or 72 pins, Pentium PCs

typically use either 72-pin SIMMs or 168-pin DIMMs.



Walkman. PC memory comes in & a mind-numbing mix of shapes, sizes, capacities, and speedsand it's very easy to buy the wrong RAM.

If you own a brand-name PC, your job is usually straightforward: Simply call a reputable memory vendor such as Kingston Technology or Insight Direct, and tell them your PC's brand and model. The company should be able to find RAM modules that fit your system.

But if you have a no-name clone or would rather buy RAM at a computer superstore or a high-tech swap meet, you've got to do your homework.

#### SIMMS VERSUS DIMMS

FOR STARTERS, you'll need to know whether your computer

#### PINS? WHAT PINS?

THESE ARE tiny vertical gold bars at the bottom of the memory module. How do you know what you have? The easiest way to find out is to remove the PC's cover and grab a ruler or tape measure: A 30-pin SIMM is slightly over 3 inches long, while a 72-pin SIMM measures just over 4 inches. DIMMs are about 5 inches long.

#### NANOSECONDS COUNT

ANOTHER ISSUE is memory speed. Most of today's PCs use either 60- or 70-nanosecond RAM. If your PC requires 70ns RAM, it's okay to use faster 60ns chips-although you prob-

ably won't notice a speed increase. Don't buy RAM that's slower than required, because it won't work in your system. Not sure which speed you're using? Consult your PC's manual for technical specs, or ask your vendor.

#### IT'S IN THE BANK

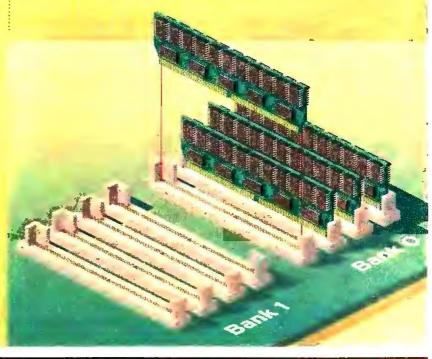
WHEN ADDING RAM modules to a PC, you'll need to fill an entire memory bank. On some motherboards, one bank can be four SIMM slots, while on others two SIMMs or one DIMM fill up a bank, If you can't tell by looking at the motherboard, check its documentation to determine what constitutes one memory bank in your PC. If all your memory banks are full, you'll need to throw away your existing RAM and replace it with higher-capacity SIMMs.

Note: You can't mix memory modules of different capacities, such as 1MB and 4MB SIMMs, in the same bank. However, if one bank contains, say, 1MB SIMMs, you can fill the other banks with higher-capacity modules.

#### THE NEW RAM

RECENT INNOVATIONS in dynamic RAM (DRAM) technology, such as extended data output (EDO) memory or synchronous DRAM (SDRAM), give newer systems an added speed boost. EDO reduces the amount of time it takes the CPU to read data from memory, while SDRAM increases performance by synchronizing memory speed with that of the processor bus. Both technologies are designed to work with the latest Pentium and Pentium Pro models, such as those that use Intel's Triton processor chip set. If your system doesn't support EDO or SDRAM (ask your vendor), look for standard SIMMs or DIMMs.

-Jeff Bertolucci and Yael Li-Ron



about 1994. Older 486s support an older, 30-pin type of single inline memory module that are now hard to come by and cost twice as much as the 72-pin type. Even worse, if all memory banks in your vintage 486 are filled with 30-pin SIMMs, you may have to toss out all your existing RAM and install new SIMMs. In that case, the cost of upgrading your RAM to 16MB could be as high as \$280—almost as much as the cost of a new Pentium-75 motherboard with 72-pin SIMMs totaling 16MB of RAM!

Before you go yanking out your motherboard—a task best left to a qualified technician—consider the other components in your system. You probably also want a bigger hard drive, a faster



FIVE EASY PIECES: A CPU upgrade kit usually contains 1 a box, natch; 2 a processor; 3 a heat sink (it often comes attached to the processor); 4 a demo disk, with varying degrees of usefulness; and 5 an illustrated manual, written in plain, nontechnical English—if you're lucky.

video card, and maybe a CD-ROM drive. If so, you're better off saving your money for a new PC. If you absolutely must upgrade your 486 and a new system is out

of your budget, spend no

more than \$300. For more information on finding the right kind of memory for your computer, see "RAM SIMMplified."

#### A 486 IN PENTIUM CLOTHING

under its load, take heart. CPU upgrade kits promise to bring Pentium-caliber performance to 486 systems. Typically, this means low-end Pentium performance, such as that produced by Intel's antiquated (in computer years) 75-MHz Pentium chip. Nevertheless, in our tests these processor upgrades boosted

our Compaq and IBM DX2-66s by an average of 25 percent.

But did our upgraded 486s match the performance of a 75-MHz Pentium? Not quite. In fact, our 486s with 8MB of RAM were still 25 percent slower than the comparably-equipped P-75s we tested, making them closer to a 486/DX4-100 system in overall performance. Only after we boosted the upgraded 486s to 16MB of RAM did they produce on a par with some Pentium-75 systems with 8MB of RAM.

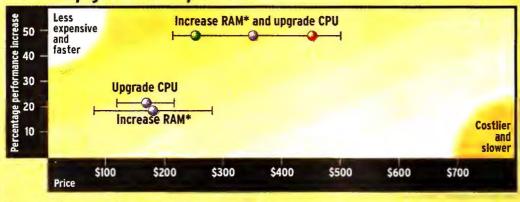
A variety of factors contributed to these lackluster results. For one thing, the typical 486 PC uses older (and slower) components than its Pentium counterpart. More important, the speed of the 486's bus—the rate at which the motherboard communicates with its components—is typically slower than the CPU. This is especially true when the vendor has squeezed more peformance from a system by doubling the speed of the CPU's internal clock. For example, our 486/DX2 has a CPU clock speed of 66 MHz but a bus speed of 33 MHz. When you replace the CPU with a 133-MHz processor, the bus still runs at 33 MHz.

Still, a 25 percent performance boost is nothing to sneeze at. Take a 486 CPU upgrade kit, which costs from \$120 to \$200, add \$100 or so for 8MB of RAM, and you get a significantly faster system for about \$300 or less. That's a pretty good deal.

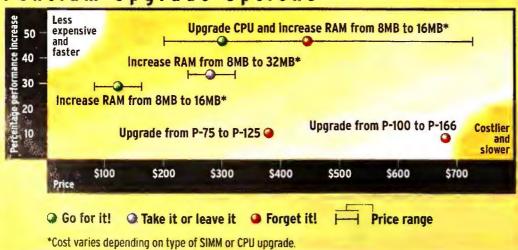
#### YOUR MONEY'S WORTH

ALL UPGRADES ARE NOT CREATED EQUAL. If you've got a 486 with 8MB of RAM, adding another 8MB and upgrading your CPU is usually your best bet. For Pentium owners, moving to 16MB is also a no-brainer. But don't bother replacing your Pentium's CPU: the minimal performance gain isn't worth the money.

#### 486 Upgrade Options



#### Pentium Upgrade Options



Dear former company,

here is a list of my demands:

- 1. i want to buy
  high performance
  direct and
  i want it fast!
- 2. i want a company that has important friends who back them up.
- 3. when i call, i want to talk to a human being who knows my name.

Nothing personal,

it's just the way

to do business now.

#### essional

#### performance 133

- · mini tower
- 133MHz Intel Pentium® Processor
- 16MB EDO Memory, Expanded to 128MB
- 512K Pipelined Burst Cache
- 1.6GB EIDE Mode 4 Hard Drive
- 64-bit Video with 2MB EDO
- Real-time video capture & MPEG1 playback
- 8X EIDE CD-RÔM Drive
- 15" .28 Pitch Monitor
- Microsoft® Windows® 95 or WFW 3.11
  Microsoft® Office Professional
- 3 Year Limited Warranty

Lease for \$62/mo

Lease for \$75/mo

performance 166

• 166MHz Intel Pentium® Processor

• 2.5GB EIDE Mode 4 Hard Drive

Microsoft® Windows® 95 or WFW 3.11
Microsoft® Office Professional

512K Pipelined Burst Cache

• 128-bit Lightspeed Video

• 8X EIDE CD-ROM Drive

• 15" .28 Pitch Monitor

3 Year Limited Warranty

32MB EDO Memory, Expanded to 128MB

· mini tower

F162D80

#### performance 200m

- 200MHz Intel Pentium® Processor
- 64MB EDO Memory
- 512K Pipelined Burst Cache
- 4.2GB EIDE Mode 4 Hard Drive
- 128-bit Lightspeed Video
- 8X EIDE CD-ROM Drive
- Creative Labs AWE32 Wavetable Sound Card
- 17" .28 Pitch Monitor
- Microsoft<sup>®</sup> Windows<sup>®</sup> 95 or WFW 3.51
- Microsoft® Office Professional
- 3 Year Limited Warranty

Lease for \$113/mo

#### pentium professional

#### z-station gtpro 180

- 180MHz Intel Pentium® ProProcessor
- 32MB EDO Memory, Expanded to 128MB
- 256K Pipelined Burst Cache
- 2.5GB EIDE Mode 4 HDD
- 128-bit Lightspeed Video with 2.25MB MDRAM
- Real-time video capture & MPEG1 playback
- 8X EIDE CD-RÔM Drive
- 17" .28 Pitch Monitor
- Microsoft® Windows® NT 3.51
  Microsoft® Office Professional
- Supports remote management through DMI
- 3 Year Limited Warranty

Lease for \$84/mo

R185F

A Committee Service

#### z-station gtpro 200

- 200MHz Intel Pentium® ProProcessor
- 32MB EDO Memory, Expanded to 128MB
- 256K Pipelined Burst Cache
- 4.2GB EIDE Mode 4 HDD
- 128-bit Lightspeed Video with 2.25MB MDRAM
- Real-time video capture & MPEG1 playback
- 8X EIDE CD-RÔM Drive
- 17" .28 Pitch Monitor
- Microsoft® Windows® NT 3.51
- · Microsoft® Office Professional
- Supports remote management through DMI
- 3 Year Limited Warranty

Lease for \$94/mo

R205H

#### z-station gtpro 200p

- 200MHz Intel Pentium® ProProcessor
- 64MB EDO Memory, Expanded to 128MB
- 256K Pipelined Burst Cache
- 4.2GB SCSI HDD
- 128-bit Lightspeed Video with 2.25MB MDRAM
- 6X SCSI CD-ROM Drive
- 17" .28 Pitch Monitor
- Microsoft® Windows® NT 3.51
- Microsoft® Office Professional
- Supports remote management through DMI
- 3 Year Limited Warranty

Lease for \$135/mo

#### multimedia pentium

#### z-station vx 133

- · mini tower
- 133MHz Intel Pentium® ProProcessor
- 16MB EDO Memory
- 256K Pipelined Burst Cache
- 1.6GB EIDE Mode 4 Hard Drive
- 64-bit 3-D Video with EDO Memory
- 8X EIDE CD-ROM Drive
- 33.6 Kbps FAX Modem
- 16-bit SRS3D Wavetable Audio
- Altec Lansing Speakers
- 15" .28 Pitch Monitor
- Microsoft® Windows® 95 Corel WordPerfect Suite 7
- Z-MPC bundle
- 3 Year Limited Warranty

Lease for \$63/mo



#### z-station vx 166

- · mini tower
- 166MHz Intel Pentium® ProProcessor
- 32MB EDO Memory
- 256K Pipelined Burst Cache
- 2.5GB EIDE Mode 4 Hard Drive
- 64-bit 3-D Video with EDO Memory
- 8X EIDE CD-ROM Drive
- 33.6 Kbps FAX Modem
- 16-bit SRS3D Wavetable Audio
- Altec Lansing Speakers
- 17" .28 Pitch Monitor
- Microsoft® Windows® 95 Corel WordPerfect Suite 7
- Z-MPC bundle
- 3 Year Limited Warranty

Lease for \$86/mo

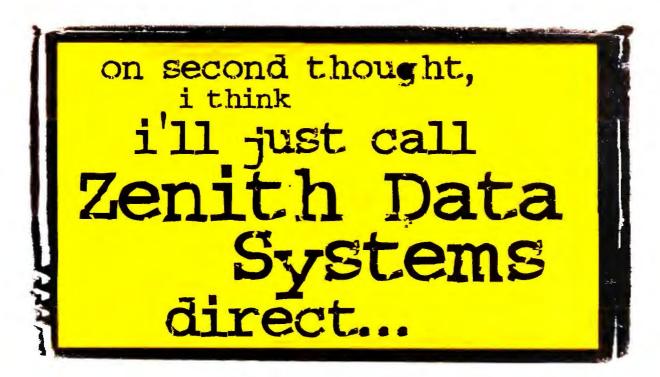


#### z-station vx 200

- mini tower
- 200MHz Intel Pentium® ProProcessor
- 32MB EDO Memory
- 256K Pipelined Burst Cache
- 3.4GB EIDE Mode 4 Hard Drive
- 64-bit 3-D Video with 2MB EDO Memory
- 8X EIDE CD-ROM Drive
- Iomega Zip 100
- 33.6 Kbps FAX Modem
- 16-bit SRS3D 3D Wavetable Audio
- Cambridge Soundworks Speakers
- 17" .28 Pitch Monitor
- Microsoft® Windows® 95
- Corel WordPerfect Suite 7
- Z-MPC bundle
- 3 Year Limited Warranty

Lease for \$96/mo

Call 800.554.6746 today to speak with a ZDS direct web site at: http://www.zdsdirect.com consultant. Visit our Education/state and local government customers call: 800.554.8892 96PW10



# Introducing the new direct Zenith Data Systems Direct. The way to do business now.

For business computing customers, it's all coming together in one company. • High Performance hardware for your most demanding desktop, notebook and server applications, for individuals, workgroups and organizations. High-performance that saves you time and maximizes your investment. • Custom-Configuration to assemble precisely the machines you need, precisely when you need them. Because nobody knows better than you how you want your hardware to work. • Outstanding Technical Support because minimizing downtime is always a mission-critical function. • And Strategic Alliances with industry leaders who have the strength to offer you cutting-edge technology and the stability to support you in the years to come. • No other company offers greater computing value than ZDS Direct.





#### notebooks

#### z-star gx 100

- 100MHz Intel Pentium® Processor
- 12.1" Active-Matrix with 800x600 Color Display
- 16MB DRAM, Expandable up to 40MB
- 1GB Hard Drive Expandable to 1.3GB
- 6X CD-ROM Module
- Lithium Ion Smart Battery
- Infrared IrDA Port
- 256K Synchronous Pipelined Burst Cache
- 128-bit graphics accelerator with 1MB Memory
- 16-bit sound
- Built-in Microphone and Stereo Speakers
- TrackPad Ergonomic Pointing Device
- Windows 95
- One Year Factory Parts and Labor Warranty
- 6.1 lbs.

Lease for \$109/mo

\$3199 SNCD061A

Man Don't Marie

Lease for \$89/mo

One Year Factory Parts and

Labor Warranty

z-star mx 100

Color Display

810MB Hard Drive

Infrared IrDA Port

8MB DRAM

NiMH Battery

16-bit sound

Windows 95

• 5.9 lbs.

• 100MHz Intel Pentium® Processor

• 10.4" Active-Matrix with 800x600

256K Synchronous Pipelined Burst Cache

Built-in Microphone and Stereo Speakers

TrackPad Ergonomic Pointing Device

\$2599

SNP1008A

#### z-note 6000

- · Network ready
- 133MHz Intel Pentium® Processor
- 12.1" Super-bright TFT screen with 800x600 Color Display
- 16MB DRAM
- 1.35GB Removable Hard Drive
- Lithium Ion Smart Battery
- Infrared IrDA Port
- 256K Synchronous Pipelined Burst Cache
- 64-bit graphics accelerator,65000 colors with 2MB Memory
- 16-bit sound
- Integrated 28.8kbps data/FAX modem
- Built-in Microphone and Stereo Speakers
- Windows 95
- Three Year Mail-in Warranty
- 6.9 lbs.

Lease for \$171/mo

\$499

ZNCD16

\$119.0

\$129.0 \$249.0

\$949.0

\$299.0

\$179.0

\$229.0

\$169.0

\$119.0 \$399.0

#### z-star gx 133

- 1.3GB Hard Drive
- 133MHz Intel Pentium® Processor
- 12.1" Active-Matrix with 800x600 Color Display
- 16MB DRAM, Expandable up to 40MB
- 6X CD-ROM Module
- Lithium Ion Smart Battery
- Infrared IrDA Port
- 256K Synchronous Pipelined Burst Cache
- 128-bit graphics accelerator with 1MB Memory
- 16-bit sound
- Built-in Microphone and Stereo Speakers
- TrackPad Ergonomic Pointing Device
- Windows 95
- One Year Factory Parts and Labor Warranty
- 6.1 lbs.

Lease for \$119/mo

\$3449

SNCD161A

#### z-star mx 120

- 120MHz Intel Pentium® Processor
- 10.4" Active-Matrix with 800x600 Color Display
- 16MB DRAM
- 1GB Hard Drive
- NiMH Battery
- Infrared IrDA Port
- 256K Synchronous Pipelined Burst Cache
- 16-bit sound
- Built-in Microphone and Stereo Speakers
- TrackPad Ergonomic Pointing Device
- Windows 95
- One Year Factory Parts and Labor Warranty
- 5.9 lbs.

Lease for \$98/mo

\$2849

**SNP1316A** 

#### z-mpc software bundle

The Z-MPC bundle includes Corel® FLOW 3, Corel Presentations 7, Corel Quattro Pro 7, Corel WordPerfect®, Microsoft® Works, MS® Money, MS Publisher, Janna® Contact Lite, America On-Line®, Netscape® Navigator, MS Encarta® 1996, Best of Microsoft Entertainment Pack, Sega® Comix Zone, Symantic® Norton Utilities® and Norton Antivirus®

## build-to-order

popular upgrades and accessories

#### desktop options

| 3Com® PCI Ethernet card            |
|------------------------------------|
| 33.6 kbps FAX modem                |
| 3.2GB travan tape backup           |
| CD-R recordable CD drive kit       |
| Paperport personal scanner         |
| Upgrade to 3 years On-Site Service |
| Paperport personal scanner         |

#### notebook options

28.8 kbps FAX modem 3Com® Ethernet card Port Replicator 16MB memory module Deluxe carry bag HP® Deskjet 340

\$59.0 \$325.0

ZENITH DATA SYSTEMS

DIRECT



pentium

Circle 214 on reader service card

#### warranty information

Specifications and prices subject to change without notice. All marks are property of their respective organizations. On-site service may not be available in some remote locations. Call for details of warranty and service agreements. Lease prices are based on a term of 36 months.

Call 800.554.6746 today to speak with a ZDS direct sales consultant. Visit our web site at: http://www.zdsdirect.com
Education/state and local government customers call: 800.554.8892

#### KIT AND KABOODLE

UPGRADE KITS for 486s come in a bewildering array of clock speeds and specs, but they basically fall into two categories: Intel and non-Intel. Intel's Pentium Over-Drive for 486 is based on Pentium technology. By comparison, Evergreen, Gainbery, and Kingston use either AMD's or Cyrix's 5x86 processors, which, architecturally speaking, are more closely related to the 486 than to the Pentium.

All the kits offer a 16K or larger internal CPU cache, which aids system speed by storing recently used instructions or data; the Intel kit features a 32K cache. Both the AMD and Cyrix processors come with a "P-rating"—in theory, a measure of the chip's performance relative to the Pentium. But none of the P-75 kits achieved true P-75 performance. Although we tested only upgrades for 486-66 CPUs, each vendor has upgrade kits for a wide range of system configurations. For full product specs, see PC World Online (http:// www.pcworld.com.nov96/upgrade.html).

The kits also vary widely in their compatibility with the universe of installed 486s. While we liked the Kingston processor best, thanks to its easy installation and low \$129 price, compatibility will likely play the key role in determining which upgrade kit you choose. (See "CPU Upgrade Issues" for more information.) Here's how the kits line up.

**Evergreen 586/133:** This kit comes in two flavors—a \$129 version that uses AMD's Am5x86 processor and has a P-75 rating, and a \$159 model that uses Cyrix's 5x86 chip and comes with a P-90 rating. (To provide a direct comparison to the other vendors' P-75-rated kits, we tested the AMD version.) The Evergreen 586/133 comes with a heat sink and a 16K internal cache. It boosted performance by 13 percent on our Compaq 486-66 test system with 8MB of RAM, and by 21 percent on the same system with 16MB. Its scores were even higher on an IBM 486-66: a 26 percent increase with 8MB, and a 29 percent jump with 16MB.

Gainbery GB-586-133: Like Evergreen's 586/33, Gainbery's processor kit uses AMD's Am5x86 chip with a 16K internal cache and a clock multiplier. The \$139 GB-586-133 also has a heat sink—a huge heat sink—so tall we couldn't install the TEST REPORT

#### CPU and RAM Upgrades

| SYSTEMS                      | RAM<br>(MB) | PC WorldBenck | h Faster Test times Slower   |
|------------------------------|-------------|---------------|--|
| Baseline DX2-66              | 8           | 64            |  |
| with CPU upgrade             | 8           | 77            |  |
| with 8MB added               | 16          | 76            | And the second do not the seco |
| with CPU upgrade, 8MB added  | 16          | 95            |  |
| Baseline P-75                | 8           | 105           |  |
| with OverDrive               | 8           | 116           |  |
| with 8MB added               | 16          | 134           |  |
| with 24MB added              | 32          | 138           |  |
| with OD-125, 8MB added       | 16          | 154           |  |
| with OD-125, 24MB added      | 32          | 158           |  |
| Base P-100                   | 8           | 106           |  |
| with OverDrive               | 8           | 116           |  |
| with 8MB added               | 16          | 139           |  |
| with 24MB added              | 32          | 144           |  |
| with OD-166, 8MB added .     | 16          | 156           |  |
| with OD-166, 24MB added      | 32          | 162           |  |
|                              |             | Minutes       | 0 5 10   |
| Word 7.0 for Windows 95      |             | (1-2)         | Paradox 5.0 for Windows  |
| Excel 7.0 for Windows 96     |             | ALC: Y        | WordPerfect 6.0 for Windows  |
| Picture Publisher 6.0 for Wi | ndows 9     | 5             | 1-2-3 release 5 for Windows  |

HOW WE TEST We tested processor upgrade kits from Evergreen Technologies, Gainbery Computer Products, Intel, and Kingston Technology, Using 66-MHz 486 systems from Compaq and IBM, we replaced the original 486 CPUs with "Pentium class" processors from the four vendors, testing the systems before and after the swap. Similarly, on 75-MHz Pentiums from AST and Quantex, and 100-MHz Pentiums from Dell and NEC, we installed Intel Pentium OverDrive processors that boost the CPUs' internal clock speeds to 125 MHz and 166 MHz, respectively. We also tested the PCs under a variety of memory configurations, including BMB, 16MB, and 32MB of RAM. On the 4B6s, we tested with BMB and 16MB of RAM only. Higher PC WorldBench scores are better.

chip properly on our IBM test system.

On our Compaq 486-66 with 8MB of RAM, the GB-586-133 hiked performance by 18 percent; oddly enough, with 16MB the boost was only 19 percent. On the IBM, the increases were 24.6 percent with 8MB and 30.6 percent with 16MB.

Intel's Pentium OverDrive for 486: Despite its Pentium core, larger cache, and higher price (\$219), the 83-MHz OverDrive was no faster than the 5x86-based upgrade kits that we tested. On our Compaq, the Over-Drive registered an 18 percent speed boost with 8MB of RAM and 20 percent with 16MB. On the IBM, the gains were 25 percent with 8MB of RAM and 29 percent

Kingston TurboChip 133: The \$129 Turbo-Chip, which also uses the Am5x86 processor, performed on a par with its competitors. It works with most—but not all—486 systems, including the lowly 16-MHz 486SX. However, the TurboChip won't work with 486s that use a 40-MHz system bus, including clock-doubled 80-MHz PCs and clock-tripled 120-MHz

# The 125-MHz Question

WHEN YOU PLAY the upgrade game, perception is as important as reality. Sure, test results may say an upgraded system is 20 percent faster, but can you really tell the difference? We decided to find out. So we brought eight PC users-four novices and four veterans-to our labs and invited them to play Spot the Faster System.

Each contestant worked with three machines: a 75-MHz Pentium with 8MB of RAM; a P-75 with 16MB; and a P-75 with 8MB that had been upgraded with a 125-MHz Pentium Over-Drive, boosting its internal processing speed to 125 MHz. Because this was a blind test, the contestants didn't know which PC was which.

Their assignment? Perform standard computing tasksusing the search-and-replace tool in Microsoft Word, editing an Excel spreadsheet embedded in a Word document, and blasting baddies to smithereens in the hallways of Doom-and then tell us which PC they thought was faster.

In the grand tradition of The Price is Right, we also asked our panel to estimate the

street prices of RAM and CPU upgrades. Although the dollar amounts varied wildly-from \$35 for a new CPU to \$1250 for 8MB of RAM-six users correctly guessed that the CPU upgrade kits were more expensive. And in fact, 8MB of RAM costs less than \$100, while a 125-MHz OverDrive kit is about four times that-\$379.

#### NO SURPRISES

SEVEN OF the eight testers picked the Pentium-75 upgraded to 16MB of RAM as the

fastest system. Our test results confirm that this memory upgrade indeed yields the best results, boosting performance

by a good 30 percent.

But when we pitted a P-75 with 8MB against the same system upgraded with the 125-MHz OverDrive, the results

were surprising: Half the users believed the 8MB machine was faster than the one with the OverDrive chip! The Over-

Drive's 11 percent performance gain went unnoticed. The loser: the OverDrive upgrade kit.

Next came our tricky perception quiz: We asked our contestants which system they thought should be faster. Inter-

> estingly, half of them picked the PC with the 125-MHz Over-Drive, and only three chose the true speed champ, the Pentium-75 with 16MB. (One was undecided.) One user voted for the OverDrive because "It's specially made to go faster." Obviously, Intel's Pentium commercials are paying off. The winner: Intel's marketing campaign.

> To some users, pure system performance may be all that matters. But

shelling out good money for an upgrade you won't even notice is surely the wrong way to play this game. -J. B.

units. On the Compaq with 8MB of RAM, the TurboChip boosted performance by 16 percent; with 16MB, the increase was 20 percent. On the IBM, the gains were 25 percent with 8MB of RAM and 31 percent with 16MB.

Bottom line: Though 486 upgrade kits are relatively affordable, a 25 percent performance boost is often not noticeable to the naked eye. If your 486 has 8MB of RAM or (shudder) less, a combination of RAM and CPU upgrade is your best route. See "Which Upgrade Is for You?" for details.

#### **PENTIUM UPGRADES:** MONEY FOR NOTHING?

A LOT HAS CHANGED since Intel introduced the Pentium more than three years ago. The first crop of Pentiums featured then-blistering clock speeds of 60 and 66

MHz. By comparison, the newest Pentium chip runs at 200 MHz.

Earlier this year, Intel introduced a series of Pentium OverDrives to bring its early models up to speed. Unlike the 486 upgrade products, which replace the original 486 chip with a faster CPU from another vendor or with Intel's own Pentium/486 hybrid, the Pentium-based OverDrives are true Pentium chips running at faster internal clock speeds. (Note: Evergreen's Pentium upgrades were not available for testing at press time.)

Bad news for Pentium owners: While the Pentium upgrade products cost considerably more than their 486 counterparts-from \$379 to \$679-they deliver less bang, as we discovered when we replaced a 75-MHz Pentium chip with a 125-MHz OverDrive, and a 100-MHz Pentium with a 166-MHz OverDrive.

Here are the sobering facts:

- ◆ The 125-MHz OverDrive increased P-75 performance by an average of just under 11 percent on our 8MB test systems. When we increased the RAM, the numbers grew slightly: a 14 percent gain with 16MB and with 32MB. Still, that performance is around the level of a typical Pentium-75 system with 16 MB of RAM.
- ◆ The 166-MHz OverDrive's test scores were equally yawn-inspiring: An average 9 percent performance gain on the 8MB systems, 12 percent with 16MB, and 12 percent with 32MB. The 166-MHz Pentium OverDrive does deliver on its promise: Its performance rivals that of an off-the-shelf Pentium-166 PC. But is a piddling 9 to 12 percent speed boost worth \$610? We think not.

Unfortunately, we couldn't make an apples-to-apples speed comparison



Step one: Scan a document. Step two: Press a button to convert that document into editable text and images for your favorite applications.

#### - WHAT'S NEW IN -OMNIPAGE PRO FOR WINDOWS 95

- Microsoft Office Compatible
- Integrates with your favorite image editor

  Designed for
- New easier-to-use AutoOCR Toolbar™
- Read faxes directly from Microsoft Exchange
- Automatic OCR scheduling
- HTML output jump starts moving pages to the Web
- . OLE 2.0 support, and more

Sound easy? It is. OmniPage® Pro is the world's most accurate Optical Character Recognition (OCR) software, turning your

scanned pages into usable, editable text and graphics in seconds.

So now you can accurately enter your letters,

faxes, reports, even articles into Word, WordPerfect, Excel, Lotus 1-2-3, PageMaker and many other applications without ever having to type a single word. OmniPage Pro is now available for Windows 95 and

Windows 3.1. Which means that—no matter which operating system you use—you can take complete advantage of the most accurate OCR

software in the world today.

Call us now to order a copy of OmniPage Pro, or simply visit a local reseller.

And then you can

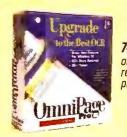
really start using your scanner for all it's worth.

caere

**\$129** 

If you have any OmniPage or WordScan product, including those bundled with your HP or other scanner, upgrade to OmniPage Pro for these benefits:

- 65% more accurate
- 35% faster
- New, easier-to-use interface
- True Page® retains text & graphics in their original layout



Visit a local reseller or call today!

800-736-5735

extension 60

[www.caere.com]









--- 66 -

OmniPage Pro is the

longtime OCR leader for

good reason. It's simple,

fast and the most com-

plete package around.

PC Computing—December 1995

- 99 -

## Bad news for Pentium owners:

while the Pentium upgrade products cost considerably more than their 486

counterparts, they deliver less bang.

with the 125-MHz Pentium OverDrive, which uses a rare "limited edition" 50-MHz system bus. The nearest off-theshelf competitor, the 120-MHz Pentium PC, has a slightly slower internal clock speed but uses a faster 60-MHz bus. Even so, the 125-MHz OverDrive's \$379 street price is too much to pay for a laggardly 11 percent performance boost.

Our recommendation: To upgrade a

Pentium PC, you'd do better buying RAM (if it has only 8MB) or a new video card.

#### TRANSPLANTING YOUR CPU: PROCEED WITH CAUTION

NO MATTER WHAT upgrade you choose, you'll have to pop the hood on your computer and fool with the innards of a \$2000 machine. Adding new RAM is like replacing the spark plugs in your



Accelerate Your DISPIA

THE RIGHT GRAPHICS CARD can mean the difference between productivity and frustration. To help figure out which graphics card is right for you, think of how you'd

describe your computer to a friend. Now look here for a similar description and see if you've got the graphics card you need to get the best results. -Brad Grimes

| YOUR PC IS             | You need   | Get this  |
|------------------------|--|---|
| a dinosaur             | If you own an older (vintage 1993 or 1994) 486 PC, you can probably use a VESA local bus graphics board. Unfortunately, most new graphics boards support PCI local bus. And if all you have are ISA slots, you could be out of luck—they don't make ISA boards any more. Look hard, though. Some retailers still carry both VLB and ISA boards.  | <ul> <li>Diamond Stealth64 Video 3000 (VLB) with a minimum of 2MB of RAM (\$269)</li> <li>STB Velocity 64 Video (VLB) with 2MB of RAM (\$269)</li> <li>Diamond SpeedStar64 2000 (ISA) with 2MB of RAM (\$199)</li> <li>STB Nitro64 (ISA) with 2MB of RAM (\$199)</li> </ul> |
| a number<br>cruncher   | To see a lot of your large spreadsheet on the screen at once, get a graphics board that offers high resolutions and high refresh rates.  Almost all boards support 1024 by 768, but not all refresh the screen fast enough to prevent flicker. Your board should support a refresh rate of at least 75 Hz at all the resolutions you plan to use.                                      | Matrox MGA Millennium (\$269)     Hercules Terminator Professional (\$279)     Number Nine 9FX Motion771 (\$259)  |
| a 1-hour<br>Fotomat    | For touching up photos, you need a board that can display 24-bit photo-realistic color (that's 16.8 million colors). Here, the difference is in the amount of memory.  | <ul> <li>A board with 2MB (for displaying 24-bit color at resolutions up to 800 by 600).</li> <li>A board with 4MB of VRAM or WRAM (for 1024 by 768; costs roughly \$140 more than a 2MB board).</li> </ul>   |
| a multimedia<br>cinema | To play full-motion video, your board should support color space conversion, which helps the video run without skipping frames; scaling, which lets you change the size of your video window without hurting video quality; and bilinear interpolation, which helps eliminate jagged edges on images. In addition, it should support DirectVideo for playing AVI movies on Windows 95. | <ul> <li>STB Lightspeed 128 (\$199)</li> <li>VideoLogic GrafixStar 600 (\$159)</li> <li>ATI Video Xpression (\$173)</li> <li>Hercules Dynamite 128/Video (\$229)</li> </ul>   |
| a 3-D console          | For killing bad guys in the latest game or browsing virtual worlds on the Web, you need a board that accelerates 3-D images. Some 3-D boards work in conjunction with your existing graphics board. Others, like the ones listed here, are 3-D and graphics boards in one.   | <ul> <li>ATI 3D Xpression (\$199)</li> <li>Diamond Stealth 3D 2000XL (\$179)</li> <li>Number Nine Reality 332 (\$199)</li> </ul>  |

#### 230 MB REWRITABLE STORAGE

# THE NOTEBOOK WITH A REMOVABLE MO\* DRIVE

\*Magneto Optica

A StepNote™ Plus Internal 230MB MO Option. Another PC First From Everex. And Fujitsu.

#### Capacity and Convenience.

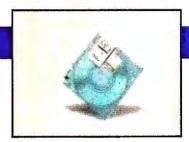
The 230MB M.O. Fujitsu drive easily slips in and out of any StepNote Plus floppy bay. Applications can run directly from the media: graphic and sound files; video sequences; large databases.



- 3.5" ISO Standard Disk
- Performs like a 14x CD-ROM
- 30-year Shelf Life
- · Low Power Consumption
- Storage Equivalent of 170 Floppy Disks

Before





After

170 Floppy Disks = 1MO Disk

Small, light, compatible. Reads fast just like a hard drive and provides back-up security without magnetization or impact concerns. Files are accessed directly for immediate retrieval.

Share. A single Everex StepNote Plus can be used by multiple operators simply by changing the MO drive or disk. A library of confidential information can be transported in one user's vest pocket while another enters data on the same StepNote Plus. *Data integrity and security are assured.* 

#### Modular Features. Custom Results.

Each Everex StepNote Plus offers you a choice of graphic displays, CD-ROM or 2nd battery option, and a removable hard drive. And a multimedia subsystem. A Pentium processor (up to a 133MHz) complements the Fujitsu MO drive option offering value conscious notebook users the finest, fastest rewritable ISO standard media on the market.

Hundreds of thousands of Everex notebooks, desktops, servers, workstations and peripherals are supported by a service organization dedicated to round-the-clock customer satisfaction. *Everex is everywhere. Since* 1983.

Fits into any Everex StepNote<sup>TM</sup> Plus Computer.

24-Hour Service, 7-days/week. 2-Year Warranty<sub>1</sub>. First Year 48-Hour Hot Swap.

Now Available

1-800-EVEREX1









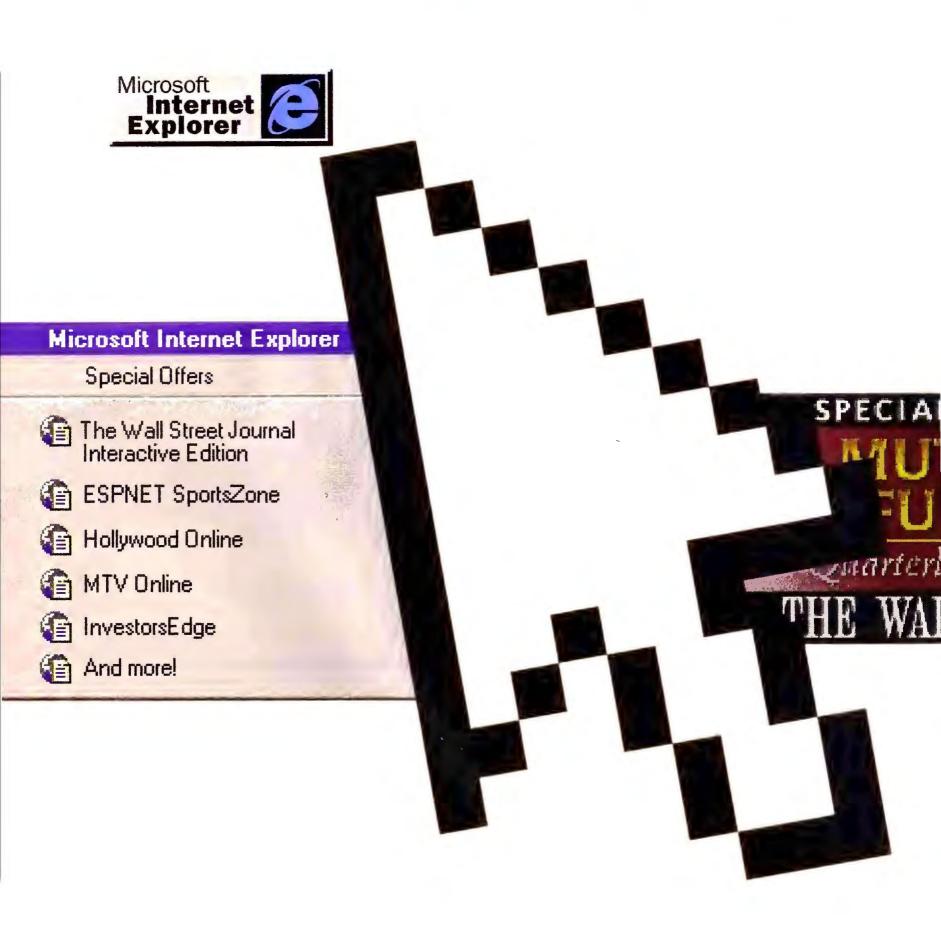


Tech Support: 1-800-262-3312, 24 hours a day, 7 days a week **1-800-EVEREX1** 

The Intel Inside logo and Pentium are registered trademarks of Intel Corporation. Microsoft, Windows and the Windows logo are registered trademarks of Microsoft Corporation. StepNote is a trademark of Everex Systems, Inc. Fujitsu is a registered trademark and Fujitsu Limited. DynaMO is a registered trademark of Fujitsu Computer Product of America, Inc. The EnergyStar emblem does not represent EPA endorsement of any product or service. One year warranty on LCD, 90 days on battery.

Circle 107 on reader service card

#### Microsoft Internet Explorer 3.0



<sup>\*</sup>Connect time charges may apply to all offers.

# IS YOURS TO DOWNLOAD, ABSOLUTELY Free, COMPLETE WITH SUBSCRIPTIONS TO THE WALL STREET JOURNAL INTERACTIVE EDITION AND ESPNET SPORTSZONE, so tree Dow Jones Industrial Average INTERACTIVE EDITION. 5525.58, up 43,65

Introducing Microsoft® Internet Explorer 3.0. The new browser that's a step ahead of all the rest. It lets you experience all the coolest content, like sound and animation, that's being developed for the Internet today. It lets you customize the way you access and view the web. And it's yours to download right now, absolutely free.\* From now through December 31, we have all kinds of special offers that make the experience even better: You get The Wall Street Journal® Interactive Edition, free. It's the web's leading source of business news, with 24-hour updated coverage of world business and deep background on thousands of companies and

topics. You also get a free subscription to the premium areas of ESPNET™ SportsZone,™ the number one destination site on the web, including expert columnists, multimedia highlights, behind-the-scenes reports, in-depth player profiles, and more. Our new browser also gives you free access to "buy, sell, hold" stock recommendations from InvestorsEdge, the Internet's premier financial information service. And there's even special content on MTV™ Online and offers on other sites that can only be seen with it. Just go to www.microsoft.com/ie. Then click one button. And see what a real browser can bring you these days.



car—once you get over the initial terror, it's usually pretty straightforward.

Adding a new processor, on the other hand, means handling the most expensive component of your PC's motherboard. All the CPU upgrade kits claim to be easy for novices to install. To find out if that was really true, we invited eight users to the PC World Usability Lab and asked them to roll up their sleeves and dig in.

Our jury consisted of eight users, all of whom had at least five years' experience using a PC. Their professional backgrounds varied from bookkeeping to

designing energy-efficient lighting. Four users had previously installed internal components (RAM, hard drive, or video card); the other four had never removed the cover from a PC.

Using the CPU upgrade kits' directions as reference, each user had to upgrade the 486 CPU in a Compaq Deskpro and rate the ease or difficulty of the procedure. The kits we tested were from Evergreen, Gainbery, Intel, and Kingston. Each juror installed three of the four products in varying sequence. As in all usability testing, we videotaped the process and

evaluated the users' struggles.

Problems appeared early on, even among the experienced jurors. Nearly everyone had trouble finding the CPU the first time they went looking. Instructions for all four upgrade products described how to identify a 486 chip by its logo, but none described the heat sink and fan that covers the chip. Evergreen addressed this problem best. Its manual said the CPU was about 1.75-inches square-a very helpful identifying tool.

Several testers were also baffled by the release lever on the zero insertion force socket, though each product's instructions made at least passing mention of it. One

# CPU Upgrade SSUES

SO YOU'VE DECIDED that a CPU upgrade is the right choice. Now what? Buy the chip, pop open the PC, flip a lever, swap the chips, and you're done. Right?

Well, sometimes. First, you've got to determine whether the upgrade kit you want is compatible with your system-or, if you have an older 486, whether the CPU is upgradable at all. These are some of the questions to consider before starting.

#### DOES MY BIOS SUPPORT THE NEW CPU?

THE BASIC input/output system is a set of instructions your computer uses to control the keyboard, monitor, disk drives,

and certain system functions. Before you order your upgrade kit, you need to know whether your BIOS will support the new CPU. If your PC is a brand-name system such as Compag or Dell, just note its model, then call the upgrade kit vendor (or check its Web site) to see if the kit works with your system. If you're not sure which BIOS you have, try pressing one of the following key combinations while your system is booting: <Ctrl>-<Alt>-<S>; <Ctrl>-<Alt>-<Esc>; <Delete>; <F10>; <Alt>-<F10>.

When you find the combination that works on your system, you'll be in a setup menu, where you the BIOS

type and version. Caution: Don't make any changes while you're in the setup menu. Just note the information you're looking for, then follow the on-screen prompts to exit.

You can also download the file et9604.exe from PC World On-

line. It's a DOS-based diagnostic tool that identifies many common CPUs and BIOSes.

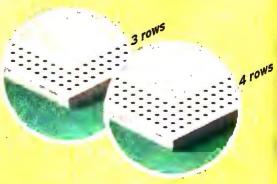
If you have an incompatible Flash BIOS, you should be able to upgrade it by downloading software from your PC

vendor's Web site or BBS. If your system is three years old or older, you probably don't have a Flash BIOS and will need to replace the BIOS chip itself. In that case, your best options are either to replace the whole motherboard, which will come with a new BIOS and CPU, or to buy a new PC.

#### WILL MY NEW CPU FIT INTO THE SOCKET?

IF YOU'RE planning to replace your 486 processor, make sure the CPU socket is compatible with the new processor. Unfortunately, 486 CPU sockets

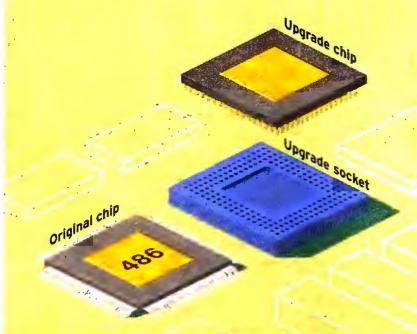
shapes and sizes, and there's no guarantee that you can upgrade. For example, in some 486s, the CPU is soldered to the motherboard-and there's no OverDrive socket. If this describes your system, you're out of luck; your PC won't support a processor upgrade. In other 486s, the CPU is sol-



dered to the motherboard and sits next to an empty OverDrive socket. In these systems, you leave the original CPU alone and install the upgrade chip in the empty socket.

To confuse matters further, some motherboards have either a 168- or 169-pin socket, while others have either a 237- or 238-pin socket. How can you tell the difference? If there are three rows of pinholes around the processor, it's a 168- or 169pin socket. Four rows indicate a 237- or 238-pin socket.

If you're a Pentium owner, you don't have to fret over come in a confusing mix of a sockets. Simply swap your



tester placed the Gainbery 586 chip on top of the existing 486 CPU, not realizing the native chip must be removed before installing a replacement. A second user misaligned the Gainbery upgrade chip and struggled at length to figure out why the system would no longer boot.

Overall, the Intel OverDrive83 and the Kingston TurboChip 133 kits received the highest marks, thanks in large part to their clear and amply illustrated instructions. The Intel kit got nods for its disk-based animated tutorial, which users viewed before disassembling their systems. Most testers also liked the Evergreen 586 Processor Upgrade kit, -

though its documentation was ambiguous in spots. "It gave examples of other sockets but not of the ZIF socket with the [lever] on it. I wasn't sure what I was supposed to do," commented one tester.

Despite the varying degrees of frustration with the upgrade kits, all of our testers eventually succeeded in their mission. As for the PC World test crew, we encountered our own usability headaches when running our performance benchmarks. The IBM 486, for example, featured a socket with a three-sided lever that wouldn't close over the tall heat sink on the Gainbery upgrade chip. Our Mac-Gyver-like solution: Scotch tape.

> Bottom line: If you are going to perform brain surgery on your PC, set aside several hours to do it. just in case there are complications.

#### TO UPGRADE OR NOT?

UPGRADING A PC can send your productivity through the roof. It can also waste time and money. It all depends on your system and on the upgrades available.

If your 486 is too old, you'd probably be better off buying a



LOW-TECH SOLUTION: The only way we could fit the Gainbery upgrade chip into the IBM motherboard was with Scotch tape.

new system. If your Pentium already has 16MB of RAM, a CPU upgrade may give too little bang for the buck. A simple rule of thumb: With new Pentiums starting around \$1500 these days, it doesn't make sense to spend more than \$300 on an upgrade.

For files mentioned in this article, visit PC World Online at http:// www.pcworld.com. Jeff Bertolucci is a freelance writer living in Denver, Colorado. Associate Editor Brad Grimes, Senior Editor Yael Li-Ron, Assistant Editor Aoife McEvoy, and Usability Testing Manager Susan Silvius also contributed to this article. Performance tests conducted by Ulrike Diehlmann of the PC World Test Center; usability testing run by Jeff Kuta.

existing Pentium CPU for an OverDrive chip.

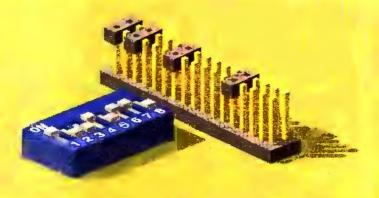
#### WHAT ABOUT JUMPERS **AND SWITCHES?**

IF YOU'VE EVER installed a modem, SCSI board, or other internal hardware, you know what a royal pain jumpers and switches can be. What are they? Jumpers are very small pairs of pins. Some upgrade products require you to reconfigure the jumper settings on the upgrade kit or on the motherboard. Configuring jumpers

have switches that let you choose processor speed, voltage setting, and OverDrive processor name. Check with your PC vendor or the upgrade kit manufacturer to see if you'll need to flip any switches during installation.

#### HOW DO I REMOVE THE CPU?

THERE ARE two common types of processor sockets: the ZIF (zero insertion force) socket, which has a handle, and the LIF (low insertion force) socket,



involves moving tiny connectors between pairs of pins. These settings are rarely labeled on the board, so be sure to refer to the upgrade kit's manual.

Switches are small devices fastened to either the motherboard or the add-in board, each with a tiny lever you flip to choose a specific setting. Some motherboards, for instance, which doesn't.

With ZIF sockets, removing the original CPU is a snap-just flip up the lever and gently remove the chip. With LIF sockets, use a chip-removal tool that may be in the upgrade kit as well as in standard computer kits; computer kits (available in computer stores) include all the necessary tools for most common systems. -J. B.

#### Upgrade kits

Evergreen, 541/757-0934, http://www.evertech.com READER SERVICE NO. 816 Gainbery Computer Products, 800/825-7331, 905/415-0480, http://www.gainbery.com READER SERVICE NO. 817 Intel, 800/538-3373, 503/264-7000, http://www.intel.com READER SERVICE NO. 818 Kingston Technology, 800/337-8410, 714/435-2600, http://www.kingston.com READER SERVICE NO. 819 For more information on all upgrade kits, circle reader service no. 913.

#### **Graphics cards**

**ATI Technologies, 905/882-2600** READER SERVICE NO. 809 Diamond Multimedia, 800/468-5846 READER SERVICE NO. 810 Hercules Computer Technology, 800/532-0600 READER SERVICE NO. 811 Matrox Graphics, 800/361-1408 READER SERVICE NO. 812 Number Nine Visual Technology, 800/438-6463 READER SERVICE NO. 813 STB Systems, 888/234-8750 READER SERVICE NO. 814 VideoLogic, 800/578-5644 READER SERVICE NO. 815 All graphics cards: 912.

THERE IS A VOICE INSIDE YOU THAT QUESTIONS STATUS QUO.

AND YEARNS TO ABANDON THE WAYS

OF TRADITIONAL THINKING.

TURGES YOU NOT TO BE CONTROLLED BY
YOUR ENVIRONMENT. BUT RATHER,

LET THE ENVIRONMENT ADAPT TO YOU.

THE VOICE INSIDE WHISPERS
FOR YOU TO START DOING EXTRAORDINARY THINGS.

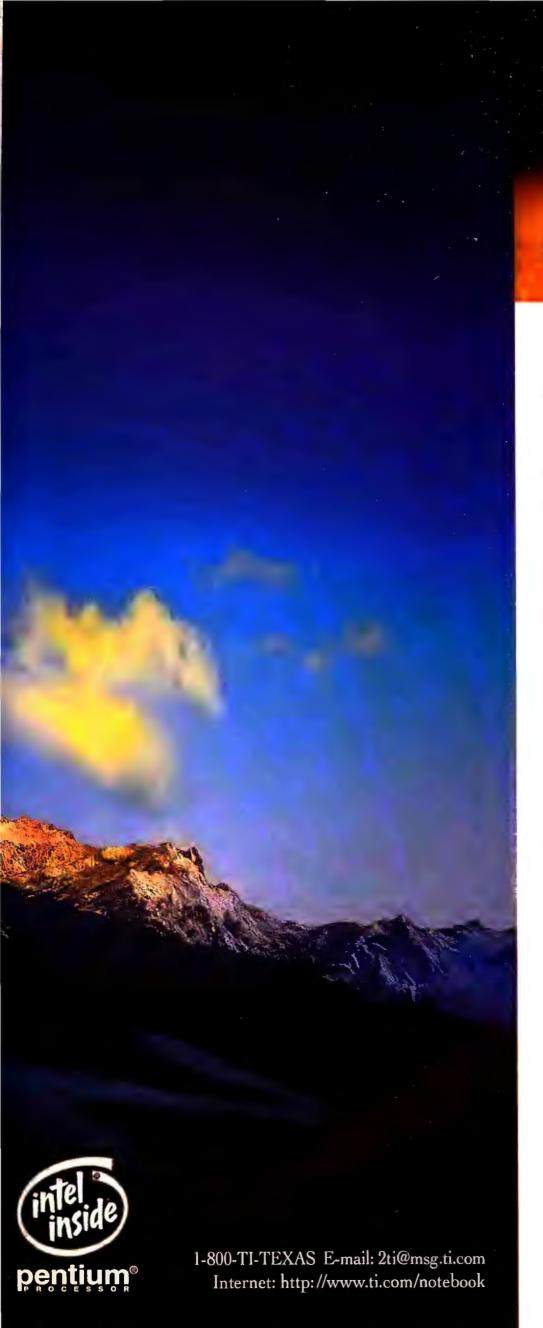












To prevent circumstances or surroundings from getting in your way, we created the new TravelMate® 6000 series. An unprecedented 6-way modular bay delivers optimum storage and memory capabilities,

#### TRAVELMATE 6000 SERIES

- o Weight: 5.9 lbs. with floppy
- o 6-way modular bay with floppy & optional 6X CD-ROM, high capacity diskette drive, 2nd Lithium ion battery, 2nd HDD, weight reduction module
- Energy-saving, super high aperture TFT screen
- O Zoomed Video port
- o 120, 133 or new 150MHz Pentium® processor with PCI bus (internal and external)

thus offering greater flexibility to work when and where you choose. With a trim 5.9 lb. frame illuminated by a noticeably brighter, more energy-efficient screen, it's ideally suited to even the most unusual locations. The TravelMate 6000 series is also fully supported by our new line of livegear™ accessories, including a wide range of optional docking stations.

All told, it's the perfect opportunity to do something highly out of the ordinary.



# WHEN CONSIDERING A SERVICE BE SURE TO READ THE GIGANTI

#### NEXT-BUSINESS-DAY AT-YOUR-DESK SERVICE GUARANTEE\*

If your Dell system experiences a covered hardware failure while it is under a next-business-day, on-site service contract purchased from Dell, and if Dell has dispatched a service call before 5:00 PM local customer time, Monday through Friday, a technician, if needed, will arrive at your location to address your problem by the end of the next business day. In the rare event that the technician does not arrive as promised, let Dell know. Your situation will receive top priority for resolution, plus you will receive an additional month of service for free.

GUARANTEED.

# ROGRAM, RINT.

DELL DIMENSION Reliable PCs For High Performance Computing



#### DELL DIMENSION™ XPS Pro200n

200MHz PENTIUM® PRO PROCESSOR

- 64MB EDO Parity Memory
- 256KB Internal L2 Cache
- 3.2GB Hard Drive [9.5ms]
- 17HS Trinitron Monitor (15.9" v.i.s., .26dp, 1600 x 1200 max. res.)
- 2MB EDO ViRGE 3D Video Card
- NEW 12X EIDE CD-ROM Drive
- 33.6 US Robotics Telephony Modem
- MS® Office Professional with Bookshelf for Windows® 95
- Microsoft® Windows NT® 4.0/30 Days Free Support/MS Mouse
- 3 Year Limited Warranty<sup>†</sup> with 1 Year On-site<sup>Δ</sup> Service
- ★ Upgrade to 3 Years of On-site Service, add \$99.

\$3399

Business Lease<sup>6</sup>: \$126/Mo Order Code #500355

#### **DELL DIMENSION XPS P200s**

200MHz PENTIUM PROCESSOR

- 32MB SDRAM Memory
- 512KB Pipeline Burst Cache
- . NEW 2.1GB Hard Drive [10.5ms]
- 15TX Trinitron Monitor (13.7" v.i.s.)
- 2MB EDO VIRGE 3D Video Card
- NEW 12X EIDE CD-ROM Drive
- Integrated Sound Blaster 16 Sound
- Altec Lansing ACS-31 Speakers with Subwoofer
- MS Office Professional with Bookshelf for Windows 95
- FREE Norton/Visio Express Software Suite
- Microsoft Windows 95/MS Plus! CD/ 30 Days Free Support/MS Mouse
- 3 Year Limited Warranty with 1 Year On-site Service

\$2399

Business Lease: \$89/Mo. Order Code #500357

#### DELL DIMENSION XPS Pro180n

180MHz PENTIUM PRO PROCESSOR

- 32MB EDO Memory
- · 256KB Internal L2 Cache
- NEW 2.1GB Hard Drive [10.5ms]
- 17LS Monitor (15.7" v.i.s.)
- · 2MB EDO ViRGE 3D Video Card
- NEW 12X EIDE CD-ROM Drive
- MS Office Professional with Bookshelf for Windows 95
- FREE Norton/Visio Express Software Suite<sup>‡</sup>
- Microsoft Windows 95/MS Plus! CD/ 30 Days Free Support/MS Mouse
- 3 Year Limited Warranty with 1 Year On-site Service
- ★ Upgrade to 64MB EDO Parity Memory, add \$399.
- ★ Upgrade to a 3.2GB Hard Drive (9.5ms), add \$99.

**\$2499** 

Order Code #500356

#### **NEW DELL DIMENSION P133v**

133MHz PENTIUM PROCESSOR

- 16MB SDRAM Memory
- 256KB Pipeline Burst Cache
- NEW 2.1GB Hard Drive [10.5ms]
- 15LS Monitor (13.7" v.i.s.)
- 64-bit PCI 2MB DRAM Video
- 8X EIDE CD-ROM Drive
- 3Com® EtherLink® Interface Combo PCI Card
- Microsoft Windows 95/MS Plus! CD/ 30 Days Free Support/Dell Mouse
- 3 Year Limited Warranty with 1 Year On-site Service
- ★ Upgrade to 32MB SDRAM, add \$199.
- ★ Upgrade to 3 Years of On-site Service, add \$99.

\$1799

Business Lease: \$67/Mo Order Code #500347 You may think all service programs are the same. But take a look at Dell's and one big word jumps out: Guaranteed.

Only Dell® guarantees that if there's a problem with your PC, a Dell-certified technician will be at your desk the next business day, servicing your PC. And in the rarest of events that we're not there the next day, you get an extra month of service at no charge. Just two of the many reasons why PC Magazine readers recently gave Dell an "A" for service and reliability.

The Dell service program reassuringly covers your Dell Dimension system for three full years. This includes one complete year of Guaranteed Next-Business-Day, On-Site<sup>A</sup> service and two additional years of Next-Business-Day Parts Delivery.

Call today to order a Dell Dimension. It comes protected by the Dell service program. And something else unique: a guarantee.



TO ORDER

800-243-2696

http://www.dell.com

Mon-Fri 7am-9pm CT • Sat 10am-6pm CT Sun 12pm-5pm In Canada; call 800-232-6978

Keycode #03192





# ARE YOUR COMPANY FILES

Theft and destruction of company files is increasing faster than the ability to stop it. Is your company next? And what can you do to protect it?

FOR CITIBANK, IT WAS A PAINFUL REMINDER that a new Cold War was raging. During a series of digital raids in late 1994, Russian hacker Vladimir Levin and some accomplices allegedly sat at computers in the offices of a small software company in St. Petersburg and electronically transferred \$11 million from Citibank's New York-based mainframes to Finland, Israel, and California.

Perhaps the most frightening aspect of these episodes is that they occurred under the watch of Citibank's well-regarded chief information officer, Colin Crook. Despite his ironic name, he has been given high marks for upgrading the bank's aging computer systems and making them among the most up-to-date and secure in U.S. business.

PHOTOGRAPHY WILLIAM



Citibank officials won't discuss the case, which has yet to go to trial in the United States, except to say that they discovered the theft after the first \$400,000 was stolen. They then informed the FBI, thereby limiting the bank's liability to that amount. But the brash robbery is mentioned in corporate and computer circles virtually every time a company discusses some new online banking or Internet commerce scheme.

"Believe me, an attack like that paralyzes a company, or at least makes you think twice before plugging in another computerized service," says a Citibank security vice president, who asked not to be named.

There are no easy answers. Yet more and more corporations are relying on the Internet and private networks for conducting business and communicating with employees on the road or at external sites. And that

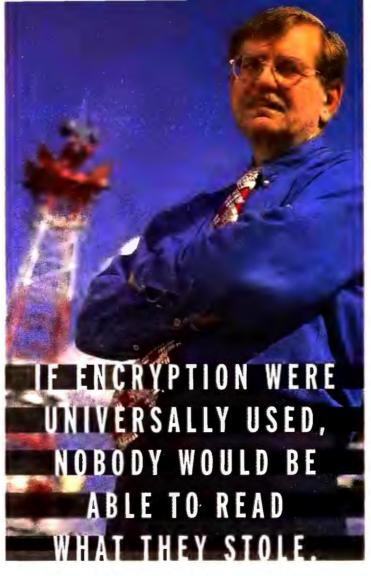
trend has vastly increased the chances that a company will fall victim to high-tech disasters—everything from computer viruses to data theft to hardware breakdowns.

Despite the efforts of many corporations to beef up security measures, the number of electronic crimes is increasing more rapidly than the ability to stop them. In a survey of U.S. corporations conducted earlier this year by the San Francisco-based Computer Security Institute and the FBI, 53 percent of 428 respondents said that they had been victims of computer virus-

es, and 42 percent acknowledged that unauthorized use of their computer systems had occurred in the prior 12 months.

What's more, nearly half of those incidents were blamed on outsiders, usually entering through the Internet. Among the companies recently victimized: America Online, Boeing, Intel, Netscape Communications. Rockwell International, and Sun Microsystems.

The scope of the problem is probably far larger than the survey sug-



NOEL MATCHETT, INFORMATION SECURITY

gests. To avoid scaring off customers and provoking shareholder complaints, most companies don't tell the authorities that they've been targets. Several British financial institutions, including the Bank of London, have even paid hackers a total of more than a half-million dollars to keep mum about recent computer break-ins, says the London Times. The American Society for Industrial Security estimates that high-tech crimes, including unreported incidents, may be costing U.S. corporations as much as \$63 billion a year.

### NO PLACE TO HIDE

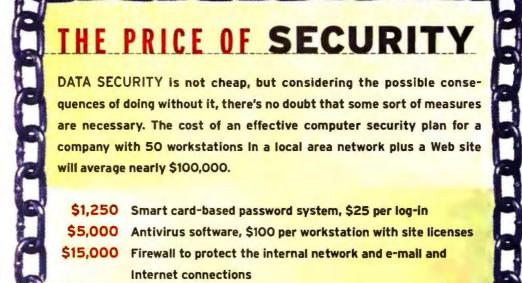
IT'S NOT JUST private companies that feel the sting. The U.S. Department of Defense is attacked some 250,000 times each year, according to a Pentagon study that simulated computer crimes to test the vulnerability of military networks. Only about 1 in 500 of these security breaches is detected and reported,

the DOD estimates. The incidents include stealing or destroying data, disabling protection systems, and shutting down entire networks. Ironically, many of these intrusions are launched by hackers entering through the Internet, which the Pentagon created more than two decades ago as a communications system that would be invulnerable to even a nuclear attack.

One of the most daring attacks on the Pentagon computer systems occurred in mid-1994, when hackers attached so-called sniffers-software programs that monitor information as it flows

across a network-to data switches that connected Rome Laboratory, the Air Force's top command and control research facility, to the Internet. The hackers scanned the information for passwords and used them to gain access to Rome's network, linking it to foreign Internet sites and stealing tactical and artificial-intelligence research.

"We need the equivalent of the Manhattan Project to help us harden our data infrastructures against attack,"



\$75,000 Encryption hardware and software-usually a card, but

sometimes a stand-alone box, at \$1,500 per workstation

\$96,250 TOTAL PRICE FOR SECURITY SYSTEM ADDITIONAL COSTS MAY BE INCURRED TO MONITOR AND MAINTAIN THE SYSTEM

### HOW TO PROTECT YOUR DATA

NOBODY'S DATA is completely safe. But everybody's computer can still be well guarded against would-be attackers. Here's your arsenal:

### PASSWORD PROTECTION

At minimum, each time they log on, all PC users should be required to type in a password that only they and the network administrator know. PC users should avoid picking words, phrases, or numbers that anyone can guess easily, such as a birth date, a child's name, or initials; instead they should use cryptic phrases that combine uppercase and lowercase letters, such as "The moon Also RISES." In addition, the system should require all users to change passwords every month or so and should lock out prospective users if they fail to enter the correct password three times in a row.

Viruses generally infect local area networks through workstations, so antivirus software packages that work only on the server aren't enough to prevent infection; ideally, all terminals on the network-personal computers as well as dumb workstations-should be protected individually.

### FIREWALL

These are gatekeepers made of hardware and software that protect a computer network by shutting out unauthorized people and letting others go only to the areas they have privileges to use. Firewalls should be installed at every point where the computer system comes in contact with other networksincluding the Internet, a separate local area network at a customer's site, or a telephone company switch.



### ENCRYPTION

Even if intruders manage to break through a firewall, the data on a network can be made safe if it's encrypted. Many software packages and network programs-Microsoft Windows NT, Novell NetWare, and Lotus Notes, among others-offer addon encryption schemes that encode all data sent on the network. In addition, companies can buy stand-alone encryption packages to work with individual applications. Almost every encryption package is based on an approach known as public-private key. Scrambled data is encoded using a secret key unique to that transmission. Receivers use a combination of the sender's public key and their own private encryption key to unlock the secret code for that message and decipher it. One scheme, PGP, for Pretty Good Privacy, has become an almost de facto standard since it was first offered in 1991 as free software by its creator, Phil Zimmermann.

### AUDIT TRAILS

Almost all firewalls, encryption programs, and password schemes include an auditing function that records activities on the network. This log-which, ironically, is turned off by many network administrators who don't appreciate its importance-is an excellent way of recording what occurred during an attack by hackers. The audit trail not only highlights points of vulnerability on a network, but can also identify the password and equipment used to invade the system during an inside job. In addition, this auditing log can prevent internal intrusions before they occur-when employees know such a trail exists.

### SMART CARDS AND BIOMETRICS

Although probably useful only to companies with ultrahigh security, smart cards are safer than passwords for verifying authorized users. These credit card-size devices generate random numbers about every minute, in sync with counterparts on each entry point in the network. To log on to a computer, people enter a password and the number that appears on the smart card's LED window. This works well as long as the card isn't stolen. For even better protection, you should consider using biometric devices-which verify identification by scanning thumbprints, retinal patterns, and even the lines on a person's face.

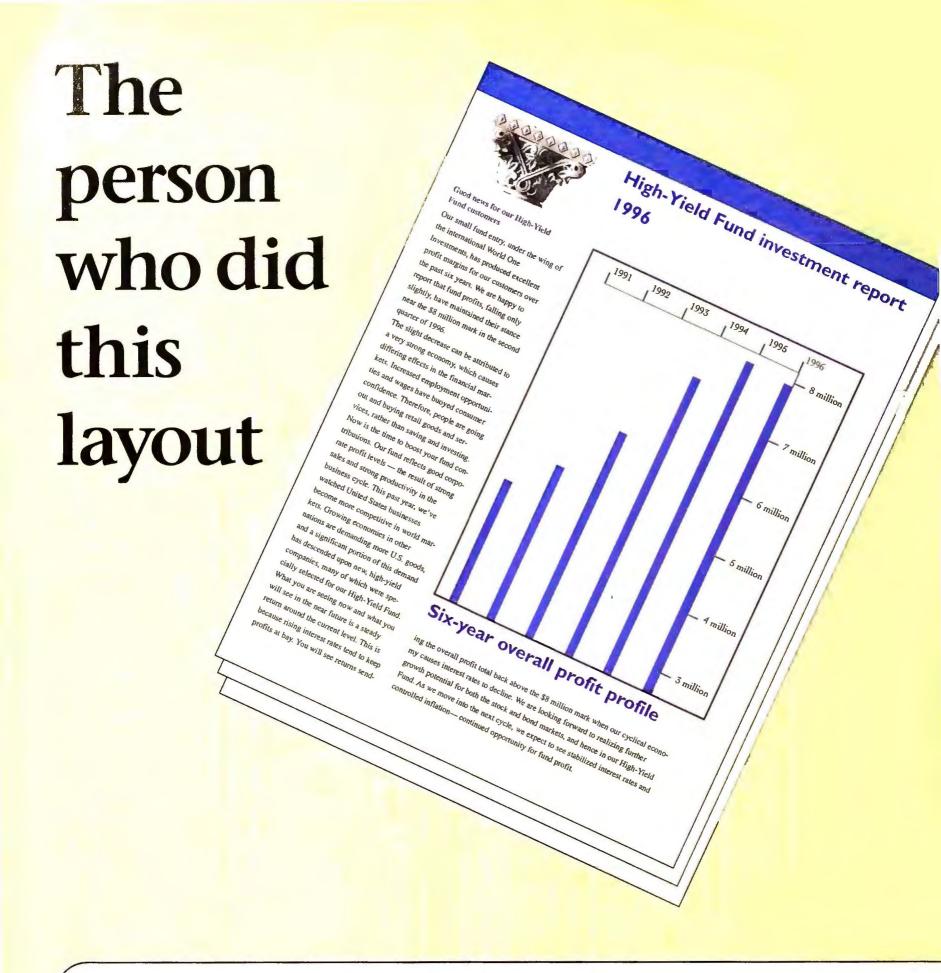
said U.S. Deputy Attorney General Jamie Gorelick, speaking last February at a government conference, National Security in the Information Age.

### **BUT WHAT CAN WE DO?**

"THERE'S NOT A WEEK goes by that I don't get a phone call from other companies asking one question: How can it be avoided?" notes the anonymous Citibank executive. These days, the solution starts with software known as a firewall. This is essentially a gatekeeper that checks the password and other identification of anyone attempting to gain access to a network from the outside. It keeps unauthorized people out and "escorts" those with privileges to the parts of the network they're allowed to use. For instance, a firewall may allow employees dialing in through an outside laptop to download marketing reports, but bar the same employees from accessing customer lists because they don't have rights to that data. Or it may completely reject people using computers that don't match the corporate standard (such as Macintoshes or XT PCs in a Pentium PC environment).

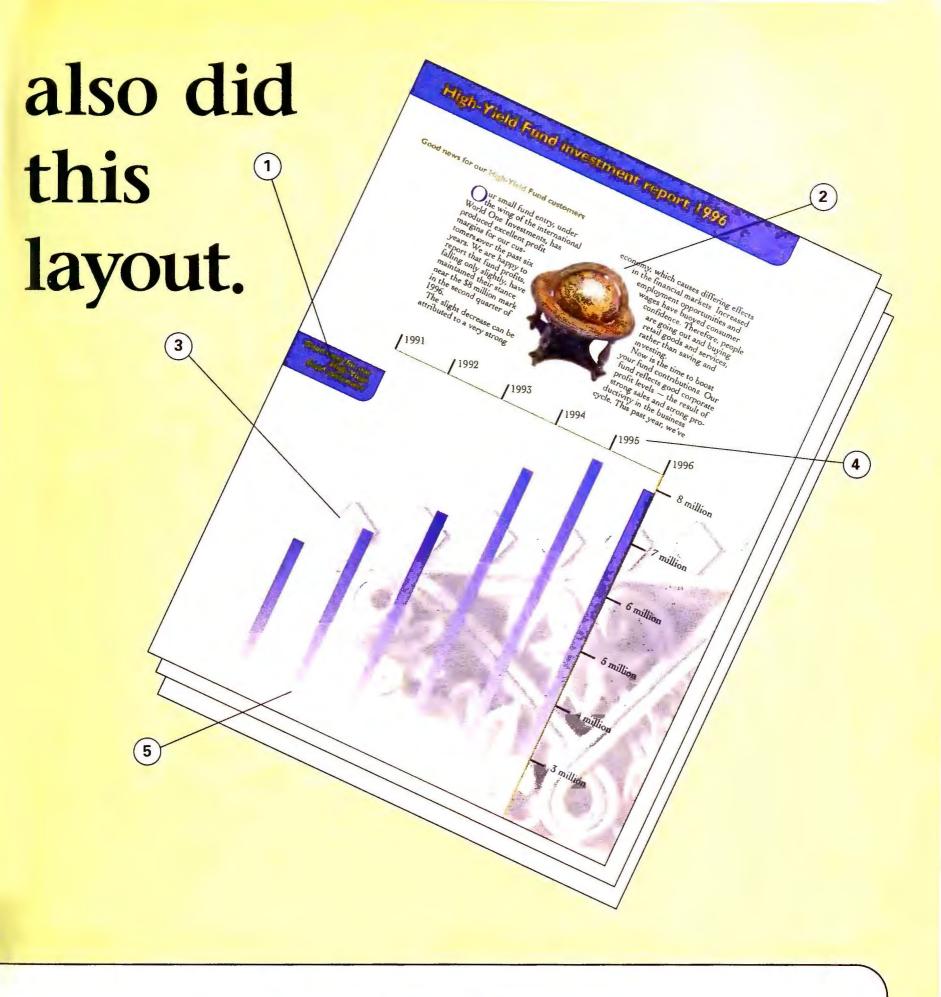
The best firewalls also don't allow incoming messages to touch the rest of the network. That's important because a favorite trick of hackers is to install malicious code in e-mail sent via the Internet. When the network scans the e-mail to determine where to distribute it, the errant code tells it to take an action such as adding a new name and password to the system. A hacker can then use this password to slip through the firewall and gain entry to the network at any time. By segregating the e-mail system, a good firewall thwarts intruders from sending the hightech equivalent of damaging subliminal messages.

It's important to put firewalls at every critical juncture where the network is exposed to the outside world—such as an Internet connection or a switching node that links the local area network to a wide area network. At \$15,000 or so per site, firewalls can be expensive, but cost hasn't deterred a lot of companies from using them. About 45 percent of 1271 companies responding to a 1995 survey by Ernst & Young have installed firewalls. At such high prices, though, few companies



### After she got her hands on QuarkXPress™ for Windows.

Before she had QuarkXPress, this job was a losing proposition. The business software she was using made it very difficult to maximize the visual impact of valuable information. It was hard to make an impression on clients. Fortunately, it wasn't long before she discovered QuarkXPress, the premium electronic publishing program that lets her capitalize on her creativity. She now takes for granted things she couldn't do before, like <sup>①</sup>use any color in the rainbow, whether it's in the system palette or not, <sup>②</sup>flow text around (and within) irregular shapes, and <sup>③</sup>colorize



black and white graphics. She can even freely rotate text and pictures, and define custom blends. Isn't it time you experienced the uncompromising design control, flexibility, and precision you can only achieve with QuarkXPress?

If you want to look great in print, you need QuarkXPress. It's the right tool for any job.

For a free demo version of QuarkXPress for Windows: 1-800-788-7835 Ext. 1002.

©1996 by Quark, Inc. All rights reserved. Quark and QuarkXPress are trademarks of Quark, Inc., Reg. U.S. Pat. & Tm. Off. QuarkXPress Passport and the Quark logo are trademarks of Quark, Inc. Windows is a registered trademark of Microsoft Corporation. All other trademarks are the properties of their respective owners. Quark, Inc., 1800 Grant Street, Deriver, CQ. 80203 PXPUSXXX13168



are willing to install firewalls that protect internal LANsto make sure, for instance, that a malicious employee in alter a list of sales records.

Unfortunately, since a firewall relies primarily on passwords to determine who's authorized to enter, its ability to keep out intruders is only as good as the identification system used to log in to a network. And in most cases, the password requirements are far too simple. Given the option to choose their own password, most people pick easy-to-guess birth dates, names of children, or initials—and that stymies criminals about as effectively as a \$5 padlock.

### THE FIREWALLS OF **JERICHO**

BECAUSE THEY RELY On passwords, "firewalls are a low hurdle," argues Noel Matchett, president of Information Security, a computer security consultancy in Silver Spring, Maryland. Boeing Corporation learned that the hard way recently when two college students used the Internet to hack through firewalls and into the defense contractor's computer networks. The hackers' weapon

was a simple program that automatically ran through every permutation of passwords and finally arrived at one that unlocked the network. "Once inside they wanted to get a list of authorized Boeing passwords, which they were going to sell to others," says Craig Worstel, the Seattle-based company's manager of computer and communications security.

The hackers were caught when they used a Boeing password to hack into a Cray Research computer system in Eagan, Minnesota, one of the defense contractor's suppliers. Both were sentenced to five years probation and 250 hours of community service.

Making matters worse, many companies—even those that are security conscious—are unwittingly drilling holes in their own firewalls by expanding the use of Internet browsers that contain applet tools like Sun Microsystems' Java. Hackers exploit security flaws in these tools to latch onto a company's Web server, which is generally outside the firewall's shield. After attaching

# TEN INTERNET SITES engineering can't log on and TO MAKE COMPUTING SAFER

### Secure Computing

http://www.sctc.com Technical and product information about firewalls.

http://www.securid.com Information about smart cards and other advanced security products.

### RSA Data Security

http://www.rsa.com Encryption products and standards, job postings, and software downloads.

### Computer Security Institute

http://www.gocsi.com Testimony, surveys, guidebooks, and other educational literature on computer security from an international information-security organization.

http://www.eliashim.com Smart card and antivirus products and downloads.

### Symantec Anti-Virus Research Center

http://www.symantec.com/avcenter Information on recent viruses, including how to detect and thwart them.

### Silicon Toad's Hacking Resources

http://www.netwalk.com/~silicon/episteme.html Resources, software, and a guide to Web pages related to hacking and computer security.

### Trusted Information Systems

http://www.tis.com Details about firewall technology and products, background on Internet security scanners, and job opportunities in computer security.

### Center for Democracy and Technology

http://www.crypto.com/safe The SAFE (Security and Freedom through Encryption) Forum, sponsored by the computer industry in order to raise awareness of encryption technology's importance and to discuss U.S. cryptography policy.

### National Computer Security Association

http://www.ncsa.com Security alerts, the latest information on viruses, and computer security help lines and forums.

themselves to the server, hackers can back in to the company's network by slipping through the firewall as if they were internal users who had logged on to the Internet to communicate or do business with customers.

Earlier this year, computer scientists at Princeton University found a security hole in Java, which is used to build interactive Web pages for such venues as electronic shopping and home banking. They also discovered three separate flaws in Netscape's Navigator browser, which hackers could use to slide through easily.

Even at relatively secure companies, a "single, motivated person could use [these weaknesses] to attack the machines of a large organization," writes Edward Felten, an assistant professor of computer science, on Princeton's Web site. Sun and Netscape say that Felten and his students are exaggerating the importance of their findings. For one thing, the flaws were corrected within days; for another, the companies say (after the fact) that they purposely display their software code on the Internet and release trial versions of their products so that groups like

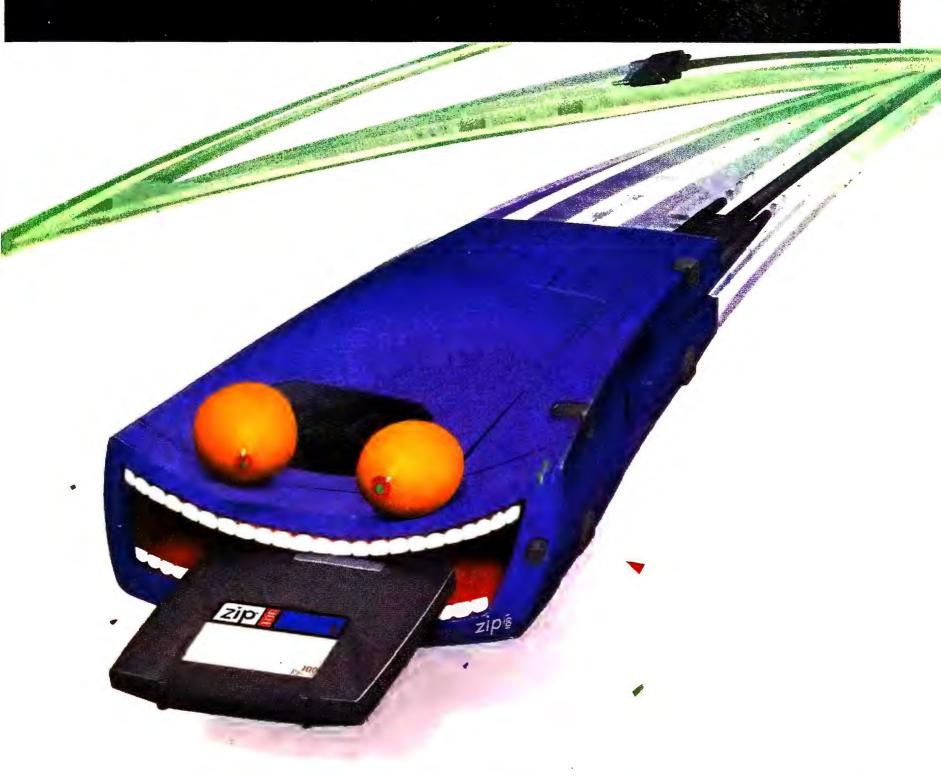
Princeton's can find and report weak spots.

Still, the weaknesses in Java and Navigator are a hacker's delight, according to computer security experts. What's more, these and other Internet software developers aren't likely to place a premium on security any time soon, says Richard Power, security analyst at the Computer Security Institute: "The competition is at such a fever pitch now that the commercial pressure is to push products out quickly and inexpensively. And that's a disincentive to invest time and money getting security right."

### **ENCRYPTION: THE BEST-KEPT SECRET**

ULTIMATELY, THE MOST complete solutions for computer security may have to come from those with the greatest economic interest in finding answers. While most companies develop a false sense of security by relying solely on simple passwords and firewalls—and sometimes get burned as a result—a small

# IT'S WHAT MAKES YOUR Zip" RIP.



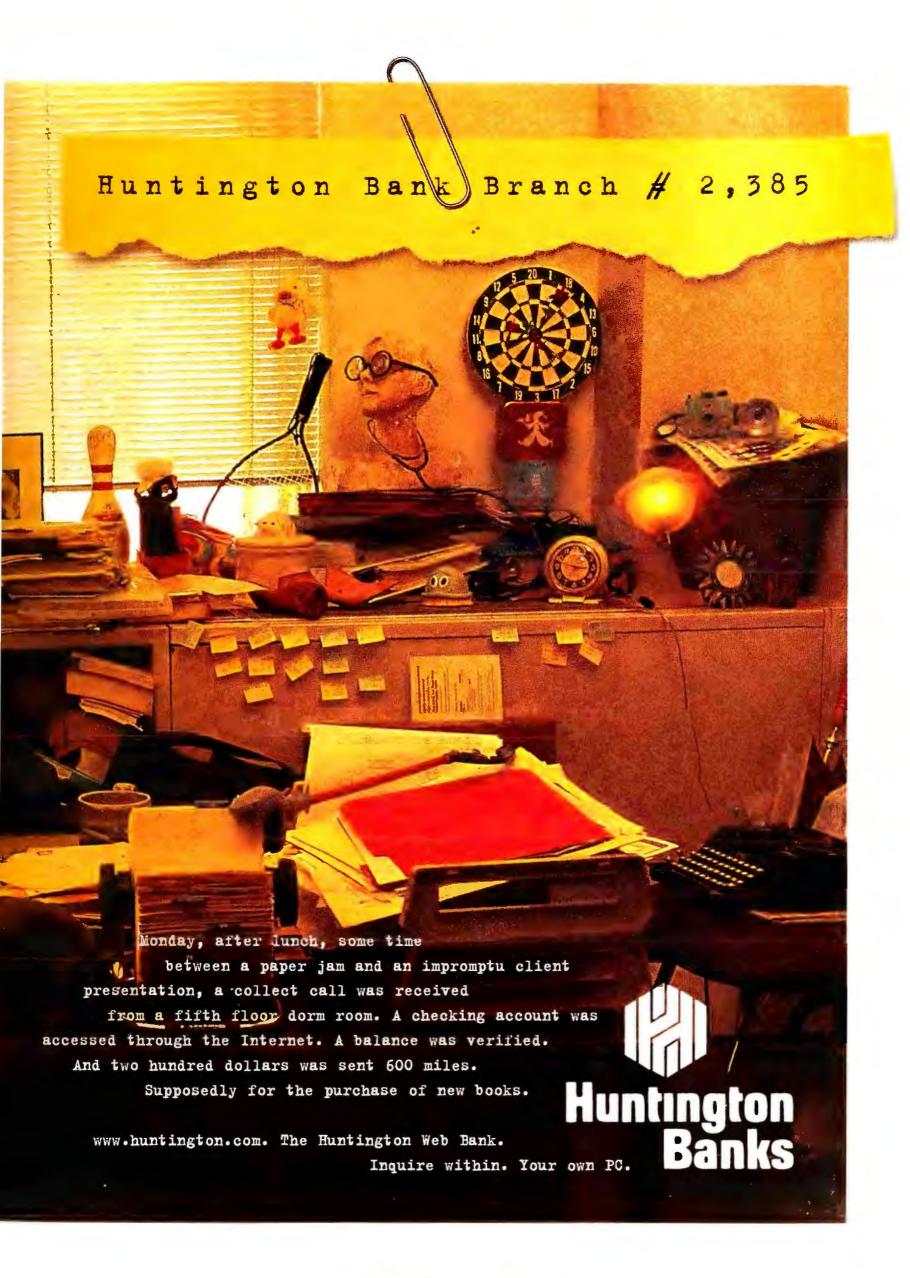
### You'll rip up to 600% faster with a SCSI Zip drive.

You may not know that Zip drives come in two flavors. Zip drives that connect to your parallel port and Zip drives that connect with SCSI. We recommend the SCSI Zip. With an Adaptec® SCSI adapter you could be zipping along up to 600% faster. It's just one more reason to give your PC a SCSI connection. To learn more about Adaptec SCSI connections, starting at \$69.00 (MSRP) call 1-800-804-8886 ext. 5540,\* or visit our home page at http://www.adaptec.com





Member F.D.I.C. 👸 ®, Huntington®, and Huntington Banks® are Federally registered service marks of Huntington Bancshares Incorporated. ©1996 Huntington Bancshares Incorporated.



number of corporations with lots of money at stake are finally doing what security experts have said is the best fail-safe approach to combating hackers: encrypting corporate information. Whereas a password merely protects a file by locking it, encryption translates all data in the file into a secret code.

"If encryption were universally used, it wouldn't matter how secure firewalls, browsers, or Java were," says Information Security's Matchett. "Nobody would be able to read what they stole."

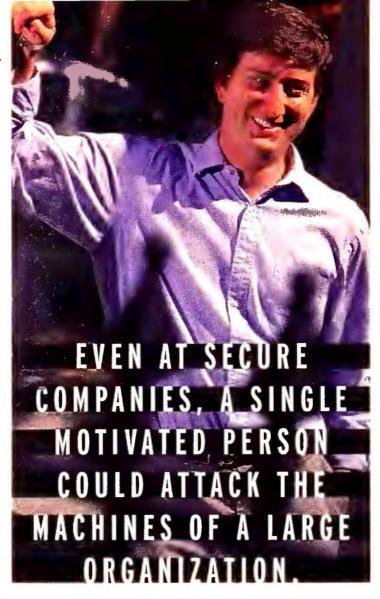
That's important to credit giants like MasterCard International and Visa International, companies that think an online shopping and banking gold mine is waiting for them on the Internet. But first these firms must come up with a security plan that puts customers at ease by protecting their credit card numbers and other personal information from hackers. "The goal is to make cyberspace bank-card transactions as

safe as in retail stores," says Steve Mott, MasterCard senior vice president for electronic commerce.

After fighting much of last year over rival approaches, Master-Card and Visa recently released standards to safeguard credit card activities on the Internet. Joining forces with them are American Express, IBM, Microsoft, and Netscape Communications, among

others. This joint effort, known as Secure Electronic Transactions, resulted in an encryption standard that encodes all credit card numbers and other personal information in such a way that only the user's and the merchant's banks can read it. Retailers themselves—essentially the intermediaries-can't unscramble the information, ensuring that hackers are unable to break through a firewall and read the data as it travels across the network.

SET is based on the highly touted encryption scheme known as publicprivate key that was de-



EDWARD FELTEN, PRINCETON UNIVERSITY

veloped primarily by RSA Data Security of Redwood City, California. The transaction data is sent in scrambled form from one bank to another, along with a secret key. The receiving bank's system can decipher the secret key, which changes with each transaction, then use it to unlock the encryption scheme and read the rest of the information sent. There is no reason why the same techniques used for encrypting monetary transactions can't be used for all types of data. Companies can easily encrypt data on their local servers and provide decrypting keys to qualified employees.

### **INSIDE JOBS**

ENCRYPTION MAY address many computer security concerns, but it can't eliminate weaknesses in human nature. Unfortunately, dishonest employees probably still pose the biggest threat to safeguarding company secrets. While electronic attacks from outsiders are

increasing more rapidly than any other kind, fully half of data break-ins are from insiders, typically by the most trusted staffers.

"In information crimes, it's not usually the janitor who's the culprit," says Ray Jarvis, president of Jarvis International Intelligence, a training academy and security consulting company in Tulsa. "It's more likely to be an angry manager who's already

> looking ahead to another job." In other words, the offender is probably someone who's authorized to have the key that unscrambles the encryption code.

> Take William Gaede, for example—a disgruntled Intel supervisor who a couple of years ago was intent on stealing the blueprints for the Pentium chip and selling them to the competition. Gaede's name was on a list of those allowed to read the Pentium specifications, but he figured he'd get caught if he printed out the lengthy files at the company's offices in Santa Clara,

### SMALL BUSINESS DEFENSES

SMALL BUSINESSES often can't afford full-scale computer security plans, but they can't afford not to take hackers seriously, either. Here are some basic security tips that will help you set up at least minimal protection.

- Implement a rigorous password protection program for authorizing network log-ins: Require complex, not simple passwords; make people change their passwords regularly; and shut out anyone that types in an unauthorized password three times in a row.
- Install a comprehensive data security package; like all-in-one stereo systems, these are usually less expensive than individual components. The packages usually include simple encryption schemes (often not public-private key) for encoding information on hard disks and any data that's sent online, a virus protection utility, and an audit trail that logs all network activities whether they're done on connected PCs or local area networks.
- Select a small group of computer-savvy employees to act as network administrators. This is especially important for small businesses that rely on the Internet for advertising their wares, for e-mail, or for sharing data with clients. And since passwords alone authorize access to network administrator functions, these users should be rigorous about changing their passwords every few days.

- My cousin Ernie answers all my Internet questions.
- The computer guy at work answers all my Internet questions.
- I'd like to stop bugging Ernie and the computer guy at work with all my Internet questions.

Here's your answer. Prodigy Internet. It gives you direct Internet access with the Microsoft<sup>®</sup> Internet Explorer 3.0 web browser along with great ordine features like e-mail, that rooms, entertainment and computing. Try it now for 20 free hours. Your relatives and co-workers will be glad you did.



California. So he decided to steal the plans from home. Intel's security system allows read-only access of critical files at remote sites, but not downloading or printing. Gaede skirted that obstacle by videotaping the file from his home computer, screen by screen. He then left the country with the tapes and was arrested when he tried to sell them to undercover federal agents. This year, Gaede pleaded guilty to transportation of stolen property and mail fraud.

That kind of crime is difficult to stop, but few are so complex. More commonly, internal computer mischief includes employees bringing in viruses and stealing databases from the workplace. Stopping these activities requires something most companies are unwilling to pay for: a security SWAT team whose efforts are focused solely on monitoring breaches in computer systems.

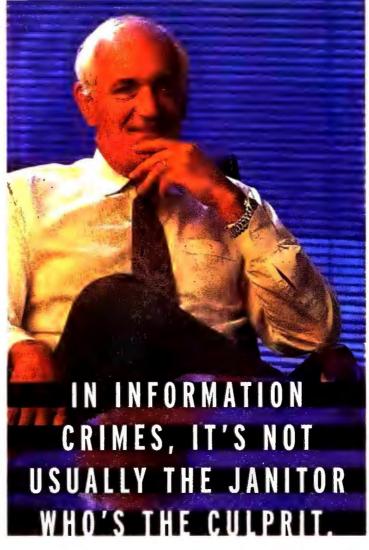
Most of the time corporations simply dump the job of maintaining secure systems onto the computer support group—nearly everywhere an overworked and understaffed department. Most of these staffers' time is so taken up with installing new computer equipment and fixing broken machines that tracking down viruses and going after hackers aren't top priorities. In fact, it's because computer support technicians tend to be weeks or even months behind in their day-to-day duties that frustrated employees are able to plug in unauthorized modems with no links to the firewall and install software themselves—causing even more fissures in the company's security system.

### SEND IN THE TROOPS

DETROIT EDISON decided a couple of years ago that the old security model wasn't working, especially when the utility's computers were being hit by viruses almost monthly. So the company's chief of security created an emergency response team of a dozen computer administrators to tackle the problem.

Detroit Edison's strategy has paid off in a big way. For instance, on one late Friday night in August 1995, an employee found that a virus was destroying his Microsoft Word documents. He paged the security response team. Before long, members of the group had consulted with Microsoft and antivirus software makers to produce a quick fix. They inoculated PCs, LANs, and workstations—some 5300 computers—against the virus, and by Tuesday morning the problem was solved. "It would have been a disaster if it had spread throughout the organization," says Tom Peltier, who heads the Detroit Edison Virus Response Team.

A high-impact security unit like Detroit Edison's can head off problems before they become disasters, experts say. Even more important, each time a new application or system is proposed,



RAY JARVIS, JARVIS INTERNATIONAL INTELLIGENCE

the team can identify security risks and figure out ways to guard against them. They can also make sure that a working audit system is in place one that consistently logs all attempts to gain access to the company's computers, prints a chronology of all network activity by users, and flags unusual activity.

While many corporations have an auditing system in place, such systems are often ignored. "I can't tell you how many times after an incident that we've talked to a company that thought it had virus and hacker protections, only to find out that the auditing function was either turned off or never installed in the first place," says Jay Douglas, a member of the technical staff at the Software Engineering Institute's Computer Emergency Response Team at Carnegie-Mellon University in Pittsburgh. For \$20,000 a year, the CERT Affiliates Program offers

seminars and technical advice for preventing computer breakins and virus attacks and dealing with them if they occur.

Although computer security is still clearly a low priority at many companies, it may not stay that way for much longer, thanks in part to how seriously the federal government now takes the issue. The FBI, the CIA, and the National Security Agency all have small units devoted to fighting computer security crimes. And after Senate hearings on the issue, the Justice Department proposed setting up a full-time task force to study the vulnerability of the nation's information infrastructure, creating a rapidresponse intelligence group for computer crimes and requiring all firms to report break-ins to the FBI.

Despite the fact that it takes some hand-holding to force corporate America to pay attention to computer security, experts say the price is right, no matter what the cost. With more and more companies planning to hook up to the Internet and set up corporate networks called intranets, anything less than a full-fledged focus on the issue could be disastrous to the nation's economy.

"The Internet was once a rural community, and now it's becoming an urban environment," says Ronald L. Rivest, a professor of computer science at the Massachusetts Institute of Technology. "If you live out in farm country, you can leave your door unlocked. But if you live in downtown Manhattan, you'll probably want triple locks on your doors."

Jeffrey Rothfeder is a freelance writer and the author of Privacy for Sale (Simon & Schuster, 1992, 800/983-5333).

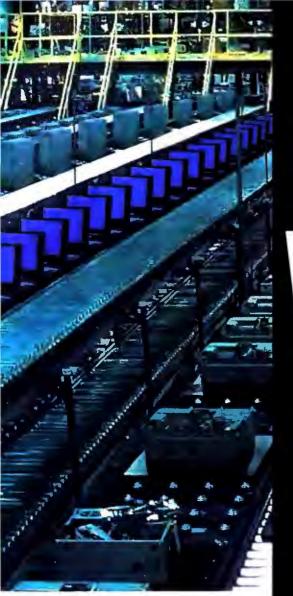


FOR HOT LINKS to the security sites mentioned here as well as an opportunity to air your concerns on security, check out PC World Online (http://www.pcworld.com/security\_talk).





MCRON ELECTRONICS, INC.



# WHAT A COINCIDENCE, WE HAPPEN TO MAKE THEM.









# SUPERIOR SOLUTIONS BY DESIGN

ny PC maker can claim to offer a solution that covers your needs. But at Micron A Electronics, we prefer to let our history and our products speak for themselves. We think you'll agree it's an impressive story.

### Superior Technology—A Micron Tradition

Micron Electronics builds PCs with a legacy of excellence. Our manufacturing processes grew out of nearly two decades in the semiconductor business, where precision is measured in millionths of an inch, and quality in parts per million. We've built strategic relationships with companies like Intel, Microsoft and Novell. From this solid background, we're forging unbeatable systems you can count on today and tomorrow. Best of all, we just doubled our memory and added powerful enhancements to several of our systems (see configura-

tions). This industry-leading approach gives you a vast increase in system capacity.

**Award-Winning Products** 

In the past two years, leading industry publications have applauded Micron Electronics PCs with more than 140 awards for product performance, customer service and support. This includes PC Magazine Best

Products of 1995 and Editors' Choice awards in several categories. Add more than 40 PC World Best Buy awards and you've got an impressive technology hall of fame. In fact, just this summer, we have won three PC Magazine Editors' Choice® Awards for Millennia™ desktop and Millennia TransPort™ notebook

### Recognized Service and Reliability

After your purchase, the story continues. Just ask PC Magazine readers. They bestowed on us the coveted Readers' Choice for Customer Service and Reliability in 1994 and 1995. And PC World recently awarded us first-tier status along with the likes of Apple, Compaq, Digital and HP. Pretty good company, wouldn't you say?

computers—an unprecedented achievement for Micron Electronics.

### Micron Power<sup>SM</sup> Warranty—An Industry First

We support our reliability promise with the industry-leading Micron Power

RELIABILITY RANKING **1ST TIER** MICRON DIGITAL APPLE 2ND TIER **3RD TIER** 

Source: PC World Reliability & Service Monitor, May 20 - November 20, 1995

warranty. It backs the microprocessor and main memory for five years, an industry first. Add a three-year, parts-only system warranty and a 30-day money-back guarantee, and you can rest assured that you're in good hands.



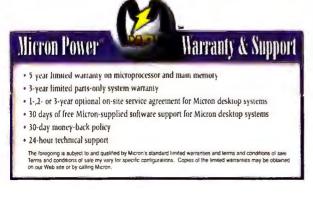
Outstanding Performance—Don't Take Our Word for It.

Talk is cheap when you're speaking for yourself. But when it's from the mouth of an industry expert, it carries weight. Here are a few of many examples of what they're saying about our PCs:

- Home MPC "... the fastest we've ever tested ... as well as a marvelous family package ... it wins our Top Rated award..."—Family PC, May 1996
- Millennia "In short, Micron covers all the bases with this Best Buy." —PC World, March 1996
- PowerServer "This is definitely a best buy." Computer Shopper, January 1996
- Millennia TransPort "... nearly a dead ringer for IBM's ThinkPad... but performs better and saves you about \$2,500." —PC Magazine, April 1996

### The Right System for You

Micron Electronics makes a suite of outstanding solutions designed for the way you work or play. From home systems to servers, desktop PCs to portable multimedia solutions, Micron Electronics always comes through with a system built to satisfy. For details and prices, turn the page.







### MILLENNIA TRANSPORT™

- Intel Mobile Pentium processor
- Intel 430MX PCI chipset
- 256KB L2 pipeline burst coche
- 16MB EDD memory (4BMB mox.)
- BX modulor CD-ROM drive
- PCI grophics occelerator, 1MB EDD memory
- Pick-o-Point™ duol pointing devices integrate both pointing stick and touchpad
- Removoble EIDE hord drive
- 3.5" modulor floppy drive
- Intelligent modulor lithium-ion bottery
- 16-bit stereo sound
- · Built-in sterea speakers and microphone
- 2 Type II or one Type III PCMCIA slots
- S-video and NTSC-video outputs
- Heodphone, microphone and line-in jacks
- 2 infrored ports, one front, ane back
- Porollel, seriol, VGA and 2 PS/2 ports
- Dimensions: 11.7" x 9.4" x 2.0", Weight: 6.9 lbs.<sup>†</sup>
- Nylon corrying cose
- Microsoft® Windows® 95 and MS® Plus! CD
- Microsaft Office Pro 95 and Bookshelf® 95 CDs
- Kensingtan™ security lock ready<sup>tt</sup>
- 5-year/3-yeor Micron Power<sup>™</sup> worranty
- † 6.9 lbs. includes 3.5" flappy and ane battery †† Lack secures bath Millennia TransPart and MicranDack



### 133MHz Mobile Pentium processor

- 16MB EDD memory (4BMB mox.)
- 12.1" octive motrix disploy, B00 x 600
- 1.2GB removoble hord drive

\$4,399 Business lease \$150/manth

- 133MHz Mobile Pentium processor
- 32MB EDD memory (4BMB max.)
- 12.1" octive motrix color display, B00 x 600
- 1.2GB removable hard drive
- Motorolo® Montona 28.8 fox/modem
- 2nd lithium-ion battery

\$5,199 Business lease \$163/manth

- 150MHz Mobile Pentium processor
- 32MB EDD memory (48MB mox.)
- 12.1" octive motrix color display, B00 x 600
- 2.1GB remayable hard drive
- Matarolo® Montono 2B.B fox/madem
- 2nd lithium-ion battery
- Somsonite® leother carrying case

\$5,550 Business lease \$174/mansh

### OPTIONS

| With 150MHz Pentium processorodd       | \$200 |
|--|-------|
| With 2nd modulor lithium-ion botterydd | \$199 |
| • With 2nd hord drive (1.2GB)add       | \$599 |
| • With 2nd hord drive (2.1GB)add       | \$699 |
| With 16MB DIMM madule upgradeadd       | \$349 |
| With 32MB DIMM madule upgrodeadd       | \$749 |

### POWERSERVER SMP-N P133

- Intel 133MHz Pentium® processor
- Duol Pentium SMP ZIF sockets
- 512KB write-bock cache, flosh BIDS
- Slots: 5 EISA, 2 PCI, 1 EISA/PCI
- Adaptec PCI 32-bit Ultro SCSI Fost-20 controller
- 12X SCSI-2 CD-RDM drive
- 3.5" floppy drive
- 64-bit 1MB ISA video
- 3Com® 3C595 PCI 10/100 Ethernet NIC
- Full-size tower with 10 drive bays
- Micrasaft® Mouse, 104-key keyboord
- Navell® NetWore® 4.1 (5 user license)
- NDS support (3 free resolutions)
- 5-yeor/3-year Micran Power<sup>s™</sup> warronty
- 16MB RAM 1GB SCSI-2 hard drive
- 15" Micron 15FGx, .28dp (13.7" display)

\$3,599 Business lease \$122/month

- 32MB RAM 2GB Ultro SCSI hord drive
- 15" Micran 15FGx, .2Bdp (13.7" display)

\$**3,799** Business lease \$129/manth

Now shipping with Netware 4.0!

### • Dual Intel 133MHz Pentium pracessars

- 512KB write-back coche, flash BIOS
- Slots: 5 EISA, 2 PCI, 1 EISA/PCI Adoptec PCI 32-bit Ultro SCSI Fost-20 controller

POWERSERVER SMP-N P266

- 12X SCSI-2 CD-RDM drive
- 3.5" floppy drive
- 64-bit 1MB ISA video
- 3Com 3C595 PCI 10/100 Ethernet NIC
- Full-size tower with 10 drive boys
- Micrasaft Mouse, 104-key keyboord
- Navell NetWore 4.1 (5 user license)
- NDS support (3 free resalutions)
- 5-yeor/3-yeor Micran Pawer worronty
- 32MB RAM 2GB Ultra SCSI hard drive
- 15" Micron 15FGx, .28dp (13.7" disploy)
- \$4,799 Business lease \$163/manth

- 64MB RAM 4GB Ultra SCSI hord drive
- 15" Micran 15FGx, .2Bdp (13.7" disploy)

\$**4,999** Business lease \$170/manth



### MILLENNIA™ Pro2 200

- Intel 200MHz Pentium® Pra pracessor
- Supports dual 200Mhz Pentium Pro processors
- 256KB internol coche, flash BIOS • 12X EIDE CD-RDM drive, 3.5" floppy drive
- 16-bit sterea sound & speakers
- PCI 64-bit 3D video, MPEG, 4MB EDO Taal-free minitower or desktap
- Microsaft® Mause, 104-key keyboard • Microsoft Windows NT® Workstation 4.0 CD
- 5-year/3-yeor Micran Pawer<sup>sM</sup> worronty
- 16MB EDO RAM 1.2GB EIDE hard drive
- 15" Micran 15FGx, .2Bdp (13.7" disploy) • Microsoft Works 95 CD

\$2,299 Business lease S7B/month

- 32MB EDD RAM 2.1GB EIDE hord drive
- 17" Micron 17FGx, .26dp (15.8" disploy)
- Microsoft Office Pro 95 & Baakshelf® 95 CDs **\$2,899** Business lease \$99/manih

• With 2nd 200MHz Pentium Pra pracessor...odd \$699

208-893-7393

### MILLENNIA™ PRO2 400 PLUS

- Duol Intel 200MHz Pentium Pro processors
- 256KB internol cache, flash BIDS
- PCI 32-bit Ultra SCSI Fost-20 controller
- 12X SCSI CD-ROM drive, 3.5" floppy drive
- 16-bit sterea sound & speakers
- PCI 64-bit 3D video, MPEG, 4MB EDO Taal-free mini-tower ar desktap
- Microsoft Mouse, 104-key keyboord
- Microsoft Windaws NT Workstotian 4.0 CD • Microsoft Office Pro 95 & Boakshelf 95 CDs
- 5-year/3-year Micron Power warranty
- 32MB EDD RAM 2GB Fost SCSI-2 hard drive

• 15" Micron 15FGx, .28dp (13.7" display) \$3,999 Business lease \$136/manth

- 64MB EDD RAM 4GB Fost SCSI-2 hard drive
- 17" Micron 17FGx, .26dp (15.8" disploy)

\$4,999 Business lease \$170/month

- 12BMB EDD RAM 9GB Fost SCSI-2 hard drive
- 21" Micron 21 FGx, .26dp (20.0" display)

\$**7,999** Business lease \$251/mansh

### CLIENTPRO™ P120

- Intel 120MHz Pentium processor
- 256KB pipeline burst cache, flosh BIOS • 3Com® 3C509 Combo network adapter
- 3.5" flappy drive
- Taal-free minitower ar desktap
- Microsaft® Mause, 104-key keybaord MS-DOS 6.22/Windows for Workgraups 3.11
- 5-year/3-year Micron Power warranty
- PCI 64-bit grophics occelerator (2MB EDD)
- BMB EDO RAM 1.2GB EIDE hard drive
- 14" Micron 14FGx, .2Bdp (12.9" display) Microsoft Works preinstalled

\$ **1,499** Business lease \$51/manth

- PCI 64-bit grophics occelerator (2MB EDD)
- 16MB EDO RAM 2.1GB EIDE hord drive • 15" Micron 15FGx, .2Bdp (13.7" display)

 Microsoft Warks preinstolled \$ **1,819** Business lease \$62/mansh

With 133MHz Pentium processor......odd \$50

### CLIENTPRO2™ 180

- Intel 1BOMHz Pentium Pro processor
- 256KB internal burst coche, flosh BIOS 3Cam 3C509 Combo network adopter
- PCI 64-bit graphics accelerator (2MB EDD)
- 3.5" floppy drive
- Toal-free minitower or desktap
- Micrasaft Mouse, 104-key keyboard
- Microsoft Windaws NT Workstotion 4.0 CD • 5-year/3-year Micron Pawer worronty
- 16MB EDD RAM 1.2GB EIDE hord drive
- 14" Micron 14FGx, .28dp (12.9" disploy) Microsoft Warks preinstalled

\$ **1,999** Business lease \$6B/manlh

• 32MB EDD RAM • 2.1GB EIDE hard drive

• 32MB EDD RAM • 3.1GB EIDE hord drive

• 17" Micron 17FGx, .26dp (15.B" display)

• 15" Micron 15FGx, .28dp (13.7" display) Micrasaft Dffice Pro 95 & Baakshelf CDs

\$2,558 Business lease \$87/mansh

 Microsoft Office Pra 95 & Baakshelf CDs **\$2,938** Business lease \$100/mansh

Microsoft Windows NT Workstation 3.51 or 4.0 available on selected configurations.

208-893-8970

Tollfree from Canada 800-708-1758



Tollfree from Puerto Rico 800-708-1756 Tollfree from Mexico 95-800-708-1755

- - Technical Support E-mail: techsupport.meic@micron.com
- 900 E. Karcher Road, Nampa, ID 83687
  - Technical Support Available 24 Hours A Day-7 Days A Week

• Mon-Fri 6am-10pm Sat 7am-5pm (MT) • International Sales Hours: Mon-Fri 6am-7pm (MT) · 208-893-3434 • Fax 208-893-3424 Purchase Order Fax 208-893-8992 • GSA Contract #GS35F4317D

http://www.mei.micron.com

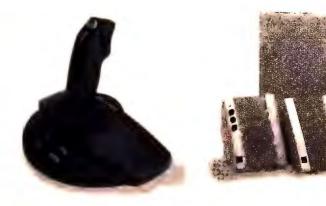
©1996 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible for omissions or errors in typogrephy or photography. All purcheses are subject to availability. Prices and specifications may be changed without notice; prices do not include shipping end handling, 30-day money-back policy does not include return freight and onginal shipping-handling charges, applies only to Micron brand products end begins from date of shipment. All sales are subject to Micron Electronics' current terms and conditions of sale. Lease prices besed on 36-month lease. Intel, Intel Inside and Pentium ere registered trademarks of the Intel Corporation. Microsoft, Windows NT and the Windows logo are registered trademarks of Microsoft Corporation. All other service marks, trademarks and registered trademarks are the property of their respective companies.

# Make a Great PC Even Better!

Custom configure your new Micron Electronics system with these popular options.

### MULTIMEDIA OPTIONS

| • 16-bit 3D Wavetable stereo sound.                       | 559* |
|---|------|
| 16-bit 3D Wovetable stereo soundcord w/2MB RAM            |      |
| Advent AV270 Powered Partners stereo speakers             |      |
| Advent AV370 Powered Portners sterea speokers w/subwoofer |      |
| Microsoft® SideWinder™ 3D Pro joystick                    |      |



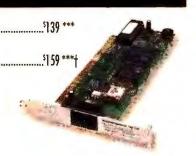
### STORAGE/MEDIA OPTIONS

| Adoptec® 2940U Ultro SCSI Fost-20 controller                      | 5100     |
|---|----------|
| (upgrade fram system with stondord Ultra SCSI Fost-20 controller) |          |
| Plextor 12Plex 12X 1.8MB/S SCSI internol CD-ROM drive             | 5200 **  |
| (upgrade fram systems with standard 12X EIDE CD-ROM drive)        |          |
| lomega Jaz SCSI drive with 1.0GB remayable cortridge              | \$399 ** |
| • lamego Zip IDE drive with 100MB removable cartridge             |          |
| • lamega 6-pok af 100MB. Zip cortridges                           |          |
| • lomego Ditto BOO (400/800MB) Travon Tope back up w/tape         |          |
| • lomega Ditta 3200 (1.6/3.2GB) Travan Tape bock up w/tope        |          |
| Sany 4/BGB DDS-2 DAT SCSI Tope back up w/tope                     | \$999 ** |



### **COMMUNICATION OPTIONS**

| • 2B.Bbd Y.34 internal doto/fox modem                             |
|---|
| <ul> <li>2B.Bbd V.34 internal telephony doto/fox madem</li> </ul> |
| w/full duplex speakerphone and voice mail                         |



### **NETWORKING OPTIONS**

| • 3Com® 3C509 Ethernet ISA NIC (BNC, AUI & RJ-45)       | 599 |
|---|-----|
| • 3Cam 3C595 Fast Etherlink PCI 10/100 NIC (RI-45 anly) |     |
| SMC ISA TokenCard network rord                          |     |

### QUICKEN® FINANCIAL PAK

### DISPLAY/VIDEO OPTIONS

| • 17" Hitachi SuperScon 1711 (15.9" disploy) .26dp calor manitor | 51 50 tt             |
|--|----------------------|
| • 21" Hitochi SuperScon 2111 (20" display) .26dp calor monitor   | <sup>5</sup> 650 ††  |
| •#9 Imagine 12B series II videa cord w/4MB VRAM.                 |                      |
| •#9 Imagine 12B series I videa card w/BMB VRAM                   | <sup>5</sup> 750 ††† |

### MILLENNIA TRANSPORT™ OPTIONS

| <ul> <li>MicranDack<sup>®</sup> multimedio port replicator: Ethernet 10BT LAN adapter, SCSI-2port, S-Video ond NTSC video outp<br/>built-in stereo speakers, infrored port, headphane, microphone, line-in jacks, parollel, seriol, VGA ond<br/>2 PS/2 ports</li> </ul> | s799             |
|---|------------------|
| MicranExec* desktop pockoge: Motching block 17" manitar (15.8" disploy) with motching black mause, mousepod and keyboord (con be used with or without MicranDack)   | 5799             |
| Motorola Montana 28.B fox/modem supparts regulor telephone connections, cellulor phanes and two-way paging devices  | 5259             |
| 150MHz Pentium processar     3Com® Ethernet 10BT PCMCIA     Somsonite® leother bag  | 3149             |
| 2nd modulor Lithium-ian battery   | <sup>5</sup> 199 |
| 2nd hard drive (2.1GB)     16MB DIMM module upgrade   |                  |
|   | 5749             |



### SERVICE OPTIONS

| • Extended 2-year an-site service caverage for desktop systems         | 599  |
|--|------|
| (upgrade from optionol 1-year on-site service coverage)                |      |
| • Extended 3-yeor an-site service caverage for desktop systems         | 5139 |
| (upgrade from optianol 1-year an-site service coverage)                |      |
| Camplete on-site PC installation (call Micron Electronics for details) | §159 |

### OTHER OPTIONS

| APC Per7T surge suppressor       | 539 |
|----------------------------------|-----|
| APC Pra7T surge suppressor       |     |
| Microsoft Notural Keybaord®      |     |
| (upgrade from standard keybaard) |     |

- \* Upgrode from systems with standard 16-bit sterea saund cord
- \*\* Requires SCSI Host Adapter
- \*\*\* V.34 modem includes trial memberships to CompuServe®, Pradigy® and Americo Online®
- † Requires sound cord
- tt Upgrade fram systems with stondord Micron 17" 17FGx colar monitor
- ††† Upgrode fram systems with stondard 64-bit 2MB video cord

Options and accessories available with system purchase only.

Circle 160 on reader service card

900 E. Karcher Road, Nompo, 10 83687
 Man-Fri Gam-1 Opm Sat 7am-Spm (MT)
 International Sales Haurs: Man-Fri Gam-7pm (MT)
 208-893-3434
 Fox 208-893-3424
 Purchose Order Fax 208-893-8992

GSA Contract #GS35F43170
 Technical Support Available 24 Haurs A Day—7 Days A Week
 Technical Support E-mail: techsupport.mei@micran.cam



800-249-1176

http://www.mei.micron.com

# Fast And Cheap

# TOP MODEMS FOR TIGHT BUDGETS

THE LATEST 28.8-KBPS INTERNAL MODEMS
SELL FOR AS LITTLE AS \$109.
BUT CHOOSE CAREFULLY:

NOT ALL ARE HASSLE-FREE.

### BY BRYAN HASTINGS AND KIRK STEERS

CHANCES ARE YOU EITHER WANT ACCESS to the Internet, or you want faster access to the Internet. For most of us, this means getting a new modem. Internal modems that fit inside PCs are popular choices. They're inexpensive, costing \$20 to \$50 less than their external counterparts, and they don't add to desktop clutter.

This roundup debuts our internal ISA card modem Top 10 (see chart on page 273). We evaluated 14 of the most popular V.34 internal modems and found out which were

the fastest, which were the easiest to install, and which offer the best value. This roundup also reaffirmed the consumer's cardinal rule: Caveat emptor. A 33.6-kbps unit doesn't guarantee the fastest speeds, nor does the "Plug and Play" moniker guarantee painless installations. In fact, our tests revealed that most current Plug and Play PCs often won't let you install these modems in a truly Plug and Play fashion.

We looked at five aspects of these modems to come up with our overall rating: price, performance, features, ease of use, and support policies. None of the modems we looked at excelled in all areas, but our top products are the least deficient. Our two Best Buys are Motorola's LifeStyle 28.8 and Cardinal's MVP288IS, the former because of top performance and great ease of use; the latter for its wealth of features.

ILLUSTRATIONS BY DAVID COWLES & PHOTOGRAPHS BY BEVERLEY HARPER



The fastest modem (the Motorola LifeStyle) sends a megabyte of data in 2 minutes and 32 seconds; the slowest modem (the Practical Peripherals ProClass PC288HC V.34, which didn't make the Top 10) takes 45 seconds longer to send the same amount of data. This performance gap isn't a big concern if you stick mostly to e-mail messages. But the more large file attachments you send, and the more you browse the World Wide Web and download large files, the more performance matters.

### PLUG AND PLAY: DON'T COUNT ON IT

INTERNAL MODEMS HAVE BEEN NOTORIOUSLY difficult to get running. You have to take the case off your PC, plug the card into a free slot, and assign it its own resources, namely an IRQ and a COM port. The biggest problem has been figuring out what settings to assign, because many other devices in the computer draw from the same, often limited, pool of resources. Because they typically have four to five more IRQs at their disposal, 16-bit ISA modems have the edge over their 8-bit counterparts.

Plug and Play technology was supposed to solve the problem just take the cover off your PC, stick in the card, and let the PC take care of the rest. But we discovered that even with the recommended three pieces of the Plug and Play puzzle in place-Windows 95, a Plug and Play modem, and a system equipped with a Plug and Play BIOS—the process can still be frustrating. Only three of the seven Plug and Play modems we tested, the Motorola and the two Hayes products, provided a truly frustration-free installation most of the time. All three are 16-bit cards.

To test Plug and Play, we used five computers selected to provide the most representative range of PCs and BIOS-

### Best Buys

THE \$175 MOTOROLA Life-Style 28.8 (bottom) is the best all-around modem. It's the fastest unit on the chart, is exceptionally well made, and is one of the easiest to install and use. The \$189 Cardinal MVP288IS (top) is our other Best Buy. It's packed with more features, including voice mail and speakerphone, than any other modem in the group, and it's easy to set up and use.



es. The first system, a Gateway DX2-66V desktop, is four years old and contains a non-Plug and Play (aka legacy) BIOS. Ironically, this was one of only two PCs in which Plug and Play actually worked for all seven Plug and Play modems. The other four PCs we used have Plug and Play BIOSes, but of those, only the Quantex QP6-SM2, with its American Megatrends v1.00 BIOS, performed ideally. On our Amax Pentium Power Station tower, with its Award v4.50 BIOS, only three of the seven Plug and Play modems installed without any prodding from us.

# Is Plug and Play Your Best Bet?

INCREASINGLY, YES-but our tests show that like a nagging cold, Plug and Play incompatibilities just haven't gone away. So if you dread the idea of adjusting jumpers and switches, do your homework before deciding on a Plug and Play modem.

1 Is your PC packed to the hilt with multimedia, a network card, an internal tape backup drive, the works? If so, that means resources are scarce. So if you opt for a Plug and Play card, make sure it's 16-bit.

Identify your PC's BIOS. Most computers will display the name, date, and version of the BIOS immediately after powering up. Hitting <Pause> will often freeze the screen so you can jot down this information. If you've upgraded to Windows 95 from DOS or Windows 3.1, you can also get BIOS information from the MSD.EXE utility program.

Once you know which BIOS you have, call your PC company's tech support. Ask them to search their knowledge base for known

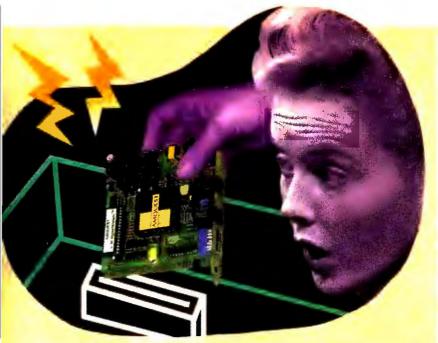
We had the worst experiences with the two systems that have Phoenix BIOSes. None of the modems were automatically detected and set up by the NEC PowerMate V100 (Phoenix v4.05), but we were able to get all of them to work by manually configuring them in Windows. (The Amax, NEC, and Quantex desktop and tower computers are still being sold.)

> The two-year-old Micron P90 Millennia desktop (Phoenix v4.04) was a Plug and Play disaster. We were able to install only the Cardinal modem, and that was after a lot of wrangling with COM ports and IRQs. The other cards either disabled the PC's mouse or appeared to install but still remained unrecognized. If you have a Micron P90 Millennia, you might be better off going with a non-Plug and Play modem. See "Is Plug and Play Your Best Bet?" for advice on how to make your Plug and Play experience as painless as possible.

> A word about legacy modems: The most common internal modem settings are COM2 and IRQ3, and all legacy modems we tested came preset to this same pair. Once we configured the installation test-bed PCs so that COM2 and IRQ3 were free, all legacy installations went smoothly.

### PERFORMANCE: SPECS VERSUS REALITY

THE BEST MEASURE OF MODEM PERFORMANCE is throughput, the time it takes to transfer a given amount of data. Surprisingly, the fastest 33.6-kbps modem we tested was still slower than six of the 28.8-kbps modems on the chart. There are at least two likely explanations: 33.6-kbps modems are relatively new, so kinks still need to be worked out; and the phone network itself tends to prevent analog modems from connecting at higher than 26.4 kbps.



Plug and Play incompatibilities with the modem you're interested in. Another useful source is Microsoft's knowledge base (http:// www.microsoft.com/support). If there are incompatibilities, find out if your PC has an upgradable flash BIOS. There may be a simple software upgrade fix.

To test throughput, we install an identical pair of modems in two Compaq Deskpro 486DX2-66 desktops, and connect them through a simulated public telephone network (see the Test Report). We run two tests that focus on both the modem's ability to work well over a variety of line conditions, and how well it sends different types of files. For the first test, we send a 328K text file over 55 different line conditions that represent 95 percent of the connections made in the United States. For the second test, we send four of the most common file types—graphics, text, program, and compressed—both individually and in a group over a single commonly encountered line condition. We then average the results of the two tests to derive the modem's overall performance time, shown as the "Average transfer time per MB" in the Test Report and in the Top 10 chart appearing on page 273. All results in the Test Report show the time it takes to send a megabyte of data.

### ALSO-RANS

OF THE MODEMS TESTED, FOUR MISSED the Top 10 chart. Amquest's Hypermodem is reasonably priced and exceptionally fast, but skimpy features and poor support keep it off the chart. Diamond's SupraExpress 288i Sp is rich in features, but it was sluggish in our speed tests. Also slow were Practical Peripherals' ProClass PC288HC V.34 and MultiTech's MT2834ZPX. We pulled the U.S. Robotics Sportster Winmodem from Top 10 contention because its performance depends heavily on the PC it's plugged into and we couldn't get a meaningful measurement from our current benchmark. See "The Sportster Winmodem Prefers Pentiums" for more details.

Bryan Hastings is a senior associate editor, Eric Hellweg an assistant editor, and Kirk Steers a contributing editor for PC World.

For more information about all products in this article, circle reader service no. 911.

### Motorola LifeStyle 28.8

PRO: Top performance, quality construction, very good documentation, easy installation, good service and support

**CON: Pricey** 

why should you pay \$175 for a modem at a time when the first V.34 modems are dipping below \$100? The LifeStyle 28.8 is decidedly pricey. But you get blazing performance, terrific ease of use, and solid support. We've received nothing but positive feedback from Motorola modem owners.

We were impressed from the moment we opened the box, from the thorough reference manual, to the Quick Start guide complete with instructions for Windows 95 installations, to the clean, uncluttered circuitry on the modem card. Although you don't see "Plug and Play" printed anywhere, the LifeStyle sailed through the installation without our having to know a COM port from Portland, Maine. The LifeStyle also comes with QuickLink II.

Our benchmarks put the LifeStyle first in performance among the modems on the Top 10 chart. It did especially well on the phone line test.

The LifeStyle's feature set won't blow you away—you don't get voice mail or speakerphone capability, for example. But it's not totally bereft of extras. It supports the Distinctive Ring and Caller ID phone services. It's also one of the few modems that shuts off its phone jack when there's a file transfer in progress, a thought-



CARDINAL'S MODEM IS ALL TALK and a good deal of action. It lets your PC be a telephone answering machine, and you can use the supplied mike, along with your PC's speakers, as a speakerphone.

ful design touch. Motorola backs its modern with a good support package, including a five-year warranty and toll-free support. Motorola, 800/566-3266, http://www.mot.com/modems

READER SERVICE NO. 720

### ② Cardinal MVP288IS

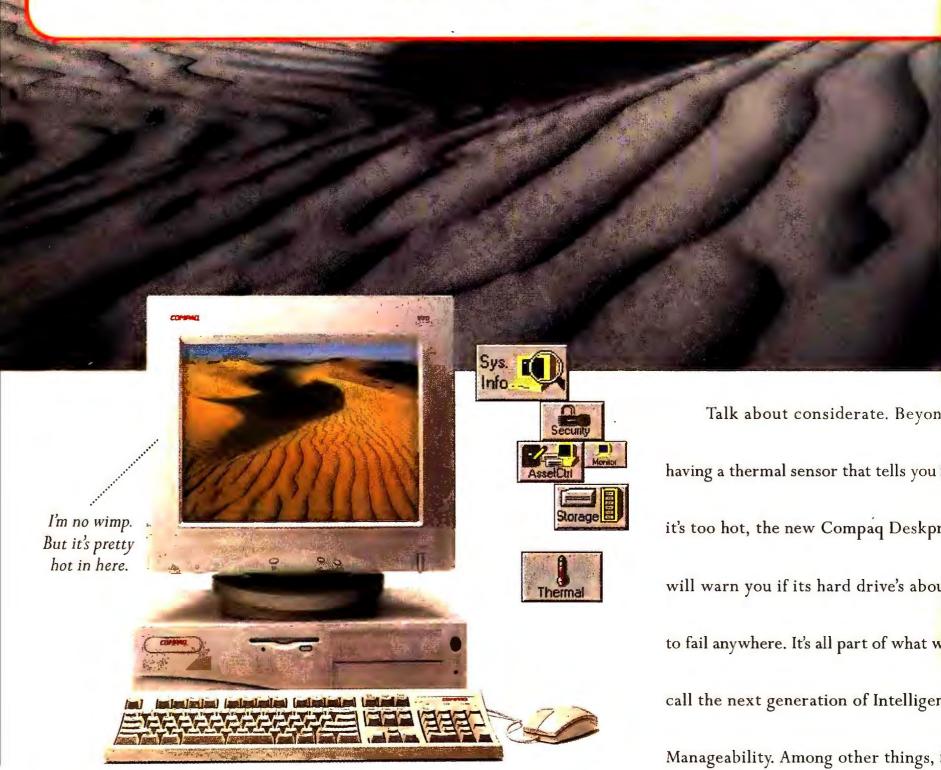
PRO: Replete with features, lifetime warranty

CON: Long card takes up lots of internal space, few IRQs to choose from

F IF ALL YOU NEED IS A BASIC MODEM, you can find a good one for less money than the \$189 MVP288IS. But if you're looking for all the bells and whistles, this is one of the best deals you can find. It has more features than any other



### A DESKTOP THAT'S ACTUALLY CAPABLE (





© 1996 Compaq Computer Corporation. All rights reserved. Compaq and Deskpro registered U.S. Patent and Trademark Office. Deskpro is covered by our 3-year limited warranty. Dealer prices may vale Features vary by model. Monitor not included. Thermal sensor available only on Deskpro 4000 and 6000. Some features available with Compaq Deskpro and independent software applications. Other features only available with Windows 95. The Intel Inside Logo and Pentium are registered trademarks and the Pentium Processor Logo and the Pentium Pro Processor Logo are trademarks of the Int Corporation. Other products mentioned may be trademarks or registered trademarks of their respective companies.



give IS managers a broader range of integrated solutions. And to minimize installation and your configuration

# TELLING YOU IT'S TOO HOT. Cool.

time, we provide an upgradeable



allows you to take inventory of all your hardware and software from one location. In case of hard drive failure, it backs up your data on the network; and now, thanks to our new PD-CD drive backup, it also preserves your data locally. There's even a sensor in

the hood that alerts the support desk if anyone's tampered with it.

Intelligent Manageability is still based on open industry standards that ensure compatibility and integration with any network. Our partnerships with Microsoft, Novell, Intel and others

integrated NIC and network-ready software which protects your investment and allows for growth. Ultimately what you get with Intelligent Manageability is lowered cost of ownership. Add to that a three-year warranty, plus dedicated toll-free technical support that's open for business seven days a week, 24 hours a day. Control. It's what makes the new Compaq Deskpro so hot. In a cool kind of way. For more information, visit us at www.compaq.com or call 1-800-392-8883.



modem reviewed here, and that, coupled with decent performance and ease of use, scores it a Best Buy.

One of the highlights is the unit's voice capabilities. The MVP288IS comes with full-duplex speakerphone and a microphone, and you can set it up so that your PC's speakers automatically shut off other audio, such as music coming from a CD playing in your PC, when you begin using the speakerphone. When you're not in the office, you can set voice mail to dial another number, such as your beeper, and alert you to new messages. If you need to transfer data over cellular channels, you'll be glad to hear that the MVP288IS supports MNP-10EC, the most common cellular protocol. The modem can also take advantage of Distinctive Ring and Caller ID if you subscribe to these phone services. Voice mail is managed by FaxWorks 3.0, one of the better fax/data packages.

The MVP288IS is unique among the modems we tested in that it comes with FlashROM, which means you can add features and performance enhancements through software if you want to upgrade the unit. By the time you read this, Cardinal should have a free software upgrade to 33.6 kbps. The 8-bit MVP288IS is a Plug and Play modem, and installation was a breeze. Cardinal also made sure the documentation speaks to the masses. The modem comes with a lifetime warranty, but after one year you have to pay \$25 in shipping and handling charges for each repair. Cardinal, 800/775-0899, http://www.cardtech.com

READER SERVICE NO. 721

### TEST REPORT

### **3** U.S. Robotics Sportster Faxmodem

PRO: Plug and Play and manual installation, good software CON: Slow for a 33.6-kbps modem, can't use IRQs beyond IRQ7

THE SPORTSTER FAXMODEM is a decent value for \$159. What we think is way cool: You can install this 8-bit card either as a Plug and Play or as a legacy board. The modem comes preset for Plug and Play. But if your PC fails to boot, you can reset the jumpers on the board for whatever COM/IRQ settings work.

The Sportster installed cleanly in its Plug and Play persona on two of the five installation test beds. When we had to resort to a manual installation, we found the documentation very helpful.

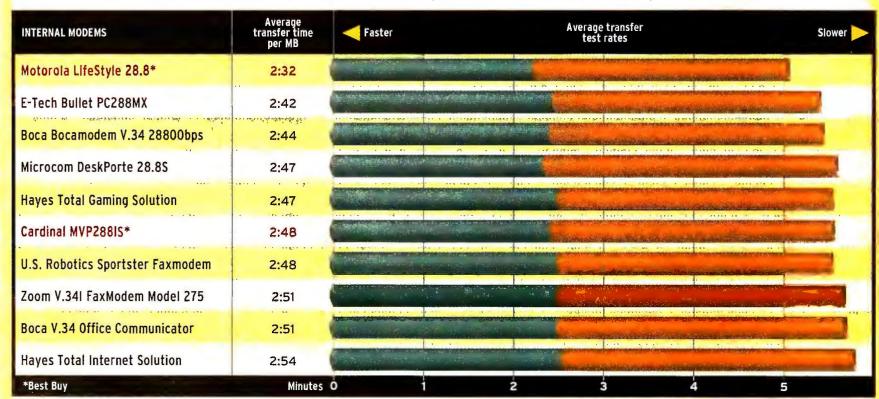
There's still room for improvement. The Sportster is one of the few modems we tested that support 33.6 kbps, so the least we expected was loads of connections at 26.4 kbps, the highest rate at which our performance test PC allows consistent connects. No such luck. The Sportster Faxmodem ended up in the middle of the Top 10 pack. The Sportster is backed by a five-year warranty and 10 hours of tech support per weekday. But you have to pay for the call. We had to spend several minutes navigating voice menus before being put on hold for an additional 15 minutes before we finally spoke to a tech support person. Arghh!

The software bundle is excellent. The included fax/data package, QuickLink II, equals FaxWorks 3.0 in features and ease of use. And the Connections CD-ROM contains a trial version of Quicken. U.S. Robotics, 800/342-5877, http://www.usr.com

READER SERVICE NO. 722

# Motorola's LifeStyle Pulls Well Ahead of the Pack

U.S. Robotics' Sportster Faxmodem is the only 33.6-kbps modem on the Top 10 chart.



Modems are arranged in order of overall performance from best to worst, based on the normalized, weighted scores from two tests.

phone line test

HOW WE TEST We install an identical pair of modems in two Compaq Deskpro 486DX2-66s, each containing 12MB of RAM. We connect the modems through a TAS simulated public phone network that uses Hayes 230-kbps ESP serial cards. We measure the transfer rate of the modems using the phone line test and the file type test, as outlined in EIA/TIA TSB 37 and 38b. For the phone line test, we send a 328K text file over 55 different line conditions, which represent 95 percent of the line conditions in the United States. For the file type test, we send a 983K graphics file, a 328K text file, a 197K program file, a 131K compressed file, and a 524K mix of files of the previous four types all over the same line condition. We average the results of the two tests.

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

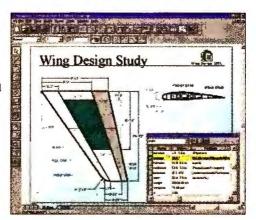
Other 2D Drawing Tools Click Click Click Click

• Imagineer™ Technical

# Draw your own conclusion.

Imagineer's easy-to-use drawing tools and intuitive on-screen feedback render other drawing programs obsolete. Intergraph Imagineer™ Technical lets you create precision 2D drawings with half the mouse-clicks, keystrokes and command changes of most drawing software.

Designed for Windows 95 and Windows NT, Imagineer makes it easy to combine drawings with text files, spreadsheets, presentations



Imagineer Technical makes design iterations fast and easy, with automatic updates from variables and equations.

and more. Imagineer also works with AutoCAD and MicroStation®— so you can take your designs directly into the CAD production workflow.

You'll find Imagineer makes drawing simpler than you ever imagined. Order Imagineer Technical today or test drive it with a free evaluation CD and draw your own conclusion. Special competitive upgrade and CAD companion pricing available.





Precision drawing made easy.







www.intergraph.com/iss/draw



### Best Pentium processor-based PC at entry-level price.

- Intel 75 or 100 MHz Pentium processor
- 8–16MB RAM, expandable to 128M
- EDO RAM
- Optional 256KB cache
- 640MB\*\* high-performance Enhanced-IDE hard drive
- PCI integrated graphics accelerator and 1MB DRAM standard, upgradable to 2MB
- Flash BIOS for easy upgrade
- Designed for Windows® 95
- Preloaded HP DMI Desktop lanagement Interface
- Free three-year limited warranty for parts and labor1

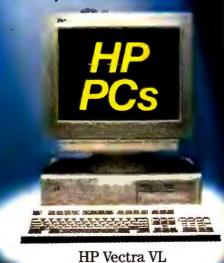
\$1,262\*

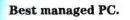


HP Vectra VE

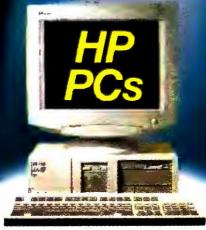
### **Leading Pentium** processor/PCI performance at an affordable price.

- Intel 100, 120, 133, 150 or 166 MHz Pentium processor
- Desktop and minitower packages
- 256KB burst synchronous cache
- 8-16MB RAM, expandable to 128MB
- EDO RAM
- PCI/ISA architecture
- 640MB\*\* high-performance Enhanced-IDE hard drive
- PCI integrated graphics acceleration and 1MB DRAM standard, upgradable to 2MB or Matrox Millenium PCI graphics card with 3D acceleration and 2MB WRAM upgradable to 8MB
  - Plash BIOS for easy upgrade
  - Full plug-and-play capability
  - Designed for Windows 95
  - eloaded HP DMI Desktop anagement Interface
  - Free three-year limited warrants for parts and labor





- Intel 75, 100, 120, 133, 150 or 166 MHz Pentium processor
- LAN Remote Power
- PCI integrated 32-bit 10Base-T Ethernet interface
- Network certified and preconfigured for Microsoft® and Novell clients
- Preloaded HP DMI Desktop Management Interface
- Vectra Op-Center
- Norton Smart Disk Doctor
- Parallel transfer driver preinstalled for faster LAN packet processing
- Advanced security meeting C2 level
- 64-bit graphics accelerator on PCI but
- 1MB video RAM, expandable to 2M1
- 8 or 16MB EDO RAM, expandable to 128MB
- 40 or 1280MB Enhanced-IDE ard drive
- 4 mass storage shelves (3 front cessible), 4 expansion slots
- Two 32-bit PCI slots
- Flash BIOS for easy upgrade
- signed for Windows 95
- Free three-year limited warrant for parts and labor!



HP Vectra XM

'In Canada, call 1-800-387-3867. 'Average U.S. street price. Monitor not included "Other capacities available. HP Vectra PCs come with MS-DOS® 6.2 and MS Windows for Workgroups 3.11; or Windows OS/2 or Windows NT included. 'First year, on-site, 24-hour, next-day service. Second and third year, return to dealer. Microsoft, MS-DOS, Windows and Windows NT are U.S. registered trademark Microsoft Corporation. Pentium and the Intel Inside logo are registered trademarks of Intel Corporation. OS/2 is a registered trademark of the International Business Machines Corporation.

### The ultimate PC.

- Intel Pentium Pro 150, 180 or 200 MHz processor with 256KB integrated cache
- Supports dual processing with secondary Pentium Pro socket
- 128-bit high-performance memory architecture
- 16–32MB ECC DIMM memory standard expandable to 256MB with 8 DIMM memory expansion slots
- PCI integrated Ultra SCSI Fast 20 interface with 20MB/s throughput
- 1,000MB\*\* SCSI-2 high-performance hard drive
- ICI Matrox Millenium graphics card with 3D acceleration and 2MB WRAM pgradable to 4MB or 8MB
- 7 mass storage shelves (5 front accessible)
- expansion slots: 3 PCI, 1 PCI/ISA
- 10Base-T/100VG AnyLAN selectable
- POLNIC with up to 100 Mb/s throughput
- Integrated 16-bit audio and 4X CD-ROM
- Microsoft Windows NT 9 3.51
- The three-year limited warranty for

\$3,939\*



HP Vectra XU

## Exceptional performance and expandability at an affordable price.

- Intel Pentium Pro 150 MHz processor with 256KB integrated cache
- 128-bit high-performance memory architecture
- 16 MB DIMM memory standard, expandable to 256MB with 8 DIMM memory expansion sockets
- 1,000MB\*\* Enhanced-IDE hard drive;
- PCI Matrox Millenium graphics
   card with 3D acceleration and 2MB
   WRAM, upgradable to 4MB or 8MB
- 7 mass storage shelves (5 front accessible)
- 6 expansion slots: 3 PCI, 1 PCI/ISA combo and 2 ISA
- Integrated 16-bit audio and 4X CD-ROM
- Microsoft Windows NT 3.51 or IBM
  OS 2º Warp
- Free three-year limited warranty for parts and labor!

\$2,615\*



HP Vectra VT

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

A little comparison shopping will quickly show you that HP puts the best prices on the most impressive PCs. One standout is the network-ready Vectra XM. It's configured for the most demanding networks with LAN Remote Power, Super-fast LAN install and HP Vectra Op-Center for more effective remote management. Every Vectra will outshine the competition when it comes to features and price. From the Pentium® processor-based PCs to the dual Pentium Pro processor-based HP Vectra XU PC. For more information or the name of your nearest HP reseller, call 1-800-322-HPPC, Ext. 1704! Or visit us at http://www.hp.com/go/vectra.



### 2 Zoom V.341 FaxModem Model 275

PRO: Terrific price, weekend support, long support hours CON: Installation is not for those with short fuses

THE ZOOM V.341'S GREAT ATTRACTION can be summed up in one number: \$109. If you don't need anything fancy and are handy at installing devices in PCs, it can save you a lot of money.

As with the company's V.34 PC Card that appeared in the Top 10 chart of PC Card modems earlier this year, installation is this 8-bit card's weak point. It's not Plug and Play, which forced us to fiddle with jumpers and switches, and we were left in the cold as to what driver to use. The documentation told us to pick a Zoom modem from the list in Windows 95 but failed to tell us which model to choose. It's a small stumbling block, but one that will send many a neophyte to tech support. Were it not for this Achilles' heel, the V.34I might have earned a Best Buy. Fortunately, support is available more than 14 hours per weekday and on the weekend as well.

Once we got the modem installed, it worked fine. Performance was a little under par. Features are basic, although you do get support for Distinctive Ring. The V.34I also comes with MNP-10EC, the most common protocol for sending files over cellular connections. The bundled software consists of WinFax Lite and Comit for Windows. Both are quite functional and relatively easy to learn, although you probably wouldn't get up to speed with them as quickly as with FaxWorks 3.0 or QuickLink II. Zoom, 800/631-3116, http://www.zoomtel.com

READER SERVICE NO. 723

### Hayes Total Internet Solution

PRO: Easy to install, easy-to-read manual, toll-free tech support

CON: Sluggish performance, large card

"TOTAL" IS STRETCHING THINGS, as you'll find out below. But this is one of the best packages we've seen so far for getting on the Internet without a lot of fuss or bother.

This \$163 package has its shortcomings. The modem, an entry-



PLUG AND PLAY? MANUAL? U.S. Robotics' Sportster Faxmodem can swing either way by setting jumpers (see close-up). Given the ongoing problems with PnP, we'd like to see this flexibility in all ISA modems.

level Hayes Accura 288, provides only basic functions. But the good decidedly outweighs the bad. This Plug and Play modem gave us one of our most trouble-free installations. It's a 16-bit card, which means you have a wide selection of IRQs.

We weren't thrilled by the ample software bundle. The Smart-Com Message Center LE fax/data package isn't nearly as easy to use as FaxWorks 3.0 or QuickLink II. And the InternetSuite 2.0 CD-ROM from Quarterdeck, a tool chest of Internet utilities, is outdated. The first thing we'd do with the supplied Mosaic browser is grab Microsoft's Internet Explorer or a preproduction version of the latest Netscape Navigator off the Net-these are far superior and free for the downloading. But SmartCom is a very capable package, if not exactly approachable, and the Quarterdeck disc includes some handy utilities, including one that lets you decide what your kids can see online.

Hayes backs its modem with good support policies. Tech sup-

### INTERNAL MODEMS

SCORECARD

|      |   | _ | _ | _   |  |
|------|---|---|---|-----|--|
| 1940 | Λ |   |   | 100 |  |
| 100  | Δ |   | R | -   |  |
|      |   |   |   |     |  |

|    | MODEMS                           | Street<br>price<br>(8/15/96) | Ease of installation | Documentation | Software<br>bundle |
|----|----------------------------------|------------------------------|----------------------|---------------|--------------------|
| 1  | Motorola LifeStyle 28.8*         | \$175                        | outstanding          | very good     | very good          |
| 2  | Cardinal MVP288IS*               | \$189                        | very good            | good          | very good          |
| 3  | U.S. Robotics Sportster Faxmodem | \$159                        | very good            | good          | outstanding        |
| 4  | Zoom V.341 FaxModem Model 275    | \$10,9                       | fair                 | good          | good               |
| 5  | Hayes Total Internet Solution    | \$163                        | outstanding          | good          | good               |
| 6  | Hayes Total Gaming Solution      | \$259                        | outstanding          | good          | good               |
| 7  | E-Tech Bullet PC288MX            | \$152                        | fair                 | fair          | good               |
| 8  | Microcom DeskPorte 28.8S         | \$143                        | good                 | very good     | very good          |
| 9  | Boca Bocamodem V.34 28800bps     | \$179                        | good                 | very good     | very good          |
| 10 | Boca V.34 Office Communicator    | \$199                        | very good            | good          | very good          |

| Maximum<br>data/fax rate<br>(kbps) | Plug and<br>Play/<br>legacy | ISA card<br>type/length<br>(inches) | V.FC/<br>V.32ter |
|------------------------------------|-----------------------------|-------------------------------------|------------------|
| 28.8/14.4                          | •/O                         | 16-bit/6.5                          | 0/0              |
| 28.8 1/14.4                        | ●/○                         | 8-bit/8.2                           | •/0              |
| 33.6/14.4                          | <b>•/•</b>                  | 8-bit/5.3                           | ●/○              |
| 28.8/14.4                          | 0/●                         | 8-bit/5.4                           | ●/0              |
| 28.8/14.4                          | ●/0                         | 16-bit/8                            | ●/0              |
| 28.8/14.4                          | ●/0                         | 16-bit/8                            | ●/○              |
| 28.8/14.4                          | 0/•                         | 8-bit/5.3                           | 0/•              |
| 28.8/14.4                          | 0/•                         | 8-bit/5                             | ●/○              |
| 28.8/14.4                          | 0/•                         | 8-bit/4.5                           | •/0              |
| 28.8/14.4                          | •/0                         | 16-bit/11.3                         | ●/○              |

\*Best Buy

'Upgradable to 33.6 kbps.

See Top 10 chart, page 273.

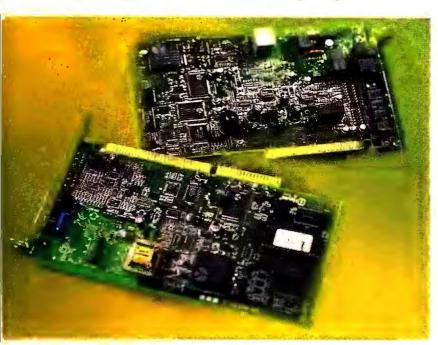
port is available 10 hours per weekday, on Hayes's dime. Reader comments on Hayes have been positive. The company emerged last year from Chapter 11 bankruptcy, but we've gotten no indication that the quality of its support has suffered. Hayes, 770/840-9200, http://www.hayes.com

READER SERVICE NO. 724

### Hayes Total Gaming Solution

PRO: Voice mail, DSVD, VoiceView, painless installation, very good support CON: Very expensive, long card

OVERALL, THE TOTAL GAMING SOLUTION is one of the most complete packages we've seen. The main thing keeping it from a Best Buy? At \$259, it's the most expensive package here.



IS YOUR PC PACKED WITH PERIPHERALS? You're better off with a 16-bit modem, identified by its two rows of pins (see upper edge of card in front). 16-bit modems can use more of the PC's settings.

As the name suggests, the product is geared for gaming. If you'd like to tell your tail gunner to attack that incoming MiG-29 or maybe shower a little verbal abuse on the opponent who just

incinerated you in Doom, the Total Gaming Solution lets you do just that. With Hayes's Accura 288 + Voice + DSVD modem, you can speak and send data at the same time using DSVD. You can conduct your digital warfare using the included microphone and speakerphone. Hayes also throws in NASCAR Racing, a fastpaced simulation game.

This package is also fine for business use and Net surfing. It's hard to cozy up to the included SmartCom Message Center LE fax/data software, but it works with the modem's voice-mail feature, has pager notification, and lets you set up a simple fax-ondemand system. You can browse an online mall, then use Voice-View to speak to a salesperson by just clicking a button. Hayes also tosses in Quarterdeck's InternetSuite 2.0.

Even the terminally technophobic should have no trouble getting this 16-bit Plug and Play modem up and running. Its performance was average for a Top 10 modem, taking 2 minutes and 47 seconds to send a megabyte of data. The product is backed by Hayes's fine support package, which includes toll-free support and a five-year warranty. Hayes, 770/840-9200, http:// www.hayes.com

READER SERVICE NO. 725

### Tech Bullet PC288MX

PRO: Fast, toll-free support

CON: Few features, needs better documentation, unclear installation

E-TECH'S BULLET IS A ONE-TRICK PONY that offers speed and little else. This \$152 modern is affordable, but it's best for users who don't need extras and who have a talent for twiddling jumper and switch settings on their PCs.

The Bullet whizzed through our performance tests, but it's a plain legacy card and the manual is unhelpful. So you may have to spend some time flailing around with COM and IRQ settings. Novices may well end up calling technical support to complete the installation. Fortunately, E-Tech offers a toll-free tech support number. E-Tech, 800/328-5538, http://www.bulletel.com

READER SERVICE NO. 726

### SUPPORT

| MNP-10EC | Fax Class 1/<br>2 (protocol)/<br>2.0 (standard) | Fax/data software                   | Voice mail/<br>speakerphone | Voice View/<br>DSVD | FlashROM<br>upgrade | Distinctive<br>Ring | Caller ID |
|----------|---|-------------------------------------|-----------------------------|---------------------|---------------------|---------------------|-----------|
| 0        | •/0/0   | QuickLink II                        | 0/0                         | 0/0                 | O control droi      | e anti-             | •         |
| •        | ●/●/○   | FaxWorks 3.0                        | ●/●                         | ●/○                 | •                   | •                   | •         |
| 0        | ●/0/●   | QuickLink II                        | 0/0                         | 0/0                 | 0                   | 0                   | 0         |
| •        | ●/●/○   | Comit for Windows, WinFax Lite      | 0/0                         | 0/0                 | 0.                  | •                   | 0         |
| 0        | ●/●/○   | SmartCom Message Center LE          | 0/0                         | 0/0                 | . 0                 | •                   | 0         |
| 0        | ●/●/○   | SmartCom Message Center LE          | ●/●                         | ●/●                 | 0                   | •                   | •         |
| 0        | ●/●/●   | Comit Lite for Windows, WinFax Lite | 0/0                         | 0/0                 | 0                   | 0                   | 0         |
| •        | ●/●/○   | FaxWorks 3.0                        | 0/0                         | 0/0                 | 0                   | •                   | 0         |
| 0        | ●/●/○   | FaxWorks 3.0                        | 0/0                         | 0/0                 | 0                   | 0                   | 0         |
| 0        | ●/●/○   | FaxWorks 3.0                        | ●/●                         | ●/○                 | 0                   | 0                   | 0         |

| Warranty<br>(years) | Weekday<br>support (hours)/<br>toll-free | Weekend<br>support |
|---------------------|--|--------------------|
| 5                   | 9/●                                      | 0                  |
| lifetime            | 12/0                                     | 0                  |
| 5                   | 10/0                                     | 0                  |
| 7                   | 14.5/0                                   | •                  |
| 5                   | 10/●                                     | 0                  |
| 5                   | 10/●                                     | 0                  |
| 2                   | 10/●                                     | 0                  |
| 5                   | 12/0                                     | 0                  |
| 5                   | 10.5/0                                   | 0                  |
| 5                   | 10.5/0                                   | 0                  |

### Microcom DeskPorte 28.8S

PRO: Nice price

CON: Legacy card, comes with few extras

IF YOU'RE LOOKING FOR A MODEM with all the latest features and no installation headaches, this isn't it. The plain-language manuals help ease installation pains—but you have to know how to mind your COM ports and IRQs. If you have to call tech support, it's available 12 hours a day on weekdays, but it's a toll call.

The \$143 DeskPorte has two redeeming features: It's quite affordable, and it includes the FaxWorks 3.0 package, one of the most capable and easiest to learn of the programs commonly bundled with modems. The DeskPorte also supports MNP-10EC, useful for people who send data over cellular connections. Performance is average among the modems on the Top 10 chart. Microcom, 800/822-8224, http://www.microcom.com

READER SERVICE NO. 727

### Boca Bocamodem V.34 28800bps

PRO: Good performance, very good documentation, easy installation CON: Pricey for a basic modem that doesn't offer Plug and Play BOCA'S LATEST PRODUCT ISN'T MUCH MODEM for the money. That's both good and bad.

Good because the Bocamodem V.34 28800bps is physically the smallest modem in the roundup. Measuring only 4.5 inches long, its small size can be a plus if you have a computer jam-packed with cards, cables, and other clutter.

Bad because this expensive \$179 card lacks Plug and Play and is 8-bit, which means it can't use any IRQs above 7-a problem

Prefers Pentiums

The Sportster Winmodem



SIZE CAN MAKE A DIFFERENCE when it comes to putting modems into PCs. Longer modems can be harder to install because of interference from cables. CPU heat sinks, and cache RAM modules.

if your PC has a lot of other devices.

The Bocamodem cranked through a megabyte of data a couple of seconds per megabyte faster than the average Top 10 modem, and its manual is very readable. But for a little more money, you can get modems with the works from Boca and several other vendors. Boca, 561/997-7202, http://www.bocaresearch.com

READER SERVICE NO. 728

### ◆ Boca V.34 Office Communicator ■ The Communi

PRO: Voice mail, speakerphone, VoiceView, FaxWorks 3.0

A 33.6-KBPS MODEM for \$99? When U.S. Robotics told us its

Sportster Winmodem price, we asked what digit was missing. But there's a catch: How well it works depends on how powerful your PC is. U.S. Robotics was up-front in saying that you'll need a Pentium if you plan on running lots of CPU-intensive apps. The Winmodem lacks a controller chip, leaving it up to the CPU to juggle extra duties.

We decided to perform some informal stress tests on the 33.6-kbps Winmodem. To see what happened to the comput-

er and modem performance on PCs using different CPUs, we installed the Winmodem on a Quantex Pentium-166 and a Gateway 2000 486DX2-66V. Then we downloaded a 200K file from CompuServe, first with no other applications loaded and then while simultaneously running the Hover 3D game and a demanding Excel macro packed with trigonometric functions. On the P-166, both download times and foreground operations appeared unaffected by the extra demand on the CPU. On the 486 with only the Excel macro running in the foreground, the Winmodem didn't suffer much performance loss. However, when we ran the macro and the 3-D game together on the 486, download time for the 200K file jumped from 30 to 40 seconds, and Hover bogged down so much it was unplayable.

Based on the results of these informal tests, we removed the Winmodem and other future PC-dependent modems from Top 10 competition until we can create a realistic benchmark that will put standard and computer-dependent modems on the same footing. Nonetheless, we found out that the U.S. Robotics Winmodem is a good performer on a very fast Pentium machine, and it may do well even on slower Pentiums. -Eric Hellweg and Kirk Steers

CON: Expensive, subpar performance, longest card

BOCA'S SECOND OFFERING this month, the \$199 V.34 Office Communicator, is more amply featured. But if voice mail, speakerphone capabilities, and VoiceView are what you're looking for, you'll get more value from the Cardinal MVP288IS, a Best Buy this month that costs a little less and offers much more.

The Office Communicator is a 16-bit Plug and Play card, but it installed smoothly on only two of the five installation test beds. Performance was nothing to rave about the unit was 5 seconds slower than the typical Top 10 modem. Also, you may have trouble fitting this 11.3-inch card into your computer.

Boca made a good choice of software: The bundled FaxWorks 3.0 program is easy to use and combines voice, fax, and e-mail in one—it's one of the best bundled fax/data packages available. You can also set the modem to call your beeper when you get new messages on your PC. Boca, 561/997-7202, http://www.bocaresearch.com

READER SERVICE NO. 729

# Now you can give everyone a better place to think.

Fits in your budget. For \$2,299', you can actually put ThinkPad power into the hands of everyone in the organization.

Crisp and clean. A 10.4" or 11.3" screen means your work will be clear, bright and easy to see in many lighting conditions.

### **ThinkPad**

Pure power. With a potent 100 or 120MHz<sup>2</sup> Pentium processor aboard, software runs at lightning speed.

Wireless link. Our built-in infrared technology lets you easily beam files to an infrared-enabled printer, desktop PC or another ThinkPad.

TrackPoint III. Built into the keyboard,TrackPointIII lets your team focus on work instead of fumbling around with hard-to-reach pointing devices.



Power to spare. With 8MB to 40MB³ of memory and a 810MB to 1.08GB hard disk¹, it can handle just about any business task.

Always connected. Two PC Card slots let you tie users to office resources, whether they're at their desks or on the road.



Serious tools. Comes with Windows 95 and Lotus SmartSuite<sup>5</sup> for instant productivity.

### Integrated multimedia.

Some models come with built-in CD-ROM, giving you a whole world of multimedia capabilities.

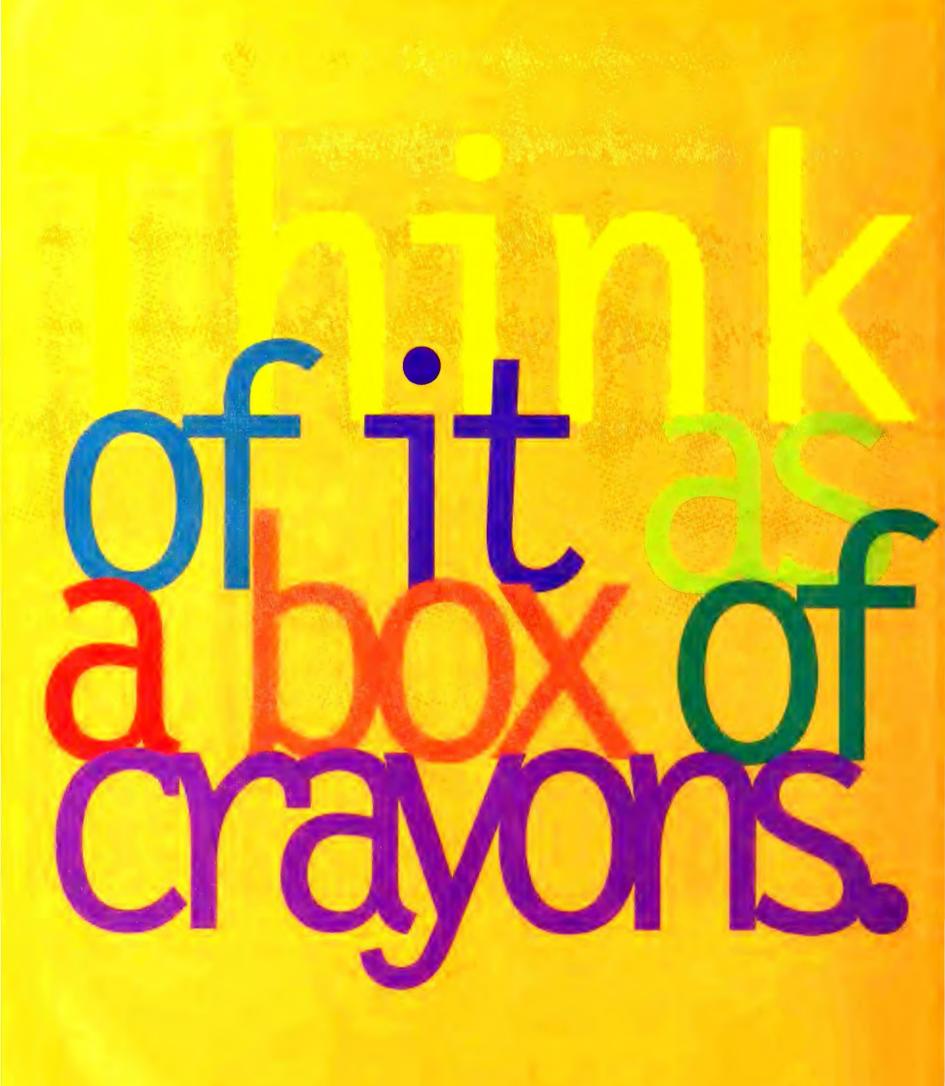
For information: 1 800 426-7255, ext. 4732 www.pc.ibm.com/thinkpad

Introducing the ThinkPad 365. Starting at \$2,299.\*

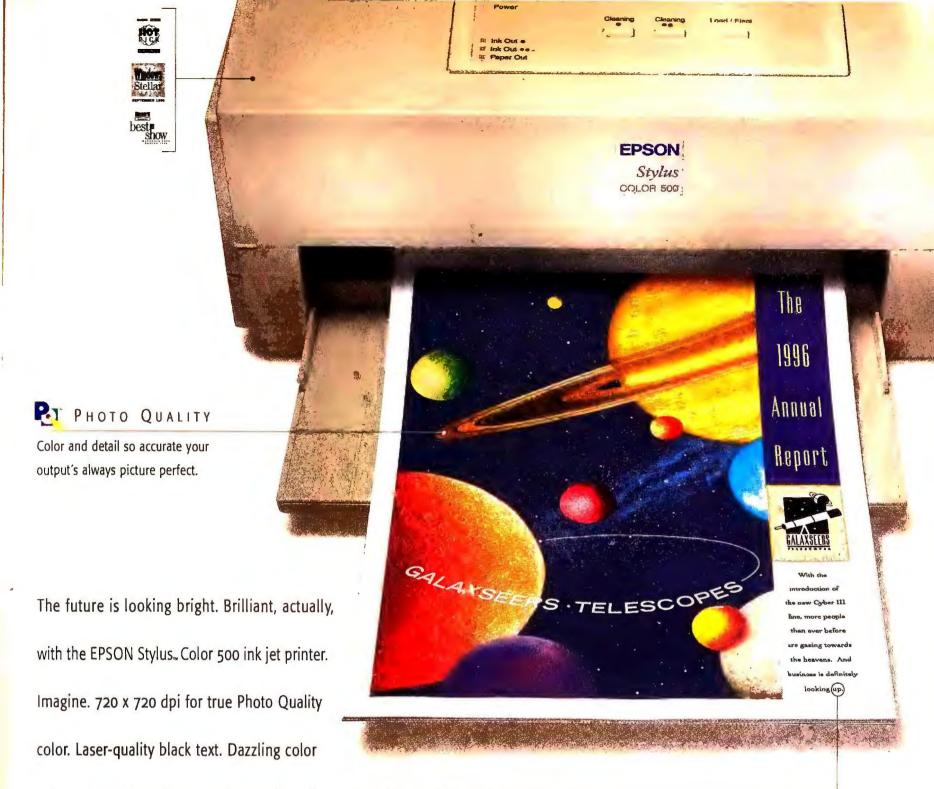


Solutions for a small planet





From the 23rd century.



printing at fast print speeds on virtually any media. And simple start-up with our Easy Setup software. With our free award-winning full-version Adobe and Sierra software), you can create striking presentations and reports for work. Or birthday cards and banners for fun. All with a two-year CALL 1 800 GO EPSON warranty for just \$289 (not bad, since the Color Pak's worth ASK FOR OPERATOR 3064 up to \$299 alone). Visit us at http://www.epson.com for even more reasons why the EPSON Stylus. Color 500 is truly ahead of the competition. And ahead of its time.



YOU'VE GOT TO SEE IT IN EPSON COLOR.



# New ATI 3D graphics upgrades put

# A WHOLE NEW SPIN

# on the way you view your computer and watch TV.

Everywhere you look, eyes are popping and heads are spinning over the new ATI 3D PRO TURBO™ PC2TV and 3D XPRESSION™ PC2TV graphics

|                         | ATI<br>3D XPRESSION PC2TV | MATROX<br>MYSTIQUE | DIAMDHD<br>Stealth 3D 2DDDXL | ATI<br>3D PRD TURBD PC2TV  | MATRDX<br>MILLENNIUM |
|-------------------------|---------------------------|--------------------|------------------------------|--|----------------------|
| Output to TV            | •                         | 173                |                              |  |                      |
| 1600 x 1200 (NI)        | •                         | 1800               | (*)<br>(*)                   | -  |                      |
| 3D Texturing (Bilinear) | •                         |                    | • , '4                       | A STATE OF THE STA |                      |
| Smooth Video            | •                         | •                  |                              | State of the second  |                      |
| Performance (WinMarks)  | 40.7M                     | 35.9M              | 33.6M                        | 31.300   | 1/7M                 |
| Price                   | S219 (2MB)                | \$219              | \$199                        | STATE (MARK)   | 5 0007               |

upgrades. The only ones with the new *PC2TV* feature that uses your

|    |           | MICROSOFT      | 3D BENCHM             | ARK TESTS <sup>2</sup> |    |             |
|----|-----------|----------------|-----------------------|------------------------|----|-------------|
|    | 68 (B)    | overskih) izv  | AND SERVE             | M<br>·                 |    |             |
| i. | Ox MATRO) | ( MYSTIQUE, 4A | MB SGRAM <sup>3</sup> |                        |    |             |
| 1. | Ox UNACCE | LERATED 3D GF  | RAPHICS               |                        |    | All Company |
| 0  | 5         | 10             | 15                    | 20                     | 25 | 30          |

| COMPARISON                                       | 3D XPRESSION PC2TV    | 3D PRO TURBO PC2TV                 |
|--|-----------------------|------------------------------------|
| Use  | Gomes, Home, Business | Major let pass<br>Nappje Vale same |
| Moximum 3D<br>Resolution and Colors <sup>4</sup> | 1024 x 768 @ 256      | Appendix (1) to the                |
| Moximum Resolution                               | 1600 x 1200 @ 60Hz    | entente de com                     |
| Memory   | 2MB or 4MB            | AMATION COMP                       |

business presentations
and awesome in-yourface game playing. The first
ones that make it plug and
play simple to get the best
possible combination of
3D, 2D and full-screen
video performance. With
more high-end 3D features
built right onto the board

than you get from Matrox, Diamond or anyone else. With

16.7 million colors at 1280x1024 resolution, and the
smoothest TV quality video playback you can get. Which means
startling improvements in realism and response from multimedia,
games, business apps and Web graphics. And both come with the ATI

3D Software Superpack that includes three of today's hottest 3D games absolutely free.

Move up to the superior performance and resolution of ATI 3D upgrades. There's no better value around. See them now at your dealer or visit us at well at the superior better.



TETEL DO DO DO DE DE



© ATI Technologies Inc., 1996 ATI, 3D PRO TURBO, 3D XPRESSION and PC2TV are trademarks and/or registered trademarks of their respective manufacturers. I. All performance tests conducted by ATI on a P5-200MHz system with 32MB EDO RAM, 256K cache, The 3D XPRESSION PC2TV, Matrox Mystique and Diamond Stealth 3D 2000 are configured with 2MB of memory and the 3D PRO TURBO PC2TV and Matrox Millennium with 4MB of memory, for PCI bus using driver release; 3.0, 1.0, 4.0, 3.0 and 2.2 respectively. WinBench tests conducted at 1024x768 resolution at 256 colors at 75Hz refresh under Windows 95. 2. Test conducted on a P5-75MHz system with Microsoft Tunnel Test in 640x480 resolution at 655K colors in bilinear, 3. Bilinear texturing not supported in hardware. 4. Double buffered with 16-bit Z-buffer.



Can your TV do this? Doubtful. New ATI-TV™ monitors closed captioning, watching for key words you define - like maybe the name of your company or your favorite team. When the word is mentioned, ATI-TV pops on screen so you can watch. Or it sits unattended in the background, recording a transcript for your review later on, You can zoom in and around the screen, capture frames and clips from your camcorder or VCR for use in other apps. You can even have ATI-TV turn on and tune in to your favorite shows automatically. There's never been a more powerful reason to get TV on your PC than ATI-TV. It's an economical add-on to ATI 3D PRO TURBO™ PC2TV or ATI 3D XPRESSION™ PC2TV, the high-performance leaders in graphics upgrades. So you'll get the smoothest full-screen, TV-quality video today. See your dealer, or check out www.atitech.ca. We'll be watching.



NOW YOU SEE IT.™



© ATI Technologies Inc., 1996. ATI, ATI-TX, 3D PRO TURBO, 3D NPRESSION and NOW YOU She I' are trademarks and/or registered trademarks of ATI Technologies Inc.



212 Power Desktops

Many Shapes,

226 Budget Desktops



242 Notebooks



263 Printers



267 Monitors



**271** Graphics Boards



273 Modems



Sizes

ANY WAY YOU LIKE IT: Compaq's highly configurable Armada 4120T takes up to three batteries.

#### EDITED BY REX FARRANCE

A CERTAIN FORMER CALIFORNIA governor once declared, "You've seen one redwood, you've seen them all." Sometimes we feel that way about PCs. Despite vendors' recent efforts to dress up their systems with designer colors and stylish front panels, PCs all look basically the same: big boxes with an on/off switch. Notebooks, on the other hand, can take many forms. Notebook ven-

dors face the challenge of stuffing the contents of a desktop computer into something the size of a loose-leaf binder. How they solve this problem yields all manner of unusual notebook designs.

Take Compaq's new Armada line. The Armadas take a sort of Lego set approach to portable computing. Depending on how much battery life, sound, and video you want to take with you, you can configure your Armada in any of several ways. Want a fast, very light, basic machine to do a few hours of spreadsheet work? That's the 5-pound Armada, with one battery and no floppy drive. Want to increase its on-the-road longevity? Attach the Armada's handle, which holds a second lithium ion battery.

The final piece in the Armada ensemble is a multimedia base that adds a CD-ROM drive. Many vendors offer CD-ROM docking stations, but they're not very portable. The Armada's base is not only much lighter and thinner than traditional docking stations, but it holds yet another battery. According to Compaq, the trio of



COMPAQ'S QV210: A terrifically sharp picture helps make it our number two monitor, despite its steep \$1825 price.

power supplies should give you at least 10 hours of operation—long enough to keep you crunching on a coast-to-coast flight and back.

For this month's Top 20 we tested the Pentium-120 version of the Armada, the \$4298 4120T. The screen looked good, and the unit performed fairly well for a Pentium-120. It would have ranked higher than eighth on our Power Notebooks chart if it had been slightly faster, a little less expensive, and a bit lighter.

Not all new notebooks are headed in the direction of the Armada. With this month's new number three budget portable, the ThinkPad 560, IBM goes the traditional route of trying to make the smallest notebook possible without sacrificing too many essentials. A remarkable 1.3 inches thick, the \$2699 ThinkPad 560 doesn't have a built-in floppy, but it weighs less than 6 pounds and its keyboard and screen are big.

#### **UPDATING SERVICE AND** RELIABILITY

EACH MONTH PC WORLD polls readers to find out how reliable their PCs have been and what kind of service they're getting (see the Reliability and Service Survey). You can see the results of this faxback survey in two places: in the reliability and service and support scores we give vendors in our Top 20 tables, and in biannual articles that delve more deeply into support trends.

#### YOUR GUIDE TO THE TOP 100

QUESTIONS ABOUT OUR CHARTS? The following section should answer most of them. If not, ask us; see page 12 for contact information.

How do the charts work? The Top 20 and Top 10 charts are evolving lists of the best PCs, monitors, modems, printers, and graphics boards we've tested. Every month we test the latest products in each category and compare them to the pool of items we've already reviewed. As new products earn places on the charts, those at the bottom drop off. Price cuts also cause chart changes.

Where do you get your prices? We estimate street prices based on vendor information and our own research, including surveys of retail outlets. We recheck all prices every month.

What does the overall rating mean? It's the sum of all our testsboth hands-on evaluations and automated speed tests. The scale is 1 to 100, so a product that scores in the 90s is generally considered exceptional, one in the 80s is among the best, one in the 70s is above average, and one that scores lower usually doesn't place.

What does the PC WorldBench score mean? It's a measure of how fast a PC is in relation to our baseline machine, a Dell P75t configured with 8MB of RAM, a 540MB hard drive, and no secondary cache. A PC that scores 200, for instance, is twice as fast as the baseline unit.

Where do the reliability and service and support scores for PCs come from? The reliability score and the "service" portion of the service and support score come from readers who respond to the Reliability and Service fax-back survey in each issue of PC World. The "support" portion of the service and support score is based on the vendor's support policies (such as length of warranty and support hours).

What do all those word scores mean? Word scores for performance and price are based on a product's rating in relation to other products in its category. For example, a budget PC that is rated "expensive" is high-priced only in relation to other budget PCs. Likewise, a power notebook rated "good" for performance is good only in relation to other power notebooks. Word scores for other categories, such as features, are relative to all desktops or all notebooks.

Where can I find the online version of the Top 100? Go to PC World Online (http://www.pcworld.com). There you'll find not only the current issue of PC World and reviews for the last 18 months, but some extra features you'll want to check out. For one thing, PC World Online includes reviews you won't find in print. If a product misses a chart and we don't cover it here, you can go directly to an online review by using the URL provided in each Top 100 section.

#### **ROLLING YOUR OWN CHARTS**

HAVE YOU EVER WISHED you could build your own chart based on your buying criteria? Now you can, with Personal Shopper, our Web site's unique chart customizer. Personal Shopper combines your criteria with PC World's current data and test results to generate customized Top 20s and Top 10s. For instance, if you want your chart to rank notebooks that have 120-MHz processors, 1.6GB hard drives, and 28.8-kbps modems, Personal Shopper will find and rank all the machines that fit your specifications.

This month we've updated our Top 20 service and reliability ratings to reflect the latest survey results. We've also adjusted our scoring scheme slightly so that our word ratings now match those we use for the biannual articles. As a result, you'll see some changes in reliability and service and support ratings for several major vendors. A few, including Dell and Micron, have improved quite a bit. Others remain unchanged, including Gateway 2000, whose reliability continues to rate only fair.

#### **SAME CHART TOPPERS**

NEW SERVICE and reliability ratings, reduced prices, and a healthy influx of new PCs brought lots of changes to our Top 20 charts this month. About the only things that remained constant were our number one Best Buys, which held their ground on every chart. A Pentium-200 machine, Dell's \$2949 Dimension XPS P200s, remains our top power desktop, due in part to a \$380 price drop since we first tested it in September. On the Budget Desktops chart, Micron's P133 Millennia, an \$1899 Pentium-133, is still the best value in the under-\$2500 category.

Dell's Latitude LM P133ST stays at number one on our Power Notebooks list. A \$200 price drop helps Toshiba's Satellite 100CS retain its top spot on the Budget Notebooks chart.

Sixteen new systems cracked our Top 20s. On the Power Desktops list, new Pentium-200 systems from Compaq and Gateway 2000 and a Pentium-200 knockoff that uses a Cyrix chip made the chart. Compaq's \$3218 Deskpro 5200/1080 debuts highest, in sixth place, almost a Best Buy. It's the first Compaq we've seen that uses the attractive new Deskpro case design. It's also one of the fastest P-200s we've tested, but it's configured strictly for business. Sound card, speakers, modem, and even applications cost extra.

#### P-200S BECOME BEST **BUDGET BUYS**

THREE NEW PCS debut at the top of the Budget Desktops chart this month. The most notable: Dell's \$1999 Dimension P200v, the first budget-price Pentium-



NOW ANYONE CAN OWN a Pentium-200, such as Dell's Dimension P200v, our number two budget machine at only \$1999.

200 to earn a Best Buy. The P200v is a good value if your needs don't go beyond basic business graphics.

Quantex's \$2249 QP5/120 M-4 slides into fourth place. This Pentium-120 is a good buy overall except for the below-average service rating PC World readers give the company. Quantex says a beefed-up tech staff will take care of that soon. Our fifth-place budget Best Buy, the \$1864 Gateway 2000 P5-133, shares many good qualities of its Pentium-200 sibling on the Power chart and costs \$1135 less. It's very fast and looks great, but readers say Gateway's computers could be more reliable.

Our biggest surprise after testing internal modems for the first time this month: Many don't plug and play, even though they're supposed to.

In addition to Compaq's Armada 4120T and IBM's ThinkPad 560, a slew of other new notebooks did well enough to make the Top 20. New arrivals occupy half the Budget Notebooks chart. IBM scored twice—once with the ThinkPad 365E, our new number two Best Buy, and again with the new ThinkPad 560, which took over third place. The ThinkPad 365E, a Pentium-75 wanna-be equipped with a Cyrix CPU, is a fine entry-level portable whose greatest attribute is its big, comfortable keyboard.

By the time you read this, the first notebooks with a P-150 chip should be available (see "150-MHz Notebooks Are Fast, but Are They Worth It?"). Look for our first review of a P-150 notebook, Dell's new Latitude LM XPI P150, in next month's Top 20.

#### MOVING TO THE BIG SCREEN

NOT TOO MANY people own 20-inch monitors yet, but as prices continue to fall (to as low as \$1100), these big screens don't seem so out of reach. For this month's Top 10 Monitors, we evaluated 14 20- and 21-inch monitors with the same expanded tests we used recently on 15and 17-inch monitors. Our new number one big monitor: Samsung's SyncMaster 20GLsi. At \$1285, it's one of the most affordable 20-inch monitors we've looked at, and it displays graphics with impressive clarity.

This month we expanded our modem coverage to include internal modems. In "Fast and Cheap: Top Modems for Tight Budgets," we evaluate 14 of the most popular 28.8- and 33.6-kbps internal modems on speed and ease of installation. To see how they ranked, check the Top 10 Modems chart in this Top 100 section. Our biggest surprise involved Plug and Play: Many internal modems lack this feature, even though they're supposed to have it. Two that do Plug and Play are our two Best Buys, Motorola's LifeStyle 28.8 and Cardinal's MVP288IS. Both are easy to set up and a pleasure to use.

Rex Farrance is a senior associate editor for PC World. Editorial Assistant Allyson Bates, Staff Editor John Goddard, Associate Editors Brad Grimes and Melissa Riofrio, Senior Associate Editor Bryan Hastings, Assistant Editor Eric Hellweg, and freelance writers Geoffrey Coffey and Jon J. Jacobi contributed to the Top 100. Testing for the Top 100 by Dave Casini, Ulrike Diehlmann, Jeffrey Kuta, Kevin Mitchell, Mike Salayko, and Susan Silvius. See page 12 for contact information.



## TOP 20 POWER DESKTOPS

|    | SYSTEMS   | Last<br>month | Month<br>tested | Street<br>price<br>(8/14/96) | CPU             | Comments  |
|----|---|---------------|-----------------|------------------------------|-----------------|---|
| 1  | Dell Dimension XPS P200s<br>800/613-3355 www.dell.com             |               | Sept 96         | \$2949                       | Pentium-200     | \$380 price drop keeps this PC at the top; fast; high-quality components.         |
| 2  | Micron P200 Millennia<br>800/223-6571 www.micron.com              | 3             | Sept 96         | \$2549                       | Pentium-200     | Quick for a P-200 with 16MB of RAM; good 3-D graphics.                            |
| 3  | Dell OptiPlex GXpro 200<br>800/613-3355 www.dell.com              | 2             | Aug 96          | \$4110                       | Pentium Pro-200 | \$422 price drop, fastest system to date, modular design, built-in networking.    |
| 4  | Dell OptiPlex GXMT 5200<br>800/613-3355 www.dell.com              | 4             | Sept 96         | \$4031                       | Pentium-200     | Fast, networkable right out of the box; can't add many PCI cards.                 |
| 5  | Dell Dimension XPS Pro200n<br>800/613-3355 www.dell.com           | 5             | Aug 96          | \$3199                       | Pentium Pro-200 | \$300 price drop; well designed; fast, but other Pentium Pro-200s are faster.     |
| 6  | Compaq Deskpro 5200/1080<br>800/345-1518 www.compaq.com           | _             | new             | \$3218                       | Pentium-200     | No sound, but great performance, high reliability rating, and clean design.       |
| 7  | Micron P166 Millennia Plus<br>800/223-6571 www.micron.com         | 7             | Mar 96          | \$3298                       | Pentium-166     | SCSI Millennia priced with an lomega Jaz drive; reliability rating is now higher. |
| 8  | Gateway 2000 P5-200<br>800/846-2000 www.gw2K.com                  | -             | new             | \$2999                       | Pentium-200     | Well-designed multimedia tower with big hard drive; reliability only fair.        |
| 9  | HP Vectra VL4 5/200MT<br>800/752-0900 www.hp.com                  | -             | Sept 96         | \$3192                       | Pentium-200     | Price has dropped by more than \$900; P-166 version is also good.                 |
| 10 | Cyrix 6x86 P200+<br>800/340-7501 www.cyrix.com                    | _             | new             | \$5169                       | Cx6x86-P200+    | Skip the pricey 64MB caching hard disk controller and buy a bigger monitor.       |
| 11 | HP Vectra 500 Model 515MCx 5/166<br>800/752-0900 www.hp.com       | 11            | July 96         | \$3212                       | Pentium-166     | \$218 price drop on small-business PC; includes voice mail.                       |
| 12 | ZDS Z-Station GT 500<br>800/533-0331 www.zds.com                  | 12            | Sept 96         | \$3570                       | Pentium-200     | Fast and well put together, except the add-in cards—they're upside down.          |
| 13 | Quantex QP5-200 SM-2<br>800/896-4898 www.quantex.com              | 10            | Sept 96         | \$2999                       | Pentium-200     | \$100 off, loaded with extras, very fast; reliability rating hurts.               |
| 14 | Quantex QP6-200 Pro<br>800/896-4898 www.quantex.com               | 8             | Aug 96          | \$3199                       | Pentium Pro-200 | Better speed and features than number five Dell; reliability rating much lower.   |
| 15 | IBM PC 350<br>800/426-2968 www.lbm.com                            | 9             | Sept 96         | \$3903                       | Pentium-200     | Fast PC features new technologies like Universal Serial Bus, but still expensive. |
| 16 | Tangent MediaGem<br>800/829-2850 www.tangent.com                  | 14            | Sept 96         | \$2695                       | Pentium-200     | \$200 price drop, fastest P-200 we've tested, built-in speakers and video input.  |
| 17 | NEC PowerMate P166<br>800/632-4636 www.nec.com                    | 15            | Aug 96          | \$2659                       | Pentium-166     | \$265 off; good-quality components, but so-so P-166 performance.                  |
| 18 | Multiwave Ultra Power<br>800/234-3358 www.mwave.com               | 16            | Oct 96          | \$2520                       | Pentium-200     | Fast multimedia system with 33.6-kbps modem, near-budget price.                   |
| 19 | Netis N5166 Power Station<br>800/577-7526 www.netistech.com       |               | Oct 96          | \$2529                       | Pentium-166     | \$222 price drop almost makes it a budget PC; great graphics card.                |
| 20 | Xi Computer Pro-200 MTower SP<br>800/432-0486 www.win.net/xi_comp | 17            | July 96         | \$4199                       | Pentium Pro-200 | Sturdy Pro-200 with SCSI hard drive is fast; expensive even after \$600 drop.     |
|    | Best Buy See features chart, page 214                             | ; performa    | ice chart, p    | age 218.                     |                 | Recommended as home system  |

<sup>1</sup> To order fax copies of system reviews, call 800/434-4495 from a touch-tone phone and use your credit card. You can order next month's reviews in advance: Power Desktops, Budget Desktops, or Notebook PCs Top 20 charts and capsule reviews (\$9.95, available October 30).



THE DAYS OF PENTIUM-133s as power machines are long gone. If you want to play with the big kids—PCs priced over \$2500—you have to be as fast, and P-133s just can't keep up with Pentium-200s. That's why Digital's new Venturis FX-5133 didn't stand a chance at a spot on our Power

Desktops chart this month. We liked it overall, but at \$2867 it's priced well above what most people will pay for a P-133 these days, considering that you can now find a P-200 for the same price. Four other power systems didn't make our cut, including the \$4350 Everex Pentium Pro 200, one of the first PCs we've seen with the new Universal Serial Bus port. For details, visit PC World Online (http://www.pcworld.com/t2opcsnaps).

#### SCORECARD PC World-Bench score/ Reader service Fax reprint number Overall rating Features and design Vendor's service Price and support 90 208/very good outstanding average 3415 611 best 90 210/very good 612 hest outstanding inexpensive hest 3416 90 232/outstanding best outstanding expensive best 3401 88 216/very good outstanding 3417 614 best expensive best **这种的**种形式 (电影和学站 88 211/very good 3402 615 best very good average best 87 218/very good 3442 616 best very good average good 87 198/good outstanding 3331 617 average 85 218/very good outstanding 3443 618 fair average dood 京年 香港 等 83 201/good 619 hest very good average fair 3421 83 223/very good outstanding very expensive 3444 620 The same 192/good 82 3383 621 best very good average fair 82 3420 622 215/very good outstanding Kilise Mark Mal who each series 82 216/very good outstanding fair 3445 623 poor average 81 224/very good outstanding 3405 624 fair 81 215/very good fair expensive 3419 very good good 79 626 220/very good outstanding inexpensive 3423 194/good fair. very good inexpensive fair 3406 79 3430 628 215/very good outstanding inexpensive 考。那一种 206/good outstanding inexpensive 3446 629 3407 630 78 221/very good outstanding expensive Performance 25 percent All Scorecard weightings 902 products: 20 percent 15 percent

Limited data; score is based on responses for this company and average of all companies.

#### This Month's Best Buys

#### NO. 1: DELL DIMENSION XPS P200S

PRO: Improved case design, fast graphics card CON: Slower than expected, no speakers



Dell's Dimension XPS P200s keeps the title of number one power desktop for the third

month in a row, thanks in part to a \$380

price drop. The \$2949 XPS P200s is the top-end PC in Dell's new "s" series, the follow-on to the well-regarded "c" line of Dells that topped our charts for months. A stylish, nicely configured business machine, the P200s is not the fastest PC in its class, despite having SDRAM, a type of main memory that's faster than today's popular EDO DRAM. But it's still very fast, and comes with several enhance-

ments that its predecessors lacked, including a more logical exterior design.

Our test system came full of high-quality components, including a Number Nine Imagine 128 Series 2 graphics card with 4MB of VRAM. This board can han-

dle all your graphics chores, including 3-D applications.

The "s" series is better thought out than the "c" line was. For instance,



Dell XPS P200s

the old on/off button, which resembled a floppy eject button, has been replaced with a circular, slightly recessed button located smack in the middle of the front panel and far from the floppy drive, so you won't turn off your PC accidentally.

Dell gets fine service and reliability scores from our readers. Documentation is well done, and the software bundled with this system is the well-regarded Microsoft Office. Don't want to spend quite as much? We recommend the Dimension XPS 166s, configured similarly but costing \$200 less.

#### NO. 2: MICRON P200 MILLENNIA

PRO: Priced near the budget level, big hard drive, 8X CD-ROM drive, 3-D graphics card

CON: No modem



Improved reliability and service scores, based on reader feedback, move the \$2549 Micron P200

Millennia up another step to become this month's number two power desktop Best Buy. The P200 also owes its high rank to a sturdy design, good configuration, one of the lowest prices on the Power Desktops chart, and good speed for a system equipped with 16MB of RAM (many

P-200s now come with 32MB).

As with the Dell P200s, one of the best things about the P200 Millennia is its graphics card. It's the first PC we



Micron P200

tested that uses the Diamond Stealth 3D 2000, a board that combines exceptional Windows graphics performance with 3-D acceleration. The Stealth 3D can't

|    | SYSTEMS                          | СРИ             | RAM<br>(MB) | Secondary<br>cache (K) | Hard<br>drive<br>(GB) | Graphics adapter                 | Video RAM<br>(MB/type) | Monitor tube/<br>viewable diag-<br>onal (inches) | Screen<br>pitch<br>(mm) | CD-ROM<br>drive<br>speed |
|----|----------------------------------|-----------------|-------------|------------------------|-----------------------|----------------------------------|------------------------|--|-------------------------|--------------------------|
| 1  | Dell Dimension XPS P200s*        | Pentium-200     | 16          | 512                    | 2.6                   | Number Nine Imagine 128 Series 2 | 4/VRAM                 | 17/15.3  | .28                     | 8X                       |
| 2  | Micron P200 Millennia*           | Pentium-200     | 16          | 512                    | 2.5                   | Diamond Stealth 3D 2000          | 2/EDO DRAM             | 17/15.9  | .26                     | 8Х                       |
| 3  | Dell OptiPlex GXpro 200*         | Pentium Pro-200 | 32          | 256                    | 2.1                   | Number Nine Imagine 128 Series 2 | 4/VRAM                 | 17/15.6  | .28                     | 4X                       |
| 4  | Dell OptiPlex GXMT 5200*         | Pentium-200     | 32          | 512                    | 2.1                   | Number Nine Imagine 128 Series 2 | 4/VRAM                 | 17/15.6  | .28                     | вх                       |
| 5  | Dell Dimension XPS Pro200n*      | Pentium Pro-200 | 32          | 256                    | 2.1                   | Number Nine Imagine 128 Series 2 | 4/VRAM                 | 17/15.3  | .28                     | 8X                       |
| 6  | Compaq Deskpro 5200/1080         | Pentium-200     | 32          | 256                    | 1.1                   | integrated Cirrus Logic 5436     | 2/EDO DRAM             | 15/14  | .28                     | 8X                       |
| 7  | Micron P166 Millennia Plus       | Pentium-166     | 16          | 512                    | 2.2                   | Diamond Stealth64 Video VRAM     | 2/VRAM                 | 15/13.6  | .28                     | 8X                       |
| 8  | Gateway 2000 P5-200              | Pentium-200     | 32          | 512                    | 3.2                   | Matrox MGA Millennium            | 2/WRAM                 | 17/16  | .25                     | 8X                       |
| 9  | HP Vectra VL4 5/200MT            | Pentium-200     | 16          | 256                    | 2.5                   | Matrox MGA Millennium            | 2/WRAM                 | 15/13.5  | .28                     | 4X                       |
| 10 | Cyrix 6x86 P200+                 | Cx6x86-P200+    | 32          | 256                    | 4.1                   | Matrox MGA Millennium            | 2/WRAM                 | 15/14  | .28                     | 8X                       |
| 11 | HP Vectra 500 Model 515MCx 5/166 | Pentium-166     | 16          | 256                    | 1.6                   | integrated Trio64                | 1/DRAM                 | 15/13.7  | .28                     | 4X                       |
| 12 | ZDS Z-Station GT 500             | Pentium-200     | 32          | 256                    | 2.6                   | integrated ATI-264VT             | 2/SGRAM                | 17/15.5  | .26                     | 8X                       |
| 13 | Quantex QP5-200 SM-2             | Pentium-200     | 32          | 512                    | 2.6                   | ST8 Lightspeed 128               | 2/MDRAM                | 17/16  | .26                     | 8X                       |
| 14 | Quantex QP6-200 Pro              | Pentium Pro-200 | 32          | 256                    | 2.6                   | STB Lightspeed 128               | 2/MDRAM                | 17/16.1  | .26                     | 6X                       |
| 15 | IBM PC 350                       | Pentium-200     | 32          | 512                    | 1.6                   | integrated Trio64V+              | 2/EDO DRAM             | 17/15.5  | .28                     | 6X                       |
| 16 | Tangent MediaGem                 | Pentium-200     | 32          | 512                    | 2.1                   | ST8 Lightspeed 128               | 2/MDRAM                | 17/15.6  | .28                     | 6X                       |
| 17 | NEC PowerMate P166               | Pentium-166     | 16          | 256                    | 2.1                   | Matrox MGA Millennium            | 4/WRAM                 | 15/13.5  | .28                     | 6X                       |
| 18 | Multiwave Ultra Power            | Pentium-200     | 16          | 256                    | 1.3                   | ST8 Lightspeed 128               | 2/MDRAM                | 17/16.2  | .27                     | 8X                       |
| 19 | Netis N5166 Power Station        | Pentium-166     | 16          | 512                    | 2.1                   | Matrox MGA Millennium            | 2/WRAM                 | 17/15.8  | .28                     | 6X                       |
| 20 | Xi Computer Pro-200 MTower SP    | Pentium Pro-200 | 32          | 256                    | 4.3                   | Matrox MGA Millennium            | 4/WRAM                 | 17/15.7  | .25                     | 6X                       |

match cards made for 3-D-intensive games, but it makes the P200 Millennia a fine choice for smooth, basic 3-D in presentations, Web sites, CAD programs, and games.

The system is well designed. The minitower case is narrower and taller than most that we've seen, but it's still easy to upgrade. A wide foot at the bottom helps prevent tipping. The multimedia ports are

installed high on the back of the case to make them easier to get to. In addition to offering round-the-clock technical support and a good standard warranty, Micron bundles Microsoft Office Professional. Bookshelf, and the Plus Pack with all its Millennias.



PRO: Fast, great design, integrated networking CON: Expensive, slow CD-ROM drive



The GXpro is a very fast, easily upgradable powerhouse designed to work well in a corporate envi-

ronment. It comes with some nice components, including integrated sound and speakers, but don't count on them for the ultimate multimedia experience. Dell puts

> most of the muscle behind this \$4110 Pentium Pro-200 machine into a LAN connection and a terrific new interior design that network administrators will love.

> With a PC WorldBench score of 232, the GXpro is the fastest system we've tested.

It's more than 10 percent quicker than the fastest Pentium-166 we've tested, and 5 percent quicker than the top Pentium-200. The graphics hardware is above average—a Number Nine Imagine 128 Series 2 graphics card with 4MB of VRAM and a bright, crisp 17-inch Dell D1728D monitor—but most of the configuration is geared toward business. The PC comes ready to plug into your network with an integrated 3Com ethernet adapter. The integrated Vibra 16 sound chip and Altec Lansing ACS 31 speakers are fairly plain, and the quad-speed CD-ROM drive that came with our test machine is slow by today's standards.

The GXpro's new desktop design is a vast improvement over previous systems. It's one of the most easy-to-upgrade PCs



Dell GXpro 200

| Modem<br>speed<br>(kbps)            | Sound board  |
|-------------------------------------|--|
| 28.8                                | integrated Vibra 16  |
| _                                   | Creative Labs Vibra 16   |
| -                                   | integrated Vibra 16  |
| - February                          | integrated Vibra 16  |
| - ,                                 | and a discontinuistics and their son and all constitutes   |
| - 200 ( Control of the parts of the | e i i Maria and Dawy De Vian, a company a utobal dys.  |
| 1                                   | Sound Blaster AWE32  |
| 28.8                                | Ensoniq Soundscape Vivo  |
| man                                 | Sound Blaster 16   |
| _                                   | Sound Blaster AWE32  |
| 28.8                                | Sound Blaster 16   |
| -                                   | Creative Labs Vibra 16   |
| 28.8                                | Ensoniq Soundscape Vivo  |
| 28.8                                | Ensoniq Soundsca <b>p</b> e Vivo   |
| and indicates                       | and the second s |
| game.                               | Sound Blaster 32 PnP   |
|                                     | integrated OPTi 82C930   |
| 33.6                                | Ensoniq Soundsca <b>p</b> e Vivo   |
| 28.8                                | Vibra 16S Plug and Play  |
| 28.8                                | Sound Blaster AWE32  |

|            |                     | The state of the s |                        |                                   |               |
|------------|---------------------|--|------------------------|-----------------------------------|---------------|
| Case style | Max.<br>RAM<br>(MB) | Maximum<br>secondary<br>cache (K)  | Open<br>RAM<br>sockets | Open<br>drive bays<br>(ext./int.) | Open<br>slots |
| minitower  | 64                  | 512  | 1                      | 3/1                               | 4             |
| minitower  | 128                 | 512  | 2                      | 3/1                               | 5             |
| desktop    | 512                 | 256  | 3                      | 1/1 🚣                             | 4             |
| minitower  | 128                 | 512  | 2                      | 3/1                               | 5             |
| minitower  | 128                 | 512  | 2                      | 3/1                               | 6             |
| compact    | 128                 | 256  | 2                      | 2/0                               | 5             |
| minitower  | 128                 | 512  | 2                      | 1/1                               | 5             |
| tower      | 256                 | 512  | 0                      | 2/6                               | 2             |
| minitower  | 128                 | 512  | 4                      | 2/1                               | 4             |
| minitower  | 256                 | 512  | 0                      | 1/3                               | 4             |
| minitower  | 128                 | 256  | 4                      | 2/1                               | 4             |
| minitower  | 192                 | 512  | 4                      | 4/1                               | 5             |
| minitower  | 128                 | 512  | 0                      | 3/2                               | 4             |
| minitower  | 128                 | 256  | 0                      | 2/1                               | 3             |
| desktop    | 142                 | 512  | 4                      | 1/1                               | 5             |
| desktop    | 512                 | 512  | 6                      | 1/1                               | 6             |
| minitower  | 128                 | 512  | 2                      | 2/2                               | 4             |
| minitower  | 512                 | 256  | 2                      | 3/1                               | 4             |
| minitower  | 128                 | 512  | 2                      | 3/1                               | 5             |
| minitower  | 512                 | 256  | 2                      | 5/1                               | 2             |

| Warranty for parts/labor (years) | Weekday toll-<br>free support<br>(hours) | Weekend<br>support | Online support              |
|----------------------------------|--|--------------------|-----------------------------|
| 3/1                              | 24                                       | Sat., Sun.         | AOL, BBS, CIS, Prodigy, WWW |
| 3/1                              | 24                                       | Sat., Sun.         | BBS, WWW                    |
| 3/3                              | 24                                       | Sat., Sun.         | AOL, BBS, CIS, Prodigy, WWW |
| 3/3                              | 24                                       | Sat., Sun.         | AOL, BBS, CIS, Prodigy, WWW |
| 3/3                              | 24                                       | Sat., Sun.         | AOL, BBS, CIS, Prodigy, WWW |
| 3/1                              | 24                                       | Sat., Sun.         | AOL, BBS, CIS, Prodigy, WWW |
| 3/1                              | 24                                       | Sat., Sun.         | BBS, WWW                    |
| 3/3                              | 24                                       | Sat., Sun.         | AOL, BBS, CIS, Prodigy, WWW |
| 3/3                              | 11                                       | -                  | AOL, BBS, CIS, WWW          |
| 3/3                              | 24                                       | Sat., Sun.         | BBS, WWW                    |
| 1/1                              | 16                                       | Sat.               | AOL, BBS, CIS, WWW          |
| 3/3                              | 24                                       | -                  | BBS, CIS, MSN, WWW          |
| 3/1                              | 4 15                                     | Sat., Sun.         | BBS, Prodigy, WWW           |
| 3/1                              | 15                                       | Sat., Sun.         | BBS, Prodigy, WWW           |
| 3/3                              | 24                                       | Sat., Sun.         | AOL, BBS, CIS, Prodigy, WWW |
| 3/3                              | 11                                       | Sat.               | BBS, WWW                    |
| 3/3                              | 24                                       | Sat., Sun.         | AOL, BBS, CIS, MSN, WWW     |
| 1/1                              | 11                                       | Sat.               | BBS, WWW                    |
| 1/3                              | 10                                       | Sat.               | BBS, WWW                    |
| 3/3                              | 9  | Sat.               | www                         |

we've seen. The case is simple to remove, and the internal construction is modular. Cards are housed on a vertical riser plane that slides out at the touch of a lever. Even the power supply swings aside for effortless access to the motherboard and drive bays. Like the Dimension XPS P200s, the GXpro uses DIMM memory modules.

#### NO. 4: DELL OPTIPLEX GXMT 5200

PRO: Fast, built-in networking, hot graphics card **CON:** Expensive



The Pentium-200 model in Dell's network-ready OptiPlex GXMT line is a real greyhound. With a

PC WorldBench score of 216, it's one of the fastest P-200 systems we've tested. While its less expensive sibling, the \$2464 OptiPlex GXMT 5166, also is a

good value, the \$4031 OptiPlex GXMT 5200 races right past it to earn a Best Buy.

The high performance of our test system was helped along by the unit's copious amount of

RAM, big secondary cache, and Number Nine Imagine 128 Series 2 graphics board with 4MB of VRAM. While Dell has yet to upgrade all its OptiPlex systems to faster CD-ROM drives, the GXMT 5200 now includes an 8X CD-ROM drive, which replaces the slower quad-speed model it used to come with.

The minitower case is sturdy and easy to open, and the 3Com ethernet adapter is integrated, saving you an expansion slot.



Dell GXMT 5200

The expansion slots hover above the motherboard on a daughtercard so you don't have to worry about system chips getting in the way of longer boards.

As with all its OptiPlexes, Dell backs the GXMT 5200

with a three-year warranty.

#### NO. 5: DELL DIMENSION XPS PR0200N

PRO: Improved design, big hard drive, powerful and capable graphics card

CON: Sluggish for a Pentium Pro-200



For a loaded Pentium Pro-200 that's as well built as this one, \$3199 is a good deal (and \$300)

cheaper than last month's price). The



## HOW TO SELL YOUR

#### STEP#1

#### What is a Lexmark?

Lex•mark\ (leks•märk) n \

It's a printer, like the 2050 Color Jetprinter™

pictured here. But

if you didn't

know that,

don't sweat

it. Research



shows most people in the market for a

**MADE IN** 

AMERICA!

good, affordable printer don't yet know our name. There's a reason.

Lexmark\* has been making

printers for business applications for years. (Our

printers print about 100

million pages a

day for banks, pharmacies and other big businesses.) And now we're applying that experience to small-office and home printers.

## Step# 2 OVERCOMING OBSTACLES



"I kinda like the Epson.""



"The Canon" is pretty good."



"I'd go with HP.""



"Lexmark? Never heard of it."

Talk to most people and you're bound to hear the same few names come up again and again. And we admit they make good products. But frankly, we wouldn't have entered the market if we didn't have something better to sell. (We may be unknown, but we're not stupid.) So how is the Lexmark 2050 better? For starters, it's a lot faster than the Epson 500. We use a patented waterproof black ink that's better than the ink used in the Canon 4200. And it comes with more software packages than the HP 682Cse. We even throw in a paper pack, so you can print great stuff the minute you get home.

## SELF A LEXMARK.

#### FINDING A LEXMARK PRINTER.

Look, we'll be honest. You may have to look a little harder to find a Lexmark. You may have to search high and low. But we're not complaining. We know we have to earn our place in the stores. So we do everything we can to make sure that when you do find one of our printers, it's worth the effort.





The Unknown CFO of Lexmark International, Inc.
The Unknown Printer Company.

#### STEP#4

GETTING THE BEST VALUE.

A MESSAGE FROM OUR
CHIEF FINANCIAL OFFICER.

"Although we can't promise it, you'll probably find Lexmark priced a few dollars less. And when you buy a 2050, you'll get 7 complete software packages that let you print everything from labels to comic books, do retouching on photos, and give you access to

the Internet and World Wide Web. (Some of our competitors only give you limited software.) And we have a 24-hour exchange warranty. Why does Lexmark give you so much for less? Well, the answer is a little embarrassing. It's because you don't know who we are. We have to."

#### Step 6 closing the sale and collecting your commission!

If you're able to overcome all the obstacles and sell yourself a Lexmark 2050, we believe you should be rewarded. So write "I Sold Myself" on your registration card and we'll send you a coupon good for \$5.00 off your next print cartridge. Consider it your commission for a job well done.



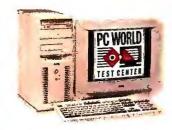


www.lexmark.com

CALL 1-800-358-5835 FOR A STORE NEAR YOU.

Circle 132 on reader service card

Dimension XPS Prozoon has a heavy helping of RAM, a big hard drive, an 8X CD-ROM drive, and a feature-rich Number Nine Imagine 128 Series 2 graphics card with 4MB of



Dell XPS Pro200n

VRAM and support for full-motion video. Dell also bundles the Microsoft Office Professional suite of business applications so you can start working immediately.

The minitower setup the same as that of the topranked Dimension XPS P200s—is a big improvement over previous Dimension designs. For one thing, to help you avoid accidental

system shutoffs, it has a sensibly placed on/off button that can't be mistaken for a floppy eject. And the system's tidy new interior makes it easy to upgrade.

The performance of this Pentium Pro-200 is a little disappointing. The system's PC WorldBench score of 211 is the lowest of all the Pentium Pro-200s we've tested—and just 3 points higher than that of the number one Dimension XPS P200s, which uses a Pentium-200 processor. Still, the XPS Pro200n is a fast, loaded PC that carries a three-year warranty. You can save \$50 by buying only a one-year warranty, but you have to ask for it.

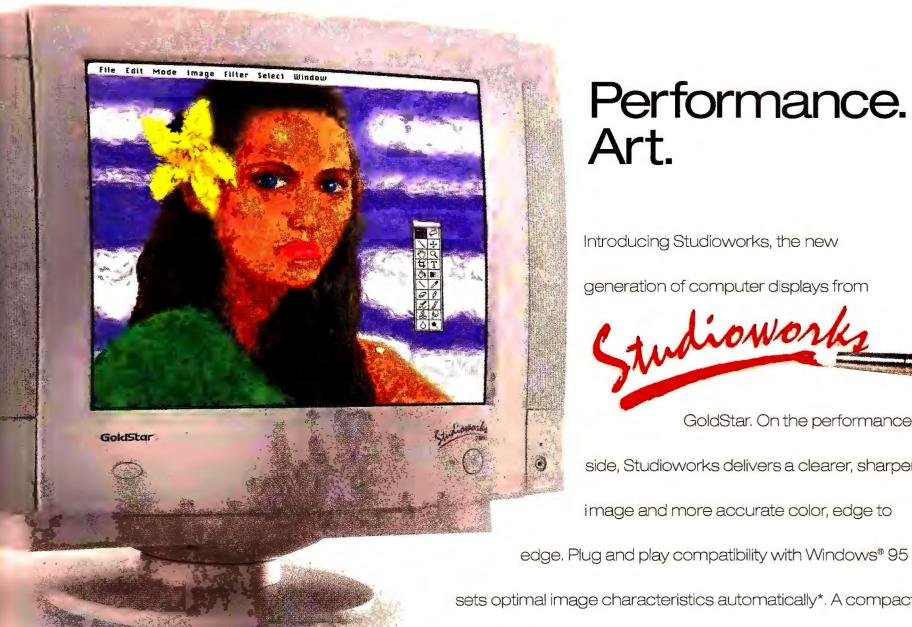
PERFORMANCE

#### TOP 20 POWER DESKTOPS Secondary cache (K) CPU **score** Pentium-200 512 208 16



Word 7.0 for Windows 95 Picture Publisher 6.0 for Windows 95 WordPerfect 6.1 for Windows Excel 7.0 for Windows 95 Paradox 5.0 for Windows 1-2-3 release 5 for Windows

HOW WE TEST All systems are tested with PC WorldBench, PC World's application-based benchmark. A higher PC WorldBench score is better. All PCs have Windows 95, and video resolution is set to 800 by 600 in 256 colors. We run automated scripts on six popular business applications, performing common tasks such as spelling checks, scrolls, saves, sorts, and recalculations. The PC WorldBench score is a sum of the weighted result of each script: Word (25 percent), Excel (20 percent), Picture Publisher (15 percent), Paradox (15 percent), WordPerfect (15 percent), and 1-2-3 (10 percent). For more details on our benchmark and how we run it, see PC World Online (http://www.pcworld.com).



## Performance. Art.

Introducing Studioworks, the new

generation of computer displays from



GoldStar. On the performance

side, Studioworks delivers a clearer, sharper

image and more accurate color, edge to

sets optimal image characteristics automatically\*. A compact design fits more screen into less space. And new digital onscreen controls make precise, custom adjustment simpler. For the artist in you, Studioworks displays the fine details and the subtle tones and textures, to give your vision that added brilliance. The new Studioworks series from GoldStar.

They're more than monitors, they're masterpleces. Ask for them at your

local computer retailer.

SEE US AT COMDEX • Booth # L1281



| -                    |                     |           |                              |
|----------------------|---------------------|-----------|------------------------------|
| MODEL                | SCREEN              | PITCH     | MAX. FLICKER-FREE RESOLUTION |
| 20i                  | 20" (18.76" VIS)    | .28mm dot | 1280x1024 @ 76 Hz NI         |
| 78i/78m <sup>†</sup> | 17" FST (15.7" VIS) | .26mm dot | 1280x1024 @ 76 Hz NI         |
| 76i/76m <sup>†</sup> | 17" FST (15.7" VIS) | .28mm dot | 1024x768 @ 80 Hz NI          |
| 56i                  | 15" FST (13.6" VIS) | .28mm dot | 1024x768 @ 80 Hz NI          |
| 56m <sup>†</sup>     | 15" FST (13.6" VIS) | .28mm dot | 1024x768 @ 80 Hz NI          |

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







#### **New This Month**

The following PCs made our Power Desktops chart for the first time this month. For previously tested PCs on the chart, visit our Web page at http:// www.pcworld.com/t20pcs.

#### NO. 6: COMPAQ DESKPRO 5200/1080

PRO: Great performance, good support CON: Small hard drive and monitor

The Compaq Deskpro 5200/1080 is a fast, well-built system that came very close to landing a Best Buy on this month's



Compaq Deskpro

Power Desktops chart. Its configuration isn't as good as that of less expensive Pentium-200s on our list. But with a PC WorldBench score of 218, it

performs well, and you can't beat its fine desktop construction or Compaq's highly readable manuals.

Our \$3218 test unit came with a fairly basic configuration. The 1.1GB hard drive and 15-inch monitor are small for a highend system. You'll have to pay extra for other niceties, like a sound card, speakers, a modem, and application software.

Compag took a hint from its competitors and put a stylish new case on its latest high-end PC. The company's manuals are superb as always, but on-screen documentation leaves something to be desired. When we clicked what we expected to be the help system, we instead found electronic ads for hardware enhancements and support plan options. Compag's support policies for this Deskpro are typical for the industry, which means they're fairly generous, including a three-year warranty on parts and one year for labor.

#### NO. 8: GATEWAY 2000 P5-200

PRO: Fast, nice design, great documentation, rich configuration

CON: Reliability only fair

This updated Pentium-200 system is a terrific combination of quality components, good design, speed, and a \$2999 price. It would probably rank as a Best

Buy if Gateway could improve its system reliability score in our surveys.

Like most Gateway PCs we review, the P5-200 performs near the top of its CPU class, with a PC WorldBench score of 218. Its construction is sturdy, the interior uncluttered. It also has one of the largest cooling fans we've seen.

The SDRAM memory is supplied in DIMMS, which are easier and more flexible than the more common SIMMS when it comes to adding memory: You can add RAM one DIMM at a time, whereas SIMMs typically are installed in pairs. Our only criticism of the design is the case's tendency to flex when the cover is off.

Gateway's printed documentation is terrific. The informative start-up guide has the feel of an owner's manual for a luxury car. And Gateway's software bundle is one of the best we know of for business use: Microsoft Office Professional and Bookshelf, plus Internet and fax software for the bundled Telepath II 28.8-kbps faxmodem with voice mail.

Gateway's warranty covers parts and labor for three years. A year of free on-site service also is part of the package, and the company provides roundthe-clock technical support. Service and support now rates as good, due mostly to Gate-

way's extensive support policies. But readers still rate the company's system reliability as fair.

#### NO. 10: CYRIX 6X86 P200+

PRO: Terrifically fast hard-drive controller CON: Very expensive

This high-end Cyrix system is a good buy for power users who work with graphics programs or gigantic databases. It's one of the few systems we've tested that comes with a high-performance SCSI hard drive and adapter. But at \$5169, it's a waste of money for anyone running common business applications. You can shave \$1000 off the price by ordering it with a standard IDE drive.

That said, the Cyrix 6x86 P200+ is an

impressive piece of desktop iron. The minitower is solidly built and has plenty of extra room for adding adapters or

> drives. The centerpiece is Cyrix's hot new 6x86-P200+ CPU, a processor that derives its name from the clock speed of the Intel processor its performance is closest to.

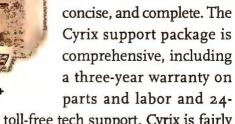
> The Cyrix's industrialstrength configuration in-

cludes a CMD 6520W Wide SCSI-2 host adapter with a massive 64MB of on-board cache. This kind of controller helps only those applications that repeatedly load and save huge chunks of data. (Image editing, professional desktop publishing, and large databases are some prime examples.) Typical business applications such as word processing and spreadsheets won't benefit at all.

Except for the monitor, the Cyrix's other components make an impressive multimedia bundle. They include a fast and flexible Matrox MGA Millennium graphics adapter, an eight-speed Mitsumi CD-ROM drive, and a Sound Blaster AWE32 wavetable sound card. The only

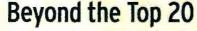
> thing that's missing is a set of speakers.

Documentation is clear,



hour toll-free tech support. Cyrix is fairly new as a PC vendor, so we don't have much feedback on its system reliability and service. But our anonymous tech support calls have been handled quickly, courteously, and most important, accurately.

continued on page 226



We tested these systems along with the others, but they didn't score high enough to reach the Top 20 Power Desktops chart. For write-ups, see PC World Online (http://www.pcworld.com/t20pcsnaps).

- ◆ Digital Venturis FX-5133
- ◆ Everex Pentium Pro 200
- ♦ HiQ C-200T
- ◆ Polywell Poly 500IP5
- Royal Power Graphic 128



Gateway 2000 P5-200

Cyrix P200+



## Not all 800 pound gorillas are what they're cracked up to be.



If you need a scanner that combines high performance and maximum value, may we suggest a little head-to-head competition. UMAX vs HP? Unfair comparison? Maybe for them. UMAX has a reputation for offering advanced, award-winning scanners at prices that make good business sense. Plus, our software bundles are unmatched, even by the big boys. So why monkey around? Compare the UMAX Vista S-12 with the HP ScanJet 4c and decide for yourself.

| Compare                            | UMAX Vista S-12               | HP Scanjet 4c |
|------------------------------------|-------------------------------|---------------|
| Image editor software              | ✓ Adobe Photoshop Full        | Photopaint    |
| Presentation software              | ✓ ASAP Word Power             | None          |
| Maximum DPI                        | <b>✓</b> 9600                 | 2400          |
| Bildepth                           | ✓ 33-bit¹                     | 30-bit        |
| Seanning speed (5 x / color photo) | ✓ 18 sec.                     | 42 sec.       |
| Lamp                               | ✓ Cold cathode - lasts longer | Fluorescent   |
| Tech support                       | ✓ Toll free                   | No 800 number |
| Price 2                            | <b>✓</b> \$821                | \$ 912        |



UMAX Vista S-12



Circle 250 on reader service card





Just slip the 6X CD-ROM drive and battery into the two modular VersaBay™ slots, and your NEC Versa\* 2400 changes into a stateof-the-art multimedia tool for brilliant on-the-road

presentations.

NEC Versa 2400 Ser starting at \$2199 Intel Pentium® Processor
up to 133MHz Up to 16MB EDO DRAM Up to 1.08GB hard drive 11.3" DSTN color display Two VersaBay slots\*\* Two high-output stereo speakers Two PC Card slots

MPEG video

SEE, HEAR AND FEEL THE DIFFERENCE



Just insert both batteries† into the two modular VersaBay slots, and your NEC Versa 2400 becomes a notebook with enough juice for up to 6 hours of nonstop computing.

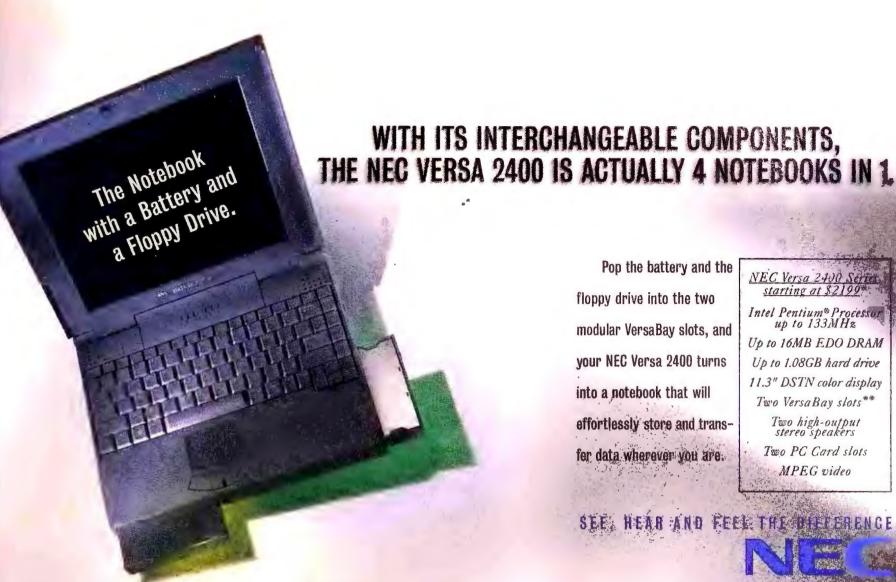
NEC Versa 2400 Ser starting at \$2199 Intel Pentium® Processor
up to 133MHz Up to 16MB EDO DRAM Up to 1.08GB hard drive

11.3" DSTN color display Two VersaBay slots\*\* Two high-output stereo speakers

Two PG Card slots MPEG video

SEE, HEAR AND FEEL THE DIFFE BE

©1996 Packard Bell NEC Inc. For more information call 1-800-NEC-VERSA, Visit our website at http://www.nec.com. Versa is a US registered trademark of NEC Technologies, Inc. used under license by Packard Bell NEC, Inc. See, Hear Inc. may vary. The Intel Inside ogo and Pentium are registered trademarks of Intel Corporation. Key # 16804



NEC Versa 2400 Seri starting at \$219; Intel Pentium® Processor up to 133MHz Up to 16MB EDO DRAM Up to 1.08GB hard drive 11.3" DSTN color display Two VersaBay slots \*\* Two high-output stereo speakers Two PC Card slots

SEE, HEAR AND FEEL THE THEFERENC



WITH ITS INTERCHANGEABLE COMPONENTS, THE NEC VERSA 2400 IS ACTUALLY 4 NOTEBOOKS IN 1.

Slide the 6X CD-ROM drive and the floppy drive into the two modular VersaBay slots. On AC power, your **NEC Versa 2400 transforms** into a powerful multimedia notebook that will rival a desktop computer.

NEC Versa 2400 Serie starting at \$219

Intel Pentium® Processor up to 133MHz Up to 16MB EDO DRAM Up to 1.08GB hard drive 11.3" DSTN color display Two VersaBay slots \*\* Two high-output stereo speakers Two PG Gard slots MPEG video

SEE, HEAR AND FEEL THE DEFFERENCE





600 DPI COLOR CAPABLE

Vivid color on any offici paper or transpar = 0.

**5¢ A COLOR PAGE** A tmy fraction of what you pay for color photocopies •

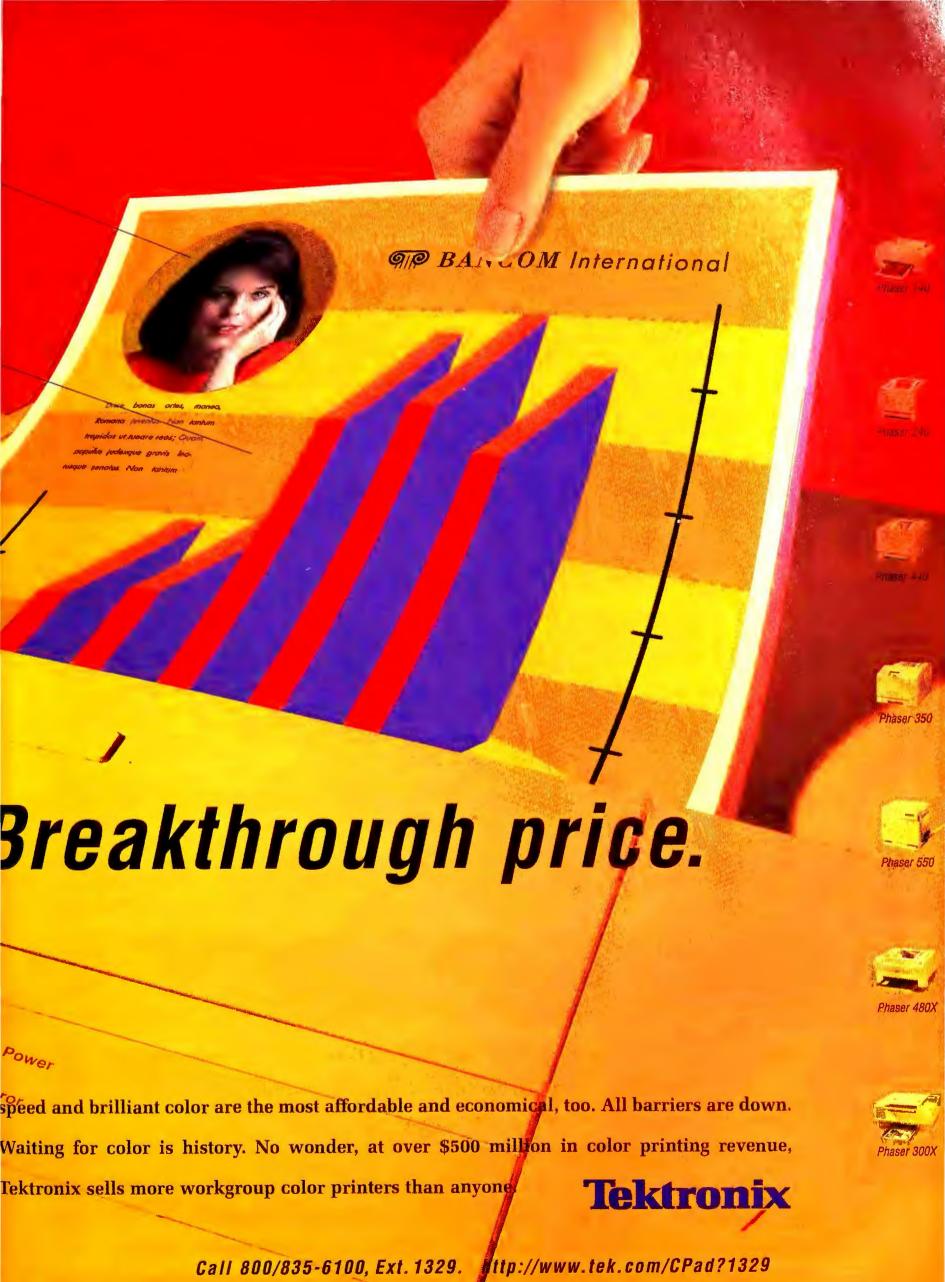
FREE BLACK INK Now you can send everything to your color printer. Black text pages cost even less than on a b&w laser.

\$3,495 From the leader in laser-class color printers with 14 years in color printing 50 years of innovation.

6 PPM COLOR Twice as fast as any competitor's desktop laser. Far beyond any inkjet.

## Brilliant performance.

The new Phaser® 350 costs less to own, less to use than any other laser-class, workgroup color printer. With all the award-winning performance that's become the hallmark of Tektronix RISC processing. Ample RAM. PostScript® Level 2. Networkability. So now our incredible



Circle 124 on reader service card



## TOP 20 BUDGET DESKTOPS

|    | SYSTEMS   | Last<br>month                       | Month<br>tested | Street<br>price<br>(8/14/96) | CPU          | Comments   |
|----|---|-------------------------------------|-----------------|------------------------------|--------------|--|
| 1  | Micron P133 Millennia<br>800/223-6571 www.micron.com              | 1                                   | Mar 96          | \$1899                       | Pentium-133  | \$150 price drop, great features and speed, improved reliability rating.         |
| 2  | Dell Dimension P200v<br>800/613-3355 www.dell.com                 | -                                   | new             | \$1999                       | Pentium-200  | Only P-200 on the Budget chart, extremely fast; sound costs extra.               |
| 3  | Dell OptiPlex GXM 5100<br>800/613-3355 www.dell.com               | 2                                   | Aug 96          | \$2068                       | Pentium-100  | Nicely constructed simple business system with built-in networking; \$145 drop.  |
| 4  | Quantex QP5/120 M-4<br>800/896-4898 www.quantex.com               | -                                   | new             | \$2249                       | Pentium-120  | Everything you'd want in a home office PC, except a good service rating.         |
| 5  | Gateway 2000 P5-133<br>800/846-2000 www.gw2K.com                  | 1944                                | new             | \$1864                       | Pentium-133  | Very fast, affordable minitower has fine graphics card, but sound is \$99 extra. |
| 6  | NMC PCW P100<br>800/800-4662 www.slsna.com/natmicrosys/           | -                                   | Aug 96          | \$1299                       | Pentium-100  | \$450 drop makes this a bargain minitower; components are mostly generic.        |
| 7  | ProGen Discover MPEG II P150<br>800/848-8777 www.progen.com/      | -                                   | new             | \$1599                       | Pentium-150  | Only P-150 on the chart; low price; it's set up to please game players.          |
| 8  | Digital Venturis 575<br>800/722-9332 www.digital.com              | 11                                  | Mar 96          | \$1425                       | Pentium-75   | Simple business system now \$200 less; good service and reliability ratings.     |
| 9  | NEC PowerMate V100<br>800/632-4636 www.nec.com                    | 16                                  | Aug 96          | \$1963                       | Pentium-100  | Solid value with very good design and features, \$267 price drop.                |
| 10 | Vektron Multimedia P-100<br>800/725-0026 www.vektron.com          | 5                                   | Mar 96          | \$1495                       | Pentium-100  | A Best Buy last month, it now faces stiffer competition.                         |
| 11 | Micro Express MicroFlex-686/P120+<br>800/989-9900 www.wpages.com/ | 9                                   | Aug 96          | \$1399                       | Cx6x86-P120+ | Bargain-basement price, average speed and features, getting support is iffy.     |
| 12 | Netis N5133DPS<br>800/577-7526 www.netistech.com                  | Craviculii ee in ci                 | Mar 96          | \$1770                       | Pentium-133  | Except for the 4X CD-ROM, an impressive configuration for under \$1800.          |
| 13 | Xi P133MTower SP<br>800/432-0486 www.win.net/xi_comp              | 14                                  | Mar 96          | \$1929                       | Pentium-133  | Fast for a P-133, full-size tower has plenty of room for more peripherals.       |
| 14 | Robotech Cobra XLT P-133<br>800/255-2215 www.robotechusa.com      | 12                                  | July 96         | \$1849                       | Pentium-133  | Fast, inexpensive home PC; spotty documentation and tech support.                |
| 15 | Royal Computer P133 Triton II<br>800/486-0008 www.royalcomp.com   | Companyated                         | new             | \$1695                       | Pentium-133  | Good deal on minitower with fine graphics card, wavetable sound.                 |
| 16 | Acma zPower 166V<br>800/786-6888 www.acma.com                     | 8                                   | Sept 96         | \$2095                       | Pentium-166  | Fast multimedia PC, only desktop on the chart with PC Card slots.                |
| 17 | USA Flex Family Special<br>800/872-3539 www.usaflex.com           | 9                                   | July 96         | \$1999                       | Pentium-133  | Decked-out P-133 includes 8X CD-ROM drive; documentation is sparse.              |
| 18 | Diamond DT-100<br>800/989-7253 www.diamondtech.com                | 20                                  | Mar 96          | \$1125                       | Pentium-100  | Penny-pincher's delight; monitor's tiny and there's no sound.                    |
| 19 | Austin Power Plus 133<br>800/752-1577 www.austindirect.com        | 19                                  | Маг 96          | \$1999                       | Pentium-133  | \$150 price drop makes this a better value than the PowerPlus 100.               |
| 20 | HP Vectra Series 4 5/120<br>800/752-0900 www.hp.com               | e atologicallo e service su e e e e | Oct 96          | \$2284                       | Pentium-120  | \$239 price drop boosts bare-bones business PC onto chart.                       |
|    | Best Buy See features chart, page 228                             | ; performa                          | nce chart, p    | age 234.                     |              | Recommended as home system   |

<sup>1</sup> To order fax copies of system reviews, call 800/434-4495 from a touch-tone phone and use your credit card. You can order next month's reviews in advance: Power Desktops, 8udget Desktops, or Notebook PCs Top 20 charts and capsule reviews (\$9.95, available October 30).



YOU WON'T FIND too many major vendors selling P-200s for the price of Dell's basic but fast \$1999 Dimension P200v, number two on our Budget Desktops chart. Only two budget PCs we tested this month failed to make the grade. Netis's \$2186 C166-PDS offers a lot of raw value; it's

faster than some P-200s and has some high-end components. But it's not a great home system: Service hours are short, and documentation is bare-bones. The \$2245 MidWest Micro 3D Interactive MPEG comes with a joystick, hardware for full-motion video, and a gaggle of MPEG titles, but a poor company reliability score ruined its Top 20 chances. For more details, visit PC World Online (http://www.pcworld.com/t2opcsnaps).

|                         |                     |                                   | SCORE                  | CARD                                     |                                 |                            |                             |
|-------------------------|---------------------|-----------------------------------|------------------------|--|---------------------------------|----------------------------|-----------------------------|
| Overall<br>rating       | Price               | Vendor's<br>system<br>reliability | Features and<br>design | PC World-<br>Bench score/<br>performance | Vendor's service<br>and support | Fax<br>reprint<br>number ' | Reader<br>service<br>number |
| 90                      | average             | best                              | outstanding            | 182/very good                            | best                            | 3268                       | 631                         |
| 89                      | average             | best                              | very good              | 205/very good                            | best                            | 3447                       | 632                         |
| 87                      | average             | best                              | very good              | 170/good                                 | best                            | 3409                       | 633                         |
| 83                      | expensive           | роог                              | outstanding            | 187/very good                            | fair                            | 3448                       | 634                         |
| 82                      | average             | fair                              | very good              | 192/very good                            | good                            | 3449                       | 635                         |
| 81                      | very inexpensive    | Z                                 | good                   | 168/good                                 | 2                               | 3450                       | 636                         |
| 80                      | inexpensive         | 2                                 | very good              | 183/very good                            |                                 | 3451                       | 637                         |
| 80                      | very inexpensive    | good                              | good                   | 100/satisfactory                         | good                            | 3436                       | 638                         |
| 79                      | average             | fair                              | very good              | 163/good                                 | fair                            | 3413                       | 639                         |
| 79                      | inexpensive         | 2                                 | very good              | 171/good                                 | 2                               | 3325                       | 640                         |
| 79                      | very inexpensive    |                                   | good                   | 175/good                                 | •                               | 3411                       | 641                         |
| 78                      | average             | 2                                 | very good              | 185/very good                            | 2                               | 3452                       | 642                         |
| 78                      | average             | 2                                 | very good              | 193/very good                            |                                 | 3398                       | 643                         |
| 78                      | average             | 2                                 | outstanding            | 189/very good                            | 2                               | 3393                       | 644                         |
| 78                      | inexpensive         | 2                                 | very good              | 191/very good                            |                                 | 3453                       | 645                         |
| 78                      | average             | 2                                 | outstanding            | 199/very good                            | 2                               | 3429                       | 646                         |
| 77                      | average `           | 2                                 | very good              | 181/very good                            | 2                               | 3426                       | 647                         |
| 77                      | very inexpensive    | 2                                 | good                   | 156/good                                 | 2                               | 3441                       | 648                         |
| 77                      | average             | poor                              | very good              | 178/very good                            | in the second                   | 3454                       | 649                         |
| 76                      | expensive           | best                              | satisfactory           | 177/good                                 | fair                            | 3455                       | 650                         |
| Scorecard<br>weightings | Price<br>25 percent | Reliability<br>25 percent         | Features<br>20 percent | Performance<br>15 percent                | Support<br>15 percent           | All<br>products:           | 903                         |

<sup>2</sup> Insufficient data.

#### This Month's Best Buys

NO. 1: MICRON P133 MILLENNIA

PRO: Fast, loaded with useful features **CON:** None significant



Like its Pentium-200 sibling at number two on the Power Desktops chart, this Pentium-133

model in Micron's Millennia line of PCs

keeps dropping in price. Now at \$1899, it holds its place as our number one budget desktop for the second month in a row. It's a fairly good configuration for the money, especially the 2.1GB hard driveunusually large for a budget PC—and the 8X CD-ROM drive, still not common in most systems costing less than \$2500. The Micron's PC WorldBench score of 182 is admirable for a budget desktop.

The interior is laid out well, with the SIMM sockets especially accessible. Micron's on-screen documentation is

helpful, with illustrations of basic maintenance tasks.

Price drops on other Millennias we've tested keep them in contention. The P166 (re-



Micron P133 Millennia

viewed in April) now goes for \$2099; the P150 (reviewed in May) sells for \$1999. The P120 and P100 (both reviewed in March) cost less than \$2000. These prices include 15-inch monitors.

#### NO. 2: DELL DIMENSION P200V

PRO: Well built, 8X CD-ROM drive

CON: No sound, speakers, or applications



Don't look now, but you can buy a P-200 from a top vendor for under \$2000. Dell's new Dimen-

sion P200v effectively combines Intel's fastest Pentium processor with an array of inexpensive but good-quality components. The result is a powerful and affordable PC that will handle typical business and home computing tasks with ease. If you want sound and speakers, you'll have to pay an extra \$99. And Microsoft Office 95 will run you another \$219. But even as configured with 16MB of RAM, a 1.6GB hard drive, and Dell's best 15-inch monitor, this \$1999 system easily becomes our first Pentium-200 budget Best Buy.

How does this system differ from the

Pentium-200s on our Power Desktops chart? The P200v's emphasis is mostly on economy rather than all-out speed and high-end features.



**Dell Dimension** 

For example, the P200v's graphics controller is built into the motherboard to cut costs. While the integrated Trio64V+ with 2MB of EDO RAM does a fine job handling word processing, spreadsheet work, and even basic multimedia, it's not ideal for more complex graphics applications such as image editing and desktop publishing. The more capable graphics

#### STANDARD FEATURES

|    | SYSTEMS                           | СРИ          | RAM<br>(MB) | Secondary<br>cache (K) | Hard<br>drive<br>(GB) | Graphics adapter             | Video RAM<br>(MB/type) | Monitor tube/<br>viewable diag<br>onal (inches) | Screen<br>pitch<br>(mm) | CD-ROM<br>drive<br>speed               |
|----|-----------------------------------|--------------|-------------|------------------------|-----------------------|------------------------------|------------------------|---|-------------------------|--|
| 1  | Micron P133 Millennia*            | Pentium-133  | 16          | 512                    | 2.1                   | Diamond Stealth64 Video VRAM | 2/VRAM                 | 15/13.6   | .28                     | 8X                                     |
| 2  | Dell Dimension P200v*             | Pentium-200  | 16          | 256                    | 1.6                   | integrated Trio64V+          | 2/EDO DRAM             | 15/13.5   | .28                     | 8X                                     |
| 3  | Dell OptiPlex GXM 5100*           | Pentium-100  | 16          | 256                    | 1,1                   | integrated Trio64V+          | 2/EDO DRAM             | 15/13.5   | .28                     | 4X                                     |
| 4  | Ouantex OP5/120 M-4*              | Pentium-120  | 32          | 512                    | 3.1                   | STB Lightspeed 128           | 2/MDRAM                | 17/16   | .26                     | 8X                                     |
| 5  | Gateway 2000 P5-133*              | Pentium-133  | 16          | 256                    | 1.6                   | STB Lightspeed 128           | 2/MDRAM                | 15/13.9   | .28                     | 8X                                     |
| 6  | NMC PCW P100                      | Pentium-100  | 16          | 256                    | 0.9                   | Vista A64P                   | 2/DRAM                 | 15/13.8   | .28                     | 4X                                     |
| 7  | ProGen Discover MPEG II P150      | Pentium-150  | 16          | 512                    | 1.3                   | ProGen Gold 64V+ PCI         | 2/EDO DRAM             | 15/13.7   | .28                     | 8X                                     |
| 8  | Digital Venturis 575              | Pentium-75   | 8           | 256                    | 0.9                   | integrated Trio64            | 1/DRAM                 | 15/13.5   | .28                     | 4X                                     |
| 9  | NEC PowerMate V100                | Pentium-100  | 16          | 256                    | 1.6                   | Alliance ProMotion 6422      | 2/DRAM                 | 15/13.5   | .28                     | 6X                                     |
| 10 | Vektron Multimedia P-100          | Pentium-100  | 16          | 256                    | 2.1                   | Diamond Stealth64 Video YRAM | 2/DRAM                 | 15/14.1   | .25                     | 6X                                     |
| 11 | Micro Express MicroFlex-686/P120+ | Cx6x86-P120+ | 16          | 256                    | 1.3                   | STB Powergraph 64 Video      | 2/DRAM                 | 15/14.1   | .28                     | 8X                                     |
| 12 | Netis N5133DPS                    | Pentium-133  | 16          | 256                    | 1.6                   | Diamond Stealth64 Video VRAM | 2/VRAM                 | 15/14   | .28                     | 4X                                     |
| 13 | Xi P133MTower SP                  | Pentium-133  | 16          | 512                    | 1.3                   | Diamond Stealth64 Video VRAM | 2/VRAM                 | 17/15.6   | .26                     | 6X                                     |
| 14 | Robotech Cobra XLT P-133          | Pentium-133  | 16          | 256                    | 1.3                   | Number Nine 9FX Motion 331   | 2/EDO DRAM             | 17/15.4   | .28                     | 6X                                     |
| 15 | Royal Computer P133 Triton II     | Pentium-133  | 16          | 512                    | 1.3                   | Matrox MGA Millennium        | 2/WRAM                 | 15/13.9   | .28                     | 6X                                     |
| 16 | Acma zPower 166V                  | Pentium-166  | 16          | 256                    | 1.3                   | Diamond Stealth64 Video 2001 | 2/EDO DRAM             | 15/13.7   | .28                     | 6X                                     |
| 17 | USA Flex Family Special           | Pentium-133  | 16          | 256                    | 1.3                   | STB Powergraph 64 Video      | 2/EDO DRAM             | 15/13.7   | .27                     | вх                                     |
| 18 | Diamond DT-100                    | Pentium-100  | 16          | 256                    | 1.3                   | Paradise Bahamas 64          | 1/DRAM                 | 14/13.6   | .28                     | 8X                                     |
| 19 | Austin PowerPlus 133              | Pentium-133  | 16          | 256                    | 1.3                   | ATI Winturbo                 | 2/DRAM                 | 15/13.6   | .28                     | 6X                                     |
| 20 | HP Vectra Series 4 5/120          | Pentium-120  | 16          | 512                    | 1.3                   | S3 Trio64 PnP PCI            | 2/DRAM                 | 15/13.5   | .28                     | and the protocolour be not be the pro- |

\*Best Buy

cards in the Dimension XPS models and many other power systems make them a better choice for these applications. The 15-inch Dell monitor, while not big enough for graphics professionals, is great for business users because of its crisp Trinitron tube.

The P200v makes other concessions to cut costs, such as using a motherboard with a 256K secondary cache ceiling, as opposed to the larger 512K limit found in the Dimension XPS line. Trade-offs like these contribute to ordinary performance for a P-200. Its PC WorldBench score of 205 is marginally below average for the P-200s we've tested, although it is 6 percent faster than the average P-166 and 15 percent faster than the typical P-133. Considering that the P200v is priced about 5 percent lower than the average Pentium-133 PC in our reviews, you're still getting a lot of speed for your money.

A peek inside this sturdy minitower reveals a clutter-free motherboard with no add-in cards. By integrating the video controller and video memory onto the motherboard and omitting both a sound card and a modem, the Dimension keeps all six expansion slots open. There are also four open drive bays.

Dell throws in a three-year warranty and gives you free Windows 95 support for 30 days, as it does on its more expensive XPS models. The company fields hardware questions around the clock for the life of the system.

#### NO. 3: DELL OPTIPLEX GXM 5100

PRO: Fast, well designed, built-in networking CON: No application software



The \$2068 OptiPlex GXM 5100 is aimed at the business buyer who wants built-in networking in

a budget-price system. With a PC World-Bench score of 170, it's quite fast for its price and CPU class.

The graphics controller—which can

accelerate full-motion videois integrated onto the motherboard along with a 16-bit sound chip. And this desktop has some room for expansion, including five open slots and one drive bay. Upgrading is a snap, thanks to an easy-open case and clean interior.



**Dell OptiPlex** 

#### EXPANDABILITY

#### CUSTOMER SUPPORT

| Modem<br>speed<br>(kbps)  | Sound board  |
|---------------------------|--|
| -                         | Creative Labs Vibra 16   |
| _                         | — — — — — — — — — — — — — — — — — — —  |
| ***                       | integrated Vibra 16  |
| 33,6                      | Ensoniq Soundscape Vivo  |
| as a management           | And the state of t |
| 28.8                      | Creative Labs Vibra 16   |
| 33.6                      | AudioDrive 32 PnP  |
| e installet tradel.       | nich in der in stradische geweren der bestehnte betrehen.  |
| sortalinal an             | integrated OPTI 930A   |
| 14.4                      | Creative Labs Vibra 16   |
|                           | ESS ES16B8 Audio Drive   |
| 28.8                      | Creative Labs Vibra 16   |
| s up                      | Creative Labs Vibra 16   |
| 28.8                      | Sound Blaster 16   |
| -                         | Sound Blaster AWE 32 PnP   |
| 28.8                      | Sound Blaster 16   |
| 28.8                      | proprietary 16-bit   |
| den til Läthurvilgenslick | and the free proceeds askers a read of the decrease in the Color of th |
| 28.8                      | integrated 16-bit  |
| occided our or            | and the dispersion at made enterestation and the se  |
|                           |  |

| Case style | Max.<br>RAM<br>(MB) | Maximum<br>secondary<br>cache (K) | Open<br>RAM<br>sockets | Open<br>drive bays<br>(ext./int.) | Open<br>slots |
|------------|---------------------|-----------------------------------|------------------------|-----------------------------------|---------------|
| compact    | 128                 | 512                               | 2                      | 2/1                               | 5             |
| minitower  | 64                  | 256                               | 1                      | 3/1                               | 6             |
| desktop    | 128                 | 512                               | 2                      | 1/0 -                             | 5             |
| minitower  | 128                 | 512                               | 2                      | 2/1                               | 4             |
| minitower  | 128                 | 256                               | 1                      | 2/2                               | 5             |
| minitower  | 128                 | 512                               | 2                      | 2/1                               | 3             |
| minitower  | 128                 | 512                               | 2                      | 3/2                               | 4             |
| desktop    | 128                 | 256                               | 2                      | 1/0                               | 4             |
| minitower  | 128                 | 256                               | 2                      | 2/2                               | 5             |
| minitower  | 128                 | 256                               | 2                      | 2/0                               | 5             |
| minitower  | 128                 | 512                               | 4                      | 3/1                               | 6             |
| minitower  | 128                 | 512                               | 2                      | 3/1                               | 4             |
| tower      | 128                 | 512                               | 2                      | 5/2                               | 6             |
| minitower  | 128                 | 512                               | 2                      | 3/3                               | 4             |
| minitower  | 512                 | 512                               | 4 .                    | 3/1                               | 5             |
| minitower  | 128                 | 512                               | 2                      | 2/1                               | 3             |
| minitower  | 128                 | 512                               | 2                      | 3/1                               | 4             |
| minitower  | 128                 | 512                               | 2                      | 3/0                               | 4             |
| minitower  | 128                 | 512                               | 2                      | 2/2                               | 3             |
| desktop    | 128                 | 512                               | 4                      | 2/0                               | 4             |

|   | Warranty for Weekday tol<br>parts/labor free suppor<br>(years) (hours) |     | Weekend<br>support | Online support              |  |  |  |  |  |
|---|--|-----|--------------------|-----------------------------|--|--|--|--|--|
| ۱ | 3/1  | 24  | Sat., Sun.         | BBS, WWW                    |  |  |  |  |  |
|   | 3/3 24   |     | Sat., Sun.         | AOL, BBS, CIS, Prodigy, WWW |  |  |  |  |  |
|   | 3/3  | 24  | Sat., Sun.         | AOL, BBS, CIS, Prodigy, WWW |  |  |  |  |  |
|   | 3/1  | 15  | Sat., Sun.         | BBS, Prodigy, WWW           |  |  |  |  |  |
|   | 3/1  | 24  | Sat., Sun.         | AOL, BBS, CIS, Prodigy, WWW |  |  |  |  |  |
|   | 3/3  | 10  | -                  | BBS, WWW                    |  |  |  |  |  |
|   | 3/1  | 11  |                    | BBS                         |  |  |  |  |  |
|   | 3/3  | 24  | Sat., Sun.         | AOL, BBS, CIS, WWW          |  |  |  |  |  |
|   | 3/3  | 24  | Sat., Sun.         |                             |  |  |  |  |  |
|   | 1/1  | 11  | -                  | BBS, CIS, WWW               |  |  |  |  |  |
|   | 2/2  | 9.5 | Sat., Sun.         | WWW                         |  |  |  |  |  |
|   | 1/3  | 10  | Sat.               | BBS, WWW                    |  |  |  |  |  |
|   | 3/3  | 9   | Sat.               | WWW                         |  |  |  |  |  |
|   | 3/1  | 9   | -                  | BBS, WWW                    |  |  |  |  |  |
| I | 1/lifetime   | 10  | Sat.               | BBS, WWW                    |  |  |  |  |  |
|   | 3/1  | 9.5 | -                  | BBS, WWW                    |  |  |  |  |  |
|   | 3/3  | 24  | Sat., Sun.         | - File                      |  |  |  |  |  |
|   | 1/1  | 9   | -                  | BBS                         |  |  |  |  |  |
|   | 3/3  | 24  | Sat., Sun.         | BBS                         |  |  |  |  |  |
|   | 1/1  | 16  | Sat.               | AOL, BBS, CIS, WWW          |  |  |  |  |  |

If you're a do-it-yourselfer, you'll like the GXM 5100's documentation, which is detailed, thorough, and easy to read and understand. The strong three-year warranty is paired with company service and reliability that consistently rate very highly with readers responding to our ongoing fax-back polls. About the only thing missing is application software.

#### NO. 4: QUANTEX QP5/120 M-4

**PRO:** Good reference software bundle; tons of memory, secondary cache, and storage

CON: Poor reliability rating, cluttered interior

If bu

If you're craving a power desktop but just can't afford one, the Quantex QP5/120 M-4 minitower

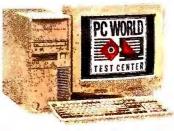
gives you a lot for your dollar—provided you're not too fussy about reliability and

service. Our ongoing faxback reader surveys rate Quantex as poor and fair in those categories.

Priced at \$2249, this Pentium-120 has much of what you find in power sys-

tems: very good performance, lots of memory, a big hard drive, and a large monitor. Granted, no Pentium-120 will keep pace with a P-166 or P-200, but the QP5/120 M-4 generated a PC World-Bench score of 187—the fastest of any Pentium-120 we've tested. It's a bit above average for all budget systems, and plenty fast for most home and business users.

Quantex loaded up this system with 32MB of RAM, a 512K secondary cache, and a 3.1GB hard drive, which is huge for



Quantex QP5/120

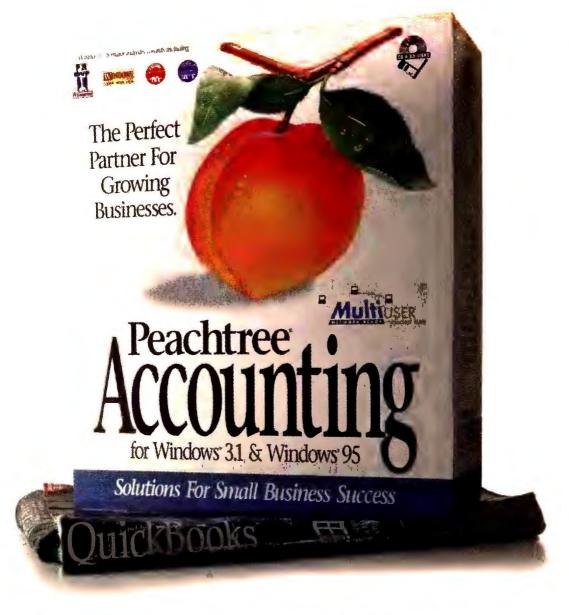
a system in the budget price range. The quality of the 17-inch MAG DX1795 monitor is good, and the STB Lightspeed 128 video card with 2MB of MDRAM is ranked near the top of

our Top 10 Graphics Boards chart.

Our Quantex also came with a nice selection of extras for communications and multimedia. If you plan to spend time on the Internet, the 33.6-kbps fax-modem will be handy. A good-quality 8X Toshiba XM 5602 EIDE CD-ROM drive spins the discs, while an Ensoniq Soundscape Vivo wavetable sound card puts out the audio. Unfortunately, Quantex cut costs on the external speakers; we would prefer something better than the low-end Altec







### Manage Your Business, Not Just Your Books

No matter what size your business, you need more than a simplified bookkeeping package to help you manage for success. You need a total accounting solution that has all the critical features, functions, and business management tools built right in. You need Peachtree.

You also need a product line that will grow with you as your business grows. With our family of accounting software for Windows, Peachtree has the perfect solution for you today—and tomorrow.

Last year more than 20 thousand businesses switched to Peachtree from Quicken and QuickBooks.\* What are you waiting for? Why

Rer fusinesss
That Demand
More...

Peachtree

Peachtree

ACCOUNTING

ACCOUNTIN

not join the nearly one million businesses that have chosen Peachtree to help them manage their success?

Call 1-800-428-9974 or visit your local dealer today!

**Peachtree First Accounting:** The best value for small business! This product is ideal if you are automating your books for the first time. It's easy to get started with, yet full featured enough to handle your needs.

\*\*\*\* "less expensive than QuickBooks, but just as intuitive" — PC Computing

Peachtree Accounting: The perfect partner for growing businesses, Peachtree Accounting helps you organize and manage all your information. It's multiuser and includes all accounting functions plus critical cash flow, income, expense, and forecasting tools.

Voted "Best Buy" by Consumers Digest; Home Office Computing's "Editor's Pick"

Peachtree Complete Accounting: For businesses that demand

more, this is absolutely the most full-featured accounting solution available at this price. Compares to packages costing thousands more, yet it is still easy to use. Includes job

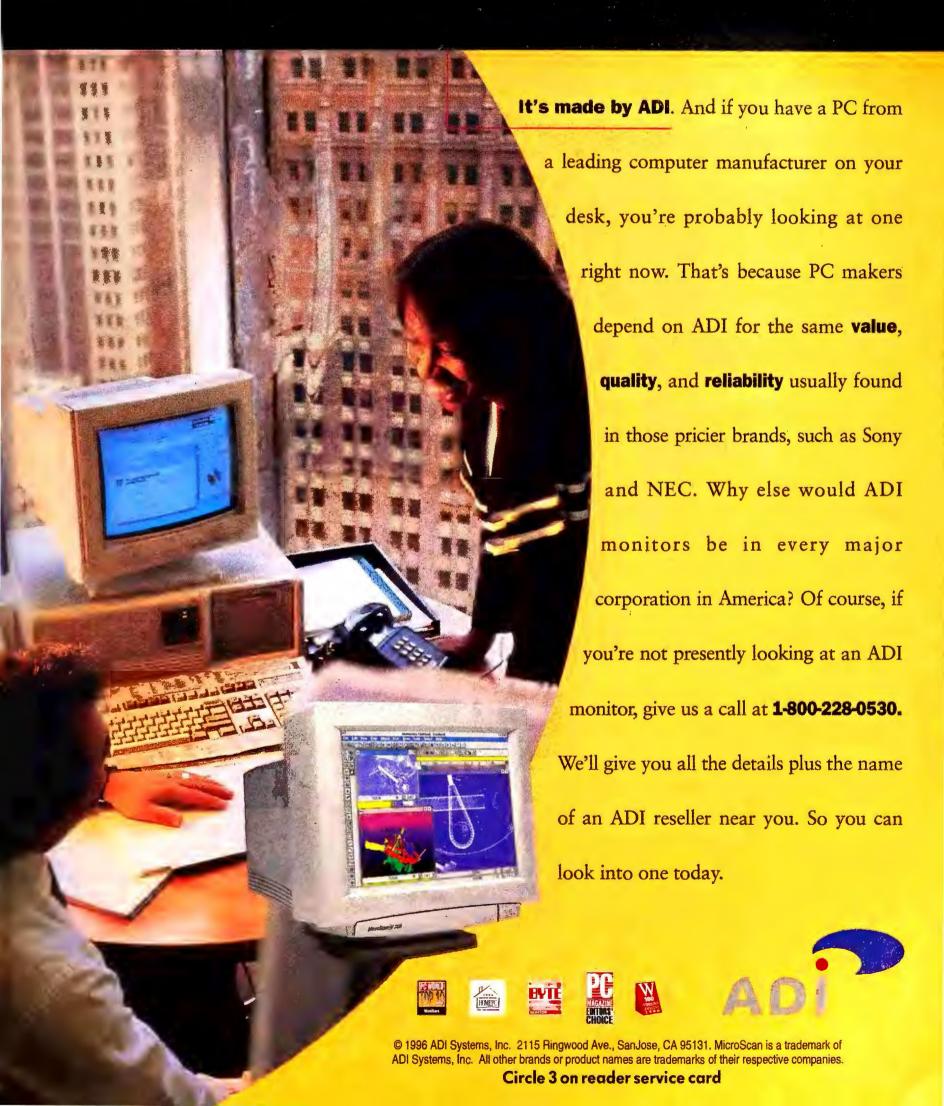
costing, fixed assets, sales orders, and more. Network ready right out of the box.

WWWW "...an excellent choice" Windows Magazin

Solutions for Small Business Success

Circle 223 on reader service card

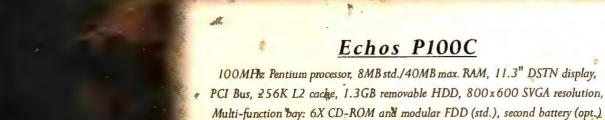
## Chances are, you're already looking at the *best monitor*.



### FINALLY, A LINE OF MULT PEOPLE WHO KNOW THAT MONE



### IEDIA NOTEBOOKS FOR DOES NOT GROW ON TREES.



#### Echos P100E

100MHz Pentium processor, 8MB std./40MB max. RAM, 10.4" TFT display, PCI Bus, 256K L2 cache, 1.3GB removable HDD, 800x600 SVGA resolution, Multi-function bay: 6X CD-ROM and modular FDD (std.), second battery (opt.)



#### Echos P120E

120MHz Pentium processor, 8MB std./40MB max. RAM, 11.3" TFT display, PCI Bus, 256K L2 cache, 1.3GB removable HDD, 800x600 SVGA resolution, Multi-function bay: 6X CD+ROM and modular FDD (std.), second battery (opt.)

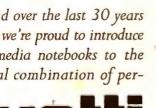


#### Echos P133S

133MHz Pentium processor, 16MB std./40MB max. RAM, 11.8" TFT display, PCI Bus, 256K L2 cache, 1.3GB removable HDD, 800x600 SVGA resolution, Multi-function bay: 6X CD-ROM and modular FDD (std.), second battery (opt.)

In 1965 we invented the world's first desktop computer. And over the last 30 years Olivetti has grown into one of Europe's top PC manufacturers. Now we're proud to introduce an award-winning line of powerful and truly affordable multimedia notebooks to the U.S., the Echos series from Olivetti. Notebooks with the ideal combination of per-

formance and value without sacrifice. From the company determined to be your best choice. For more information, call Olivetti toll-free at 1-888-465-4838, or visit www.olivettipc.com











Lansing ACS 45s. You get a nice bundle of software, including Quicken SE, How Your Body Works, Grolier's Encyclopedia 8.0, Mindscape Reference Library, Every-Where USA East & West, The Animals, and a slew of games. You'll have to buy your own word processor and spreadsheet applications, however.

The Quantex's overall design is adequate. Typical of many systems that we see, the inside of the case is somewhat cluttered. You'll find it hard to add memory without unhooking some cables, and you can't install any full-length ISA cards because the CPU is in the way. The system does have plenty of open expansion slots and drive bays.

The documentation is barely adequate: It's hard to find what you're looking for without a glossary, index, or detailed table of contents to consult. Quantex's service rating from our ongoing fax-back reader survey is fair. You get a year of free on-site service, and toll-free technical support is available 15 hours a day, seven days a week. Although we were still experiencing long waits during calls at press time, the company assures us it's working to improve technical support response times. Moreover, the poor survey rating on Quantex's system reliability is sobering, although the company does provide a three-year limited warranty.

#### PERFORMANCE TOP 20 BUDGET DESKTOPS RAM (MB) PC WorldBench score Faster Secondary cache (K) Slower SYSTEMS CPU Micron P133 Millennia\* Pentium-133 16 512 182 Dell Dimension P200v\* 16 205 Pentium-200 256 3 256 Dell OptiPlex GXM 5100\* Pentium-100 170 16 Quantex QP5120 M-4\* Pentium-120 32 512 187 Gateway 2000 P5-133\* Pentium-133 256 192 6 NMC PCW P100 Pentium-100 16 256 168 ProGen Discover MPEG II P150 Pentium-150 16 512 183 Digital Venturis 575 Pentium-75 256 100 9 **NEC PowerMate V100** Pentium-100 16 163 256 Vektron Multimedia P-100 Pentium-100 16 171 256 Micro Express MicroFlex-686/P120+ 11 Cx6x86-P120+ 16 256 175 Netis N5133DPS Pentium-133 16 256 185 13 XI P133MTower SP Pentium-133 512 193 14 Robotech Cobra XLT P-133 Pentium-133 256 189 15 Royal Computer P133 Triton II Pentium-133 512 16 191 16 Acma zPower 166V Pentium-166 16 256 199 17 **USA Flex Family Special** 181 Pentium-133 256 18 Diamond DT-100 Pentium-100 156 16 256 19 Austin PowerPlus 133 Pentium-133 256 16 178 20 HP Vectra Series 4 5/120 Pentium-120 512 177 \*Best Buy 50 Application test times in minutes 30 20 60 10 Word 7.0 for Windows 95 Picture Publisher 6.0 for Windows 95 WordPerfect 6.1 for Windows Excel 7.0 for Windows 95 Paradox 5.0 for Windows 1-2-3 release 5 for Windows

HOW WE TEST All systems are tested with PC WorldBench, PC World's application-based benchmark. A higher PC WorldBench score is better. All PCs have Windows 95, and video resolution is set to 800 by 600 in 256 colors. We run automated scripts on six popular business applications, performing common tasks such as spelling checks, scrolls, saves, sorts, and recalculations. The PC WorldBench score is a sum of the weighted result of each script: Word (25 percent), Excel (20 percent), Picture Publisher (15 percent), Paradox (15 percent), WordPerfect (15 percent), and 1-2-3 (10 percent). For more details on our benchmark and how we run it, see PC World Online (http://www.pcworld.com).



## If you think file transfer is all we do, you need some time away from the office.

To appreciate how much more LapLink® for Windows® 95 has to offer, all you have to do is hit the road.

Wherever you go—across the hall, across town or across the country—if you've got LapLink, you have everything you need to access anything you want on your desktop or your network.

With this single piece of software, you can read and send e-mail, run databases and custom applications, synchronize data and, yes, even transfer files.

Since there's no need to change apps to do all these things, there's no need to hang up and redial. And since LapLink works the same way over modems, IPX and TCP/IP networks, serial cables, parallel cables, wireless, even the Internet, there's no need to laboriously reconfigure.

And there's no need to worry about compatibility. Our 16-bit version is built right into LapLink for Windows 95, so connecting to Windows 3.1 systems is no problem at all.

By now, you probably can't wait to get your hands on the latest LapLink. So you'll be glad to know that upgrading—from an earlier LapLink, or from another product altogether—is ridiculously inexpensive. Call 800-487-4396. Better yet, see your reseller. It'll give you an excuse to get away from the office.



Circle 239 on reader service card

#### NO. 5: GATEWAY 2000 P5-133

PRO: Fast, great documentation, beautiful design and construction

CON: No modem or sound card at this price, reliability could be better



Gateway 2000's P5-133 features a fresh design, better construction than previous models, and an

affordable price—just \$1864. The new angular case style has a more up-to-date feel than the curvy Gateways of the past; we found it very attractive. It's also one of the fastest Pentium-133s we've tested,



turning in an amazing PC WorldBench score of 192. That's faster than some P-166s we've tested. It's a great business system, but not one

Gateway P5-133

that we would recommend for home use unless you add a sound card and speakers—ours came with neither.

The P5-133 we looked at had a 1.6GB hard drive and an eight-speed Toshiba EIDE CD-ROM drive. The 15-inch CrystalScan monitor is a good basic display, but it's not Gateway's top of the line, the more expensive Vivitron. We can't find fault with the 2MB STB Lightspeed 128 graphics adapter, which is currently ranked near the top of our Top 10 Graphics Boards chart. The P5-133's reasonable price also includes Microsoft Office 95 Professional Edition.

The P5-133 offers a cutting-edge feature for a budget system: Memory is supplied in synchronous DRAM DIMMs. SDRAM is the fastest (and most expensive) new type of memory, and DIMMs can be installed in single memory modules rather than in pairs like the more typical SIMMs. The system's construction is sturdy, and its layout is clean. The motherboard is easy to access and upgrade.

Gateway's printed documentation is as professional as it comes. The warranty covers parts for three years and labor for one, and a year of free on-site service is thrown in along with 24-hour-a-day tech support. Gateway earns a good service and support score because of its fine support policies, but our readers still rate system reliability only as fair.

#### **New This Month**

The following PCs made our Budget Desktops chart for the first time this month. For previously tested PCs on the chart, visit our Web page at http://www.pcworld.com/t20pcs.

#### NO. 7: PROGEN DISCOVER MPEG II P150

PRO: MPEG graphics board, great-sounding speakers, bargain price

CON: Documentation could be better, no weekend tech support, reliability record is an unknown This full-featured system is only an average Pentium-150 performer, but it comes with a fast modem and a bargain price of just \$1500. The ProGen has the extra mul-

timedia features necessary to make it a good machine for game players, but you'll have to pay extra for an office suite to make it a complete home system.

Our ProGen came with a relatively mixed configuration: a Pentium-150 CPU, 16MB of EDO RAM, and 512K of secondary cache-more than we typically see on budget systems. It also had an 8X GoldStar EIDE CD-ROM drive, which was a Best Buy in September (see "CD-ROM Drives: Behind the Ratings"). The ProGen Gold 64V+ PCI video card should handle heavy-duty graphics applications (although we have not tested it for our Top

10 Graphics Boards chart), and it lets you run fullmotion MPEG video. On the other hand, it was matched with a fairly plain 15-inch CTX monitor. At 1.3GB, the hard drive is

none too large either. Bent on exploring the Web? ProGen throws in a 33.6-kbps fax-modem. The wavetable sound card and speakers are generic, but we liked what we heard. The stereo speakers are powerful and sound good.

This minitower system has plenty of expandability, with four available expansion slots and five open drive bays. The interior is fairly neat, but we still had to push aside a bit of cable tangle to get to the SIMM sockets. And the system's keyboard felt flimsy and cheaply constructed.

ProGen's support policies are adequate. The warranty covers parts for three years and labor for one, with a year of free onsite service. Toll-free tech support is available just 11 hours per day, weekdays only.

#### **NO. 15: ROYAL COMPUTER** P133 TRITON II

PRO: Inexpensive, fast multimedia PC

CON: One-year parts warranty at this price, technical support is iffy

If your castle needs a PC that won't bankrupt the court, check out the Royal P133 Triton II, a surprisingly complete system for the money. At \$1695, it's one of the least expensive Pentium-133 PCs we've seen. It's also one of the fastest.

> This minitower's interior is impressively clean and clutter-free. Ordinarily, that means easy upgrades. But if your PC arrives the way ours did, installing PCI cards will be a Royal pain in the you-

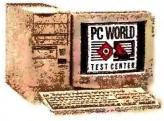


ProGen Discover

know-what. Both PCI slots in our system were blocked by the serial, parallel, game, and mouse ports. You'll have to reinstall these ports where they belong, into cutouts in the case, before you can use the PCI slots. The job takes about a half hour. Otherwise, we liked the way the P133 Triton II was laid out.

Royal throws in some good software to get you going, including Lotus SmartSuite

> 96 and InfoPedia 2.0, a CD-ROM reference title. Support is a mixed bag. Royal covers labor for a lifetime, but guarantees parts for only a year. Technical support is toll-free but available only 10



Royal P133

hours Monday through Saturday, and it's not very good, at least based on our experience. We had to wait over 24 hours for a return call, and the technician's poor English made communication difficult.

#### Beyond the Top 20

We tested these systems along with the others, but they didn't score high enough to reach the Top 20 Budget Desktops chart. For write-ups, see PC World Online (http://www.pcworld.com/t20pcsnaps).

- ◆ MidWest Micro 3D Interactive MPEG
- ♦ Netis C166-PDS



### If anything else comes remotely close, we'll buy it for you. Designed for

We've taken the risk out of choosing a remote access solution for Windows® 95.

Here's the deal. You buy LapLink® for Windows 95, the only remote access software designed from the ground up to take maximum advantage of your new operating system.

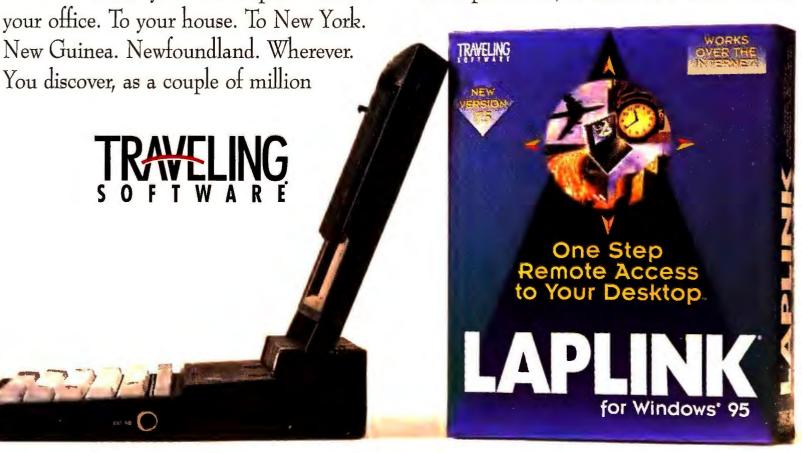
You take your new LapLink back to

users already have, that to use LapLink is to love LapLink.

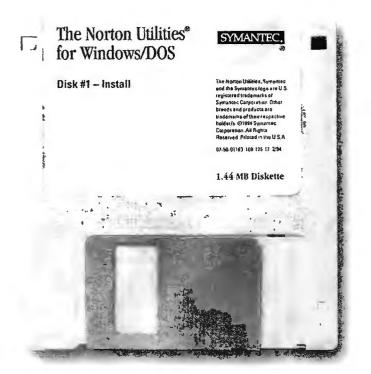
And if not? We buy you the remote access package of your choice.

Seriously.

See your dealer. Or, if you would like a bit more information on how far we've distanced ourselves from the rest, visit www.laplink.com, or call 1-800-472-4735.



Here's the legal stuff. One product exchange per customer. Offer valid on single unit purchases by end users in U.S. and Canada. Not valid with any other Traveling Software promotion and void where prohibited or restricted by law. See in-store coupon for further details and restrictions. Offer expires 11/30/96. ©1996 Traveling Software, Inc. LapLink is a registered trademark of Traveling Software.





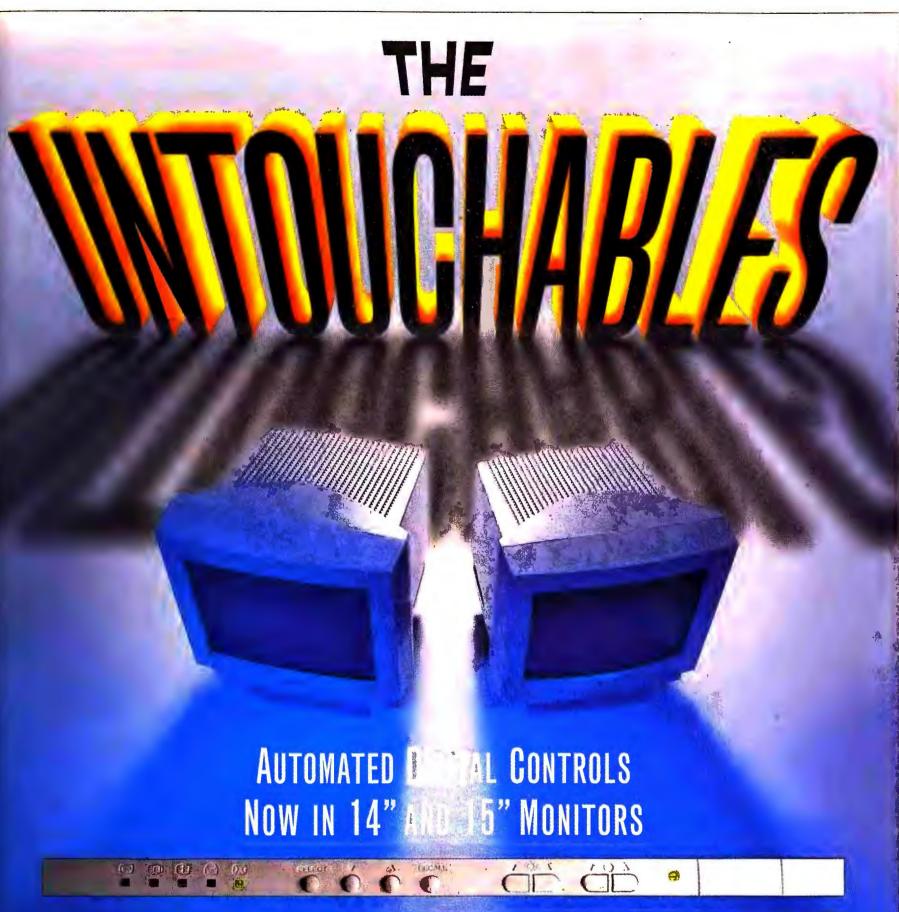
# These disks are exactly the same, but somebody just paid \$100,000 for the one on the right.

If you illegally copy software, you commit a federal offense and risk a fine of up to \$100,000. You also lose the benefits of licensed software, such as documentation, upgrades and technical support. And you may get something you don't want – a virus. Don't be a software pirate.

#### Get the facts.

Copying software is against the law. To clean up your software or to report someone who should, call our Piracy Hotline at (800) 388-7478; or see us on the World Wide Web at http://www.spa.org.





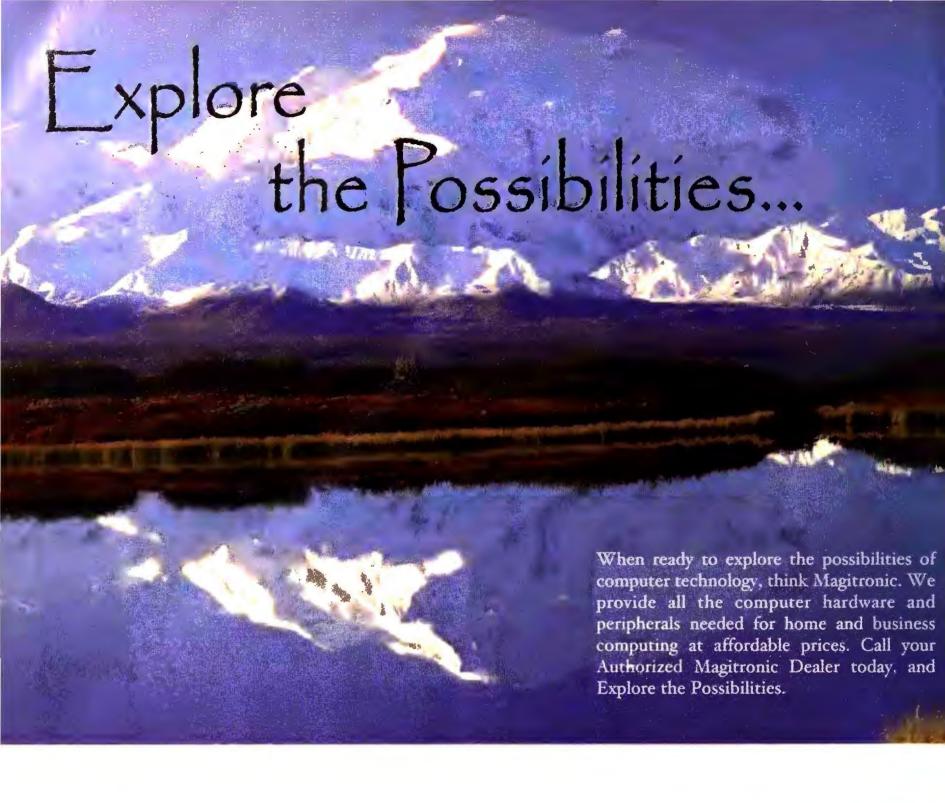
Our smart 14" (13.2"V) and 15" (13.8"V) digital monitors automatically change your screen settings to the proper resolution and refresh rate. You don't have to lift a finger. And that's just a preview of the premier digital features on Hyundai DeluxScan 14" and 15" monitors. Hyundai's advanced digital technology also gives you brilliant color and spectacular reliability. All at very popular prices — about what you pay now for ordinary analog models. See for yourself why nothing touches a Hyundai monitor for value. Call (800) 568-0060.

RETAILED BY

MICROAGE COMPUTER CENTERS 800-887-0045 - INSIGHT DIRECT 800-546-0565 - PC ZONES 800-258-0270 HE01



©1996 Hyundai Electronics America 800,568.0060 Fax 408,232,8146 Web: www.hea.com DeluxFacts FaxBack Service 800,501,4986





200MHz Pentium® Processor-Based Multimedia System 16MB EDO RAM, 2.1GB HDD, 512KB cache, Intel 430HX Chipset, 8X CD-ROM Drive, 2MB Video Accelerator with Software MPEG, Speakers and Sound Card. Includes Lotus SmartSuite and Windows '95. G-P200M





Call Today! Toll-Free! 1-888-MAGITRONIC

Circle 140 on reader service card

# Your Days Of Dreaming To Play see the Song. Solow The The Guitar Are Over...





The Ultimate Tool for the Aspiring and Inspired Guitarist.

Windows 3.1 or better required. Mac version coming soon.

It's called the SmartLIGHT Interactive System™ and with it you can play your favorite songs and guitar solos, chord for chord and note for note, right away. · Yold buA With your choice of several SmartLIGHT™ Guitars (starting at \$499.95) and Optek's SmartLIGHT PC Connection Kit (\$349.95), you'll own the most powerful guitar learning system ever invented. Plug your SmartLIGHT Guitar into your PC's serial port and you're ready to rock n' roll. And of course, you can

learn at your own pace by adjusting the tempo at which the lights move across your SmartLIGHT Guitar's

fretboard. Loading a song from tablature or sheet music into your PC is simple. Just point and

click to select different chords, scales, or notes O in different positions on the neck, and insert them into the sequence window. That's all there

Stop dreaming and start playing. Call now to order your Smart<mark>LIGHT™</mark> interactive system.

800-833-8306

Oc AWAY!



P.O. Box 90485 Raleigh, NC 27675 • Phone 919.878.7997 • Fax 919.954.8389



## TOP 20 NOTEBOOK PCs

|             | POWER NOTEBOOKS  | Last<br>month            | Month<br>tested | Street<br>price<br>(8/18/96) | СРИ                               | Comments   |
|-------------|--|--------------------------|-----------------|------------------------------|-----------------------------------|--|
| 1           | Dell Latitude LM P133ST<br>800/613-3355 www.dell.com   | 1                        | Oct 96          | \$3849                       | Pentium-133                       | Number one again this month; great speed, fine screen and battery.   |
| 2           | Gateway 2000 S5-100XL<br>800/846-2000 www.gw2K.com   | 6                        | 0ct 96          | \$3349                       | Pentium-100                       | Improved reliability rating on Gateway notebooks makes this a 8est Buy.  |
| 3           | Dell Latitude XPi P133ST<br>800/613-3355 www.dell.com  | 2                        | Aug 96          | \$4599                       | Pentium-133                       | Fast notebook tested with hefty 24MB of RAM; no CD-ROM drive option.   |
| 4           | WinBook XP5 P120<br>800/468-2162 www.winbookcorp.com/  | 7                        | Apr 96          | \$2779                       | Pentium-120                       | \$720 price drop on quick P-120 puts it on Power and Budget charts.  |
| 5           | IBM ThinkPad 760E<br>800/772-2227 www.ibm.com  | 8                        | Sept 96         | \$6248                       | Pentium-133                       | Great speed and features; pricey, so-so battery life.  |
| 6           | Toshiba Satellite Pro 420CDS<br>800/457-7777 www.toshlba.com   | 3                        | Sept 96         | \$2798                       | Pentium-100                       | \$500 drop helps fairly fast multimedia model make both charts.  |
| 7           | NEC Versa 6030H<br>800/632-4636 www.nec.com  | _                        | new             | \$5799                       | Pentium-133                       | Expensive, quick, has a fine screen, 6X CD-ROM drive, and a fast fax-modern  |
| 8           | Compaq Armada 4120T<br>800/345-1518 www.compag.com   | -                        | new             | \$4298                       | Pentium-120                       | Fairly fast, modular multimedia notebook uses up to three batteries at once  |
| 9           | Fujitsu Montego<br>888/466-8434 www.fujitsu-pc.com   |                          | new             | \$3199                       | Pentium-100                       | Fujitsu's first notebook is quick and light, long warranty but no CD-ROM driv  |
| 0           | Toshiba Tecra 720CDT<br>800/457-7777 www.toshiba.com   | 4                        | Sept 96         | \$6299                       | Pentium-133                       | Chunky and extremely pricey, but killer screen.  |
|             | BUDGET NOTEBOOKS   |                          |                 |                              |                                   |  |
| 1           | Toshiba Satellite 100CS<br>800/457-7777 www.toshiba.com  | 1                        | June 96         | \$1599                       | Pentium-75                        | Price drop of \$200 this month on no-frills Pentium; service rating's down.  |
| 2           | IBM ThinkPad 365E<br>800/772-2227 www.ibm.com  | - Miron vo shudur l      | new             | \$1799                       | Cx5x86-100                        | Inexpensive notebook with Cyrix CPU has great keyboard, P-75-level speed   |
| 3           | IBM ThinkPad 560<br>800/772-2227 www.ibm.com   |                          | new             | \$2699                       | Pentium-100                       | Lots of RAM, fine keyboard, and dual-scan display, but no internal floppy dr   |
| 4           | WinBook XP5 P120<br>800/468-2162 www.winbookcorp.com/  | C. r Kin master.         | Apr 96          | \$2779                       | Pentium-120                       | \$720 price drop; also number four on Power chart.   |
| 5           | AcerNote Light 356<br>800/733-2237 www.acer.com  | 6                        | Sept 96         | \$1999                       | Pentium-100                       | \$200 drop helps light, comfortable P-100 despite its disappointing screen.  |
| 6           | Toshiba Satellite Pro 420CDS<br>800/457-7777 www.toshiba.com   | a ship one .             | Sept 96         | \$2798                       | Pentium-100                       | \$500 price drop; also number six on Power chart.  |
| e y ne neta | WinBook XP5-P100   |                          | new             | \$2399                       | Pentium-100                       | Quick, good display, fine battery life, reliability rating slightly improved.  |
| 7           | 900/460-3163   |                          |                 |                              | with the highlater as our wife in | to while attended to the contract of the contr |
| 7           | AcerNote Light 361   | na, na se a lessantes es | new             | \$2199                       | Pentium-120                       | Nice performance for the money, long warranty; port covers are flimsy.   |
| is the s    | es a mainte at more a long a lightner of a star of that a a lightness property and the object of a state of the contract of th | in in the second         | new             | \$2199<br>\$2499             | Pentium-120 Pentium-100           | Nice performance for the money, long warranty; port covers are flimsy.  Needs more RAM to be faster but has nice active screen.  |

'To order fax copies of system reviews, call 800/434-4495 from a touch-tone phone and use your credit card. You can order next month's reviews in advance: Power Desktops, Budget Desktops, or Notebook PCs Top 20 charts and capsule reviews (\$9.95, available October 30).

EIGHT NEW NOTEBOOKS, including two budget-price ThinkPads from IBM, stake out positions on this month's notebooks chart. Most agreeable travel companion: Compaq's Armada 4120T, due to the multiple ways you can configure it to balance battery life and function. Chart also-rans

you should probably avoid: the new AMS Power CD P100, whose battery kept falling out; the ChemBook 5400A-P/75, a poor attempt at a gaming notebook; and the Echos P100C, Olivetti's failed first try at selling a top-notch notebook in the U.S. For more details, visit PC World Online (http://www.pcworld.com/t2opcsnaps).

| Overall rating           | PC WorldBench<br>score          | Performance  | Price   | Vendor's<br>system<br>reliability | Features<br>and<br>design    | Vendor's<br>service and<br>support | Battery life (hours:min)/<br>rating                           | Traveling<br>weight                           | Fax<br>reprint<br>number             | Reado<br>servio<br>numb                |
|--------------------------|---------------------------------|--|---|-----------------------------------|------------------------------|------------------------------------|---|---|--------------------------------------|--|
| 86                       | 180                             | outstanding  | average   | good                              | very good                    | good ²                             | 4:32/good   | heavy   | 3779                                 | 651                                    |
| 86                       | 147                             | very good  | average   | good                              | very good                    | fair <sup>2</sup>                  | 4:46/good   | light   | 3780                                 | 652                                    |
| 86                       | 166                             | very good  | average   | good                              | very good                    | good <sup>a</sup>                  | 5:20/very good  | average                                       | 3771                                 | 653                                    |
| 83                       | 145                             | very good  | inexpensive   | fair                              | good                         | poor                               | 6:19/outstanding  | average                                       | 3736                                 | 654                                    |
| 83                       | 177                             | outstanding  | very expensive  | good                              | very good                    | good                               | 2:02/satisfactory   | average                                       | 3773                                 | - A Thomas A                           |
| 83                       | 142                             | good   | inexpensive   | good                              | good                         | fair                               | 4:02/good   | heavy   | 3771                                 | 655                                    |
| 82                       | 174                             | outstanding  | very expensive  | good                              | very good                    | fair ²                             | 3:04/good   | heavy   | 3785                                 | 656                                    |
| 81                       | 143                             | good   | average   | good                              | good                         | good                               | 4:27/good   | very heavy                                    | 3786                                 | 657                                    |
| 80                       | 136                             | good   | inexpensive   | and the same and                  | good                         | 1                                  | 4:56/very good  | light   | 3787                                 | 658                                    |
| 80                       | 160                             | very good  | very expensive  | good                              | outstanding                  | fair                               | 4:23/good   | very heavy                                    | 3772                                 | 659                                    |
| Scorecard                | weightings                      | Performance<br>22 percent                            | Price<br>14 percent                                       | Reliability<br>22 percent         | Features<br>16 percent       | Support<br>10 percent              | Battery life<br>8 percent                                     | Weight<br>8 percent                           |                                      |  |
| 81                       | 86                              | good   | very inexpensive  | good                              | satisfactory                 | fair                               | 3:35/good   | average                                       | 3754                                 | 660                                    |
| 80                       | 82                              | satisfactory   | inexpensive   | good                              | satisfactory                 | good                               | 4:16/good   | light   | 3788                                 | مص<br>برقوانیا درون                    |
| d demand street street.  |                                 |  |   |                                   |                              |                                    |   |   |                                      |  |
| 79                       | 135                             | very good  | expensive   | good                              | good                         | good                               | 3:35/good   | very light                                    | 3789                                 | -                                      |
| 77                       | 1 <b>35</b><br>145              | outstanding  | very expensive  | fair                              | good                         | good                               | 3:35/good<br>6:19/outstanding                                 | very light<br>average                         | 3789<br>3736                         | oid y de which                         |
| . L. Formania, r. N. co. | ilbe i                          | oise ate, whereforence                               | . W Wassing and Co  | fair                              | เจอไปเราเลเพอเพราไปไม่       | Activities and the last of         | 6:19/outstanding<br>2:57/good                                 | average<br>light                              | 3736<br>3777                         | 654                                    |
| 77                       | 145                             | outstanding  | very expensive  | fair                              | good                         | poor                               | 6:19/outstanding  | average                                       | 3736                                 | 654<br>661<br>655                      |
| 77<br>27<br>27           | 145<br>118                      | outstanding  good                                    | very expensive average                                    | fair                              | good<br>good                 | poor                               | 6:19/outstanding<br>2:57/good                                 | average                                       | 3736<br>3777                         | 654<br>661<br>655                      |
| 77                       | 145<br>118<br>142               | outstanding<br>good<br>outstanding                   | very expensive  average  very expensive  average  average | fair<br>good                      | good<br>good                 | poor<br>3<br>fair                  | 6:19/outstanding<br>2:57/good<br>4:02/good                    | average<br>light<br>heavy                     | 3736<br>3777<br>3771<br>3790<br>3791 | 654<br>661<br>655                      |
| 77<br>77<br>77           | 145<br>118<br>142<br>132        | outstanding  good  outstanding  very good            | very expensive  average  very expensive  average          | fair<br>good                      | good<br>good<br>good         | poor<br>s<br>fair<br>poor          | 6:19/outstanding 2:57/good 4:02/good 5:02/very good           | average<br>light<br>heavy<br>average          | 3736<br>3777<br>3771<br>3790         | 654<br>661<br>653<br>662               |
| 77<br>77<br>77<br>77     | 145<br>118<br>142<br>132<br>124 | outstanding  good  outstanding  very good  very good | very expensive  average  very expensive  average  average | fair<br>good<br>fair              | good<br>good<br>good<br>good | poor<br>fair<br>poor               | 6:19/outstanding 2:57/good 4:02/good 5:02/very good 4:16/good | average<br>light<br>heavy<br>average<br>light | 3736<br>3777<br>3771<br>3790<br>3791 | 654<br>661<br>655<br>662<br>663<br>664 |

Limited data; score is based on responses for this company and average of all companies. Insufficient data.

POWER NOTEBOOKS

#### This Month's Best Buys

NO. 1: DELL LATITUDE LM P133ST

PRO: Large, crisp screen; terrifically fast CON: None significant



Number one for the second month in a row, the Dell Latitude LM P133ST is a hands-down Best

Buy for users looking for a desktop replacement. This \$3849 Pentium-133 notebook scored an amazing 180 on our PC WorldBench test—smackdab in the middle of performance results for P-133 desk-

tops. The 12.1-inch active-matrix color screen is vivid and spacious, with a view-



Dell Latitude LM

able area close to what you get with a standard 14-inch desktop monitor.

In our test, the Dell managed to wring 4.5 hours per charge out of its lithium ion battery. The traveling weight

of 8.8 pounds, while heavy, isn't bad for a multimedia notebook: As with most

| *  | POWER NOTEBOOKS               | СРИ          | Traveling<br>weight<br>(pounds) ' | RAM<br>(MB) | Hard<br>drive<br>(MB) | Color<br>screen<br>type | Screen<br>diagonal<br>(inches) | Screen<br>resolution | Maximum<br>screen<br>colors | Battery<br>type | Pointing device      |
|----|-------------------------------|--------------|-----------------------------------|-------------|-----------------------|-------------------------|--------------------------------|----------------------|-----------------------------|-----------------|----------------------|
| 1  | Dell Latitude LM P133ST*      | Pentium-133  | 8.8                               | 16          | 810                   | active                  | 12.1                           | 800 x 600            | 256                         | lithium ion     | touchpad             |
| 2  | Gateway 2000 S5-100XL*        | Pentium-100  | 6.8                               | 16          | 810                   | active                  | 11.3                           | 800 x 600            | 256                         | lithium ion     | touchpad             |
| 3  | Dell Latitude XPi P133ST      | Pentium-133  | 7.2                               | 24          | 1215                  | active                  | 11.3                           | 800 x 600            | 256                         | lithlum ion     | trackball            |
| 4  | WinBook XP5 P120              | Pentium-120  | 7.4                               | 16          | 1295                  | active                  | 10.3                           | 640 x 480            | 65,536                      | lithium ıon     | eraserhead, touchpad |
| 5  | IBM ThinkPad 760E             | Pentium-133  | 7.8                               | 24          | 1080                  | active                  | 12.1                           | 800 x 600            | 65,536                      | lithium ion     | eraserhead           |
| 6  | Toshiba Satellite Pro 420 CDS | Pentium-100  | 8.8                               | 16          | 772                   | dual-scan               | 11.3                           | 800 x 600            | 65,536                      | lithium ion     | eraserhead           |
| 7  | NEC Versa 6030H               | Pentium-133  | 8.6                               | 16          | 1358                  | active                  | 12.1                           | 800 x 600            | 65,536                      | lithium ion     | touchpad             |
| 8  | Compaq Armada 4120T           | Pentium-120  | 10.8                              | 16          | 814                   | active                  | 11.8                           | 800 x 600            | 65,536                      | lithium ion     | touchpad             |
| 9  | Fujitsu Montego               | Pentium-100  | 6.4                               | 16          | 1083                  | active                  | 10.4                           | 800 x 600            | 256                         | lithium ion     | eraserhead           |
| 10 | Toshiba Tecra 720CDT          | Pentium-133  | 10.6                              | 16          | 1130                  | active                  | 12.1                           | 1024 x 768           | 16.8 million                | lithium ion     | eraserhead           |
|    | BUDGET NOTEBOOKS              | A CONTRACTOR |                                   |             |                       |                         |                                |                      |                             |                 |                      |
| 1  | Toshiba Satellite 100CS*      | Pentium-75   | 7.6                               | 8           | 540                   | dual-scan               | 10.4                           | 640 x 480            | 256                         | NIMH            | eraserhead           |
| 2  | IBM ThinkPad 365E*            | Cx5x86-100   | 7                                 | 8           | 540                   | dual-scan               | 10.4                           | 640 x 480            | 65,536                      | NiMH            | eraserhead           |
| 3  | IBM ThinkPad 560              | Pentium-100  | 5.8                               | 16          | 810                   | dual-scan               | 11.3                           | 800 x 600            | 256                         | lithium ion     | eraserhead           |
| 4  | WinBook XP5 P120              | Pentium-120  | 7.4                               | 16          | 1295                  | active                  | 10.3                           | 640 x 480            | 65,536                      | lithium ion     | eraserhead, touchpad |
| 5  | AcerNote Light 356            | Pentium-100  | 6.8                               | 16          | 810                   | dual-scan               | 10.4                           | 640 x 480            | 65,536                      | NIMH            | touchpad             |
| 6  | Toshiba Satellite Pro 420 CDS | Pentium-100  | 8.8                               | 16          | 772                   | dual-scan               | 11.3                           | 800 x 600            | 65,536                      | lithium ion     | eraserhead           |
| 7  | WinBook XP5-P100              | Pentium-100  | 7.4                               | 16          | 543                   | dual-scan               | 10.4                           | 640 x 480            | 256                         | NIMH            | eraserhead           |
| 8  | AcerNote Light 361            | Pentium-120  | 6.8                               | 16          | 810                   | dual-scan               | 10.4                           | 640 x 480            | 65,536                      | ным             | touchpad             |
| 9  | Toshiba Satellite 110CT       | Pentium-100  | 7.4                               | 8           | 814                   | active                  | 11.3                           | 800 x 600            | 65,536                      | NiMH            | eraserhead           |
| 10 | Digital HiNote VP             | Pentium-100  | 6.8                               | 16          | 810                   | dual-scan               | 10.4                           | 800 x 600            | 256                         | NiMH            | touchpad             |

\*Best Buy • Yes O No ¹Includes computer, adapter, power cord, floppy drive, and CD-ROM drive if notebook has one.

genuine power notes these days, the unit comes with both a floppy drive and a CD-ROM drive you can swap in and out.

The Latitude's design is classy and uncluttered, and the unit is sturdy. The keyboard is well laid out, with large, fulltravel keys. The only compromise is the <F1> through <F12> function keys, which are whittled down to about half the size of the other keys. The touchpad is smooth and responsive, allowing you to click with either the buttons or the touchpad itself. Dell's service and reliability are good according to our reader fax-back surveys, and the support policies are generous. The documentation, both on-screen and printed, is thorough and well written.

#### NO. 2: GATEWAY 2000 S5-100XL

PRO: Very good performance, good battery life, lightweight and easily portable

CON: Highest-price P-100 on our chart



The Gateway 2000 S5-100XL is a classy power notebook with a fine keyboard, a good pointing device,

and performance to spare.

The S5-100XL is pricey for its CPU

class. At \$3349, it's the most expensive P-100 on our list, but it's well worth the cost. For one thing, the 11.3-inch active-matrix screen is big and clear, with a handy slider for fine-tuning the brightness. The integrated stereo speakers are placed in the display panel near the screen hinge, where they can most effectively project sound. Ports have a sliding door, which is much less likely to break than a hinged cover. The S5-100XL is light (with a traveling weight of 6.8 pounds) and has good battery life (4.8 hours).

Typical of Gateway, the documention is good. But the one-year labor warranty is

short for this price, and the turnaround policy of 14 days on factory repairs seems particularly long when onsite service is not even an option. Readers rate the company's service and support as only fair.



Gateway 2000

|                                    |                                  | L |
|------------------------------------|----------------------------------|---|
| CD-ROM drive<br>speed              | Modem speed<br>(kbps)            |   |
| 6X                                 | -                                |   |
| 4X                                 | er Mile simmer                   |   |
| and afterward therefore            | Kan-                             | i |
|                                    | 14.4                             |   |
| -                                  | 28.8                             |   |
| 6X                                 | in modelessimente (              |   |
| 6X                                 | 28.8                             |   |
| 4X                                 | -                                | ļ |
| And Mr. Land                       | _                                |   |
| 6X                                 | 28.8                             |   |
|                                    |                                  | ì |
| -                                  |                                  |   |
| or on the think the think the tree | Military Military Alle Committee |   |
|                                    |                                  |   |
| -                                  | 14.4                             |   |
| - Atrica                           | A Part State and State of        |   |
| 6X                                 | onthe said of Fundament File Co. |   |
| - To                               | 28.8                             |   |
|                                    | water that a most redebuted 24.2 |   |
|                                    | -                                |   |
| James Jerris successive abunda     | ernous-pr                        |   |

| Maximum<br>RAM<br>(MB) | Modular<br>expansion<br>bays  | Bay for<br>second<br>battery   | Optional<br>docking<br>station                            | Infrared<br>port      |
|------------------------|---|--|---|-----------------------|
| 40                     | 1   | O State of the sta | •   | •                     |
| 40                     | 0   | O States   | 0   | •                     |
| 40                     | 0   | 0  | - Charles   |                       |
| 32                     | O   | a level de la mais entre de la decensió de la decen | ina i i ezekte i  | s to see the native . |
| 80                     |   |  | The same table in   | As Williamshifts and  |
| 40                     |   | outer take   | in the sales  | en Hakiri             |
| ANTANA.                | - 10 Table |  |   | T. Wash               |
| 48                     | ide distribution in the   | and properties.  | mhillen va X is.  | athur interceptation  |
| 48                     | 1<br>Marky Market   | with the original of the origi | and strategic man   |                       |
| 40                     | 0   | distribution to  | 0 3   | Legar Lander          |
| 144                    | 1   | 0  | •   | •                     |
|                        |   |  |   |                       |
| 40                     | 0   | O  |   | 0                     |
| 24                     | 0   | 0  | 0   | •                     |
| 24                     | 0   | 0  | O   |                       |
| 32                     | 0   | Albani 1888 SAN  | •   | Adeirites/s.          |
| 40                     | . 0   | O  | O   | O                     |
| 40                     | era veder everil Veraneda eller a   | O  | Andrew State On   | er in Marke.          |
| 32                     | 0   | 0  |   | 0                     |
| 40                     | O   | 0  | O   | 0                     |
| 40                     | 0   | 0  |   | 0                     |
| 40                     | , e i Tri shibbata sant.<br>1   | iants issomodelistus   | . Des l'Artiste de les les les les les les les les les le | 0                     |

|   |                                  | USTQ                                     | ME'R  | UPPORT  |
|---|----------------------------------|--|---|---|
|   | Warranty for parts/labor (years) | Weekday toll-<br>free support<br>(hours) | Weekend<br>support  | Online support  |
|   | 3/1                              | 24                                       | Sat, Sun.   | AOL, BBS, CIS, WWW  |
|   | 1/1                              | 24                                       | Sat., Sun.  | AOL, BBS, CIS, Prodigy, WWW   |
|   | 3/1                              | 24                                       | Sat., Sun.  | AOL, BBS, CIS, WWW  |
|   | 1/1                              | 13                                       | Sat.  | BBS   |
|   | 3/3                              | 24                                       | Sat., Sun.  | AOL, BBS, CIS, Prodigy, WWW   |
|   | 3/3                              | 24                                       | - Sat., Sun.  | BBS, CIS, MSN, WWW  |
|   | 3/3                              | 24                                       | Sat., Sun.  | AOL, BBS, CIS, MSN, WWW   |
| N | 3/3                              | 24                                       | Sat., Sun.  | AOL, BBS, CIS, Prodigy, WWW   |
|   | 3/3                              | 24                                       | Sat., Sun.  |   |
|   | 3/3                              | 24                                       |   | DOC CIC MCM WILLIAM   |
| 3 |                                  |  | Sat., Sun.  | BBS, CIS, MSN, WWW  |
|   |                                  |  | Sat., Suit.   | BBS, CIS, MSN, WWW  |
|   | 1/1                              | 24                                       | Sat., Sun.  | BBS, CIS, MSN, WWW  |
|   |                                  |  | Sat., Sun.  | BBS, CIS, MSN, WWW  AOL, BBS, CIS, Prodigy, WWW   |
|   | 1/1                              | 24<br>in problembra, Notice in Samuel    | Sat., Sun.<br>Sat., Sun.<br>Sat., Sun.                      | AOL, BBS, CIS, Prodigy, WWW   |
|   | 1/1                              | 24<br>oo baadaan da isaa                 | Sat., Sun.<br>Sat., Sun.                                    | AOL, BBS, CIS, Prodigy, WWW  AOL, BBS, CIS, Prodigy, WWW  BBS   |
|   | 1/1 1/1                          | 24<br>24                                 | Sat., Sun.<br>Sat., Sun.<br>Sat., Sun.                      | BBS, CIS, MSN, WWW  AOL, BBS, CIS, Prodigy, WWW  AOL, BBS, CIS, Prodigy, WWW  |
|   | 1/1<br>1/1<br>1/1<br>1/1         | 24<br>24<br>24                           | Sat., Sun. Sat., Sun. Sat., Sun.                            | BBS, CIS, MSN, WWW  AOL, BBS, CIS, Prodigy, WWW  BBS  |
|   | 1/1<br>1/1<br>1/1<br>1/1<br>3/3  | 24<br>24<br>24<br>13                     | Sat., Sun. Sat., Sun. Sat. Sat., Sun. Sat., Sun. Sat., Sun. | BBS, CIS, MSN, WWW  AOL, BBS, CIS, Prodigy, WWW  BBS  AOL, BBS, CIS, Prodigy, WWW  BBS, CIS, MSN, WWW                                   |
|   | 1/1<br>1/1<br>1/1<br>3/3<br>3/3  | 24<br>24<br>13<br>24<br>24               | Sat., Sun. Sat., Sun. Sat. Sat., Sun. Sat., Sun. Sat., Sun. | BBS, CIS, MSN, WWW  AOL, BBS, CIS, Prodigy, WWW  BBS  AOL, BBS, CIS, Prodigy, WWW  BBS, CIS, MSN, WWW  BBS  AOL, BBS, CIS, Prodigy, WWW |
|   | 1/1 1/1 1/1 3/3 3/3 1/1          | 24<br>24<br>13<br>24<br>24<br>24         | Sat., Sun. Sat., Sun. Sat. Sat., Sun. Sat., Sun. Sat., Sun. | BBS, CIS, MSN, WWW  AOL, BBS, CIS, Prodigy, WWW  BBS  AOL, BBS, CIS, Prodigy, WWW  BBS, CIS, MSN, WWW                                   |

#### **New This Month**

The following PCs made our Power Notebooks chart for the first time this month. For previously tested PCs on the chart, visit our Web page at http://www.pcworld.com/t20pcs.

#### NO. 7: NEC VERSA 6030H

PRO: Fast, well built, multimedia hardware CON: Very expensive, fair service rating The NEC Versa 6030H is fast and loaded, but you'd better have deep pockets, because at \$5799, it's one of the most expensive portables on our Power chart. Fortunately, it's also the third-fastest notebook we've tested, making it almost as fast as the average Pentium-133 desktop.

Aside from the high price, a couple of other factors keep the Versa 6030H from placing higher on the chart: The 3hour battery life, while above average, is still the second shortest among our top power notebooks, and readers rate

NEC's service and support as only fair.

The Versa 6030H is well constructed, with sleek lines and a roomy, comfortable keyboard. But the doors that protect the system's ports are flimsy, a trait we've noticed in most Versa notebooks.

The company bundles a few useful software utilities, including FaxWorks, LapLink remote control software, McAfee



**NEC Versa** 

VirusScan, and Netscape Navigator. The Versa 6030H also has the video hardware it needs to play full-screen, full-motion video clips. NEC even throws in a software MPEG player so you can enjoy full-

AOL, BBS, CIS, WWW

motion MPEG CD-ROM titles.

#### NO. 8: COMPAQ ARMADA 4120T

PRO: Highly configurable, lightweight docking station, holds three batteries at once

CON: Heavy when fully configured

Compag's new Armada 4120T is a Transformer toy for adults. You'll get a kick out of adding, detaching, and moving

# to guide your project down a clear path

Microsoft Project for Windows 95.

Now you can manage projects more simply, more smoothly, by communicating project information as it occurs. With Microsoft® Project you can convey project status quickly and effectively so your boss, customers, and coworkers are always in the loop. From sharing task deadlines and responsibilities, to letting people know about changes and the impact they'll have on the deadline, you have the tools to organize your projects into manageable steps and keep them moving in the right direction. Microsoft Project unlocks the doors of communication and gives you the power to navigate the most efficient route to a successful end product.



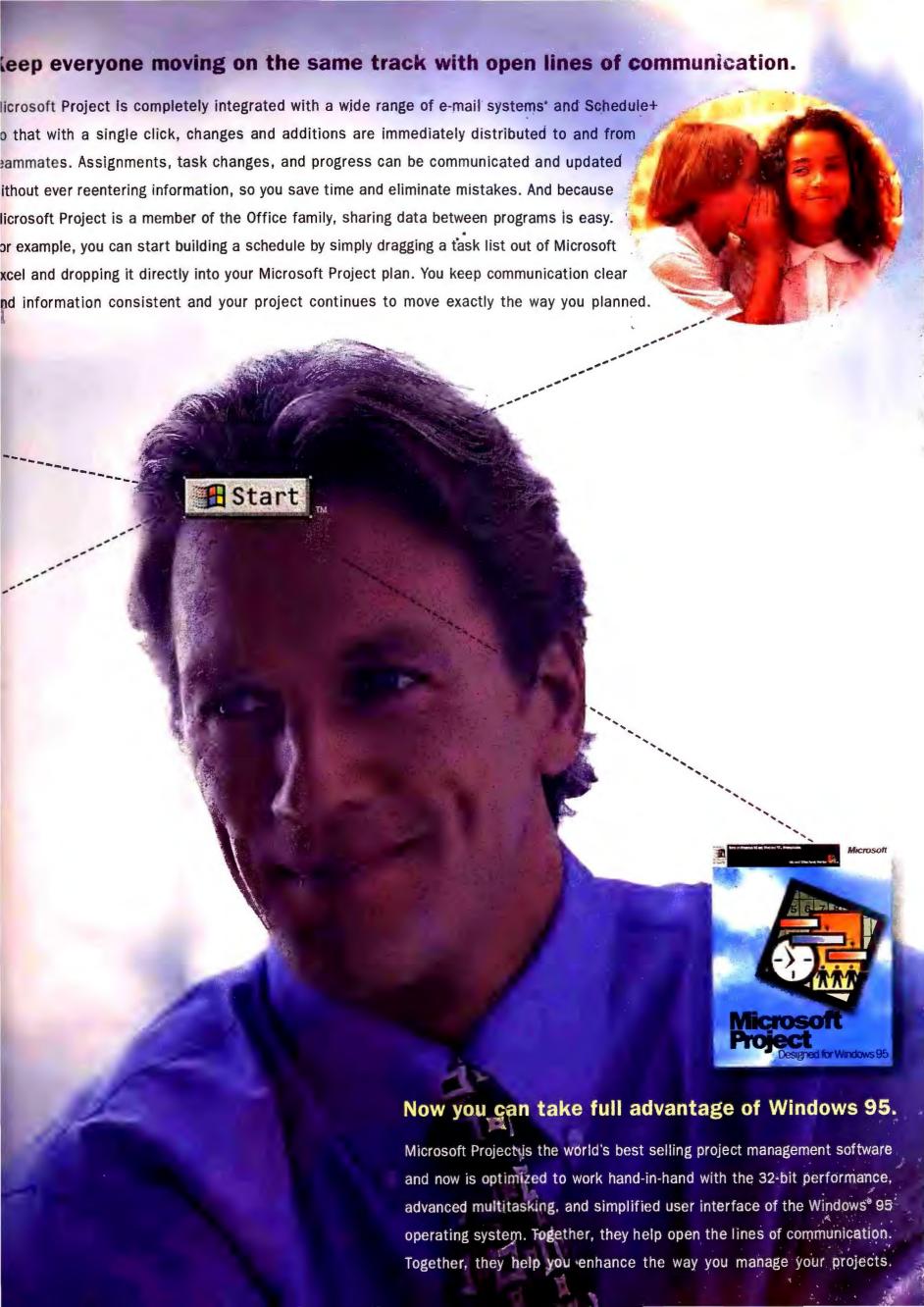
With Microsoft Project you can display project data in ways that everyone can understand. Great-looking Gantt Charts integrate text, timelines and graphical bars so everyone can see start and finish dates, inter-

dependencies and task assignments. Throughout your project, you can also use a

Monthly Calendar report to share your plan in a format that's clear and easy to read. And since Microsoft Project shares many of the same key commands with other Office applications, it will be easy to create schedules and reports. But if at any time you need help, type in a question and the Answer Wizard gives you the information you need. Microsoft Project helps you illustrate every phase of your project so you and your team keep your goals in sight.







around all its parts to build whatever kind of notebook you want. In its most basic configuration, this 120-MHz version in Compaq's new line of "flexible" portables is a 1.5inch-deep, 5-pound wafer



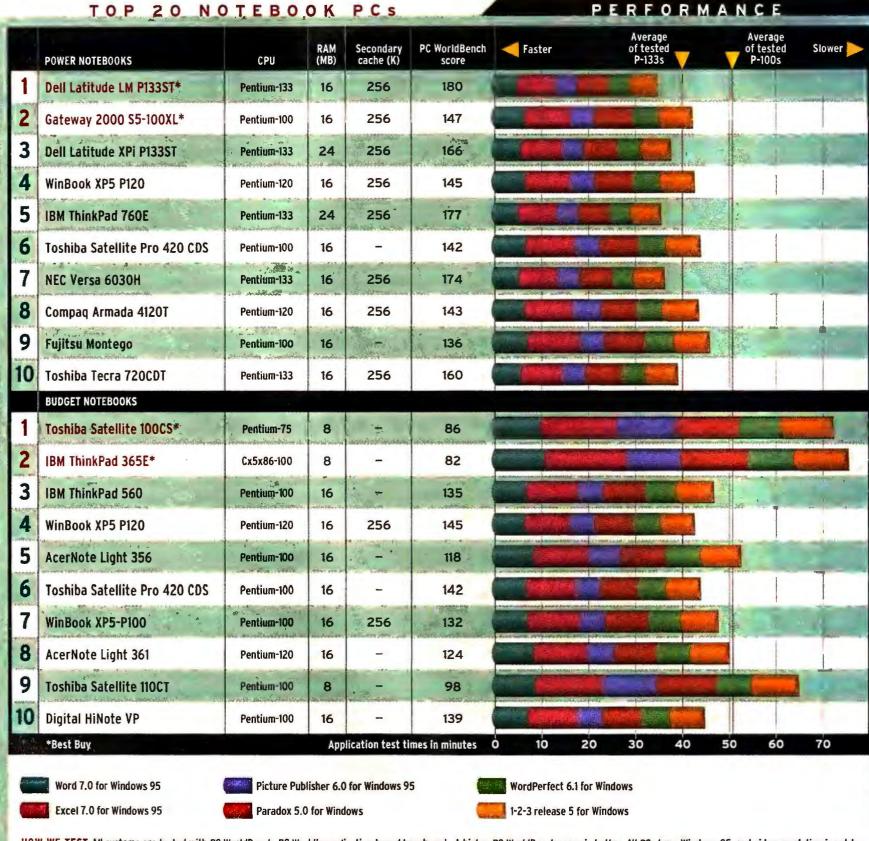
Compaq Armada

that can run 4.5 hours on a single battery. Add a seemingly endless combination of batteries, drives, and attachments, and

you can work your way up to a 10.8-pound multimedia notebook that runs for 10 hours, according to Compaq. As a performer, the 4120T's speed is barely above average, and at \$4298, it has a typical

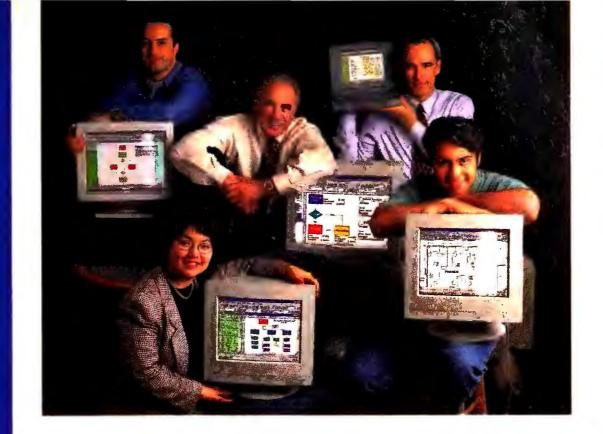
high-end notebook price. But it's a handsome little charcoal-colored number with lots of possibilities.

We reviewed a fully configured Armada, including the base notebook, handle, and what Compaq calls the Mobile CD Expansion Unit, a lightweight snap-on base that adds a CD-ROM drive. The most unusual part of the Armada is the adjustable grooved handle. This James Bondinspired accessory can serve not only as a grip, port cover, and ergonomic keyboard tilt, but also as a compartment for a



HOW WE TEST All systems are tested with PC WorldBench, PC World's application-based benchmark. A higher PC WorldBench score is better. All PCs have Windows 95, and video resolution is set to 800 by 600 in 256 colors. We run automated scripts on six popular business applications, performing common tasks such as spelling checks, scrolls, saves, sorts, and recalculations. The PC WorldBench score is a sum of the weighted result of each script: Word (25 percent), Excel (20 percent), Picture Publisher (15 percent), Paradox (15 percent), WordPerfect (15 percent), and 1-2-3 (10 percent). For more details on our benchmark and how we run it, see PC World Online (http://www.pcworld.com).





## It's a simple change

it only affects how you

# think, plan and work

Chrysler Corporation is
saving time by using Visio
to track parts
throughout the
US, Europe,
Mexico and
Singapore. Other
companies use it to
save money or increase
productivity. Companies
such as Amoco, HewlettPackard and National
Semiconductor.

Change is inevitable. But embrace it and your whole company can be more efficient, rise to new levels Visio® allows you to make such a change. By using SmartShapes® technology you can create business diagrams that are both intuitive and intelligent. You'll be able to see information more clearly, think about it differently and understand it more completely. Try Visio and see for yourself.

Call 800-24-VISIO, ext. F31 or visit the Visio Solutions Library™ at

www.visio.com. For a corporate evaluation kit, call 800-VISIO-07.

Visualize your business™





# what are YUU looking AT?

Well, if it's the sharpest, cleanest, most vivid image you've seen on a display monitor in years, then it's probably a Panasonic® PanaSync™ Monitor. And if it's not a PanaSync you're looking at, keep reading. You're in for an eye opening experience.

Let's start with the most extensive warranty and customer support program in the industry. You simply won't find anything like it.

Panasonic provides a three year warranty on parts, labor and the CRT. We offer an On-Site Exchange program during the first year of ownership for no additional charge. And we provide a 24 hour, 7 day-a-week Customer Support Hotline.

This is what PC Magazine said when they took a look at our program. "A three year warranty on both parts and labor, with on-site replacement the first year, the best warranty we've come across."\*\*

But that's not the only place we make the competition look bad. Let's take a look at viewable image size. Our S17 provides a full 16" of viewable image size and also features a sharper dot pitch than Samsung, NEC and Nokia. And with our high refresh rates, the result is one of the sharpest images available.

That's why PC World named the S17 its Best Buy for 17" monitors.\*\*\* And if it's multimedia you're looking for, check out our PanaMedia™ Series. They feature all the advantages of the S17 with built in stereo speakers and microphone.

| Model         | Dot Pitch<br>(mm) | Max. Res.<br>(H x V) | H-Scan<br>(kHz/NI) | Viewable<br>Area | Warranty<br>(Years) | ARP'  |
|---------------|-------------------|----------------------|--------------------|------------------|---------------------|-------|
| PenaSync S17  | 10.27             | 102807/024           | 30-69              | 316.0°           | 3/1 Swup            | 5650  |
| NECXV17+      | 0.28              | 1280x1024            | 31-82              | 15.6"            | 3                   | \$799 |
| Samsung 17GLi | 0.28              | 1280x1024            | 30-65              | 15.75"           | 3                   | \$645 |
| Nakia 447L    | 0.28              | 1024x768             | 31-64              | 15.63"           | ,3                  | \$674 |

The S17 is just one of Panasonic's complete line of 15" through 21" monitors that are far better than the competition.

Whether part of a Home System or CAD/CAM workstation, our Entry, Standard, Professional and PanaMedia series provide the feature set you're looking for.

When you look at the whole picture, we're sure you'll agree, Panasonic has the monitors you should be looking at.



To find out more about the complete line of Panasonic PanaSync Display Monitors, visit our Web-site at www.panasonic.com or call us at 1-800-742-8086, Ext. MN13.





















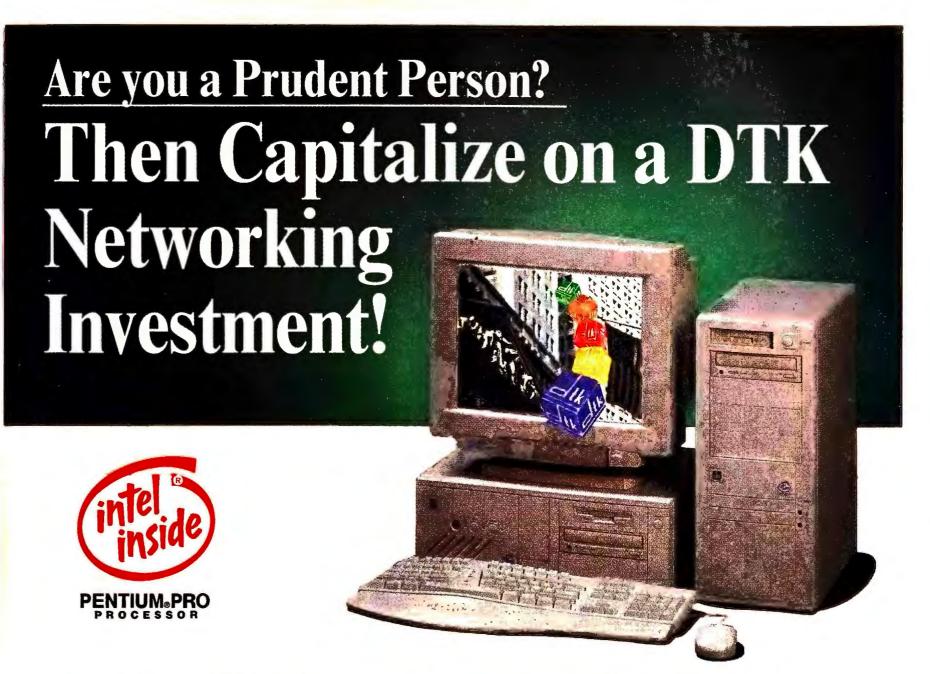


SERIES

STANDARD SERIES

PROFESSIONAL SERIES

MULTIMEDIA SERIES



Invest in DTK Networking Solutions for your peace of mind! Dependability and performance are your DTK dividends!

DTK has been developing and manufacturing quality PC products since 1981...virtually the entire history of the personal

#### APRI-31

- Intel 200MHz or 180MHz Pentium Pro processor w/256KB internal cache
- Up to 384MB EDO RAM on board
- 3COM Network Card
- AMI Flash BIOS
- 8X CD-ROM drive
- PCI 64-bit Graphics Accelerator w/2MB
- 2.5Gigabyte EIDE Hard Drive
- 3.5-inch Floppy Disk Drive
- · MS Mouse and MS Keyboard
- MS Windows NT Workstation 4.0
- 2-Yr. Ltd. Wrnty. w/On Site Option

computer industry! DTK originated the Bare Bone System® method of computer assembly that revolutionized assembly!

But we haven't sat on our laurels; we've stayed near the cutting edge, with an eye on our price/ performance ratio. It doesn't take a Wall Street analyst to recognize that

compatible; they're reliable, affordable, very low-maintenance, and network-ready. PC World magazine gave DTK four stars for service and reliability and cited a "miniscule system DOA rate, and few unresolved problems."

DTK's APRI-31 desktop workstations with the Pentium® Pro processor ship with Windows NT™ Workstation 4.0 installed. Our technical support is free and our technicians receive ongoing training from Microsoft and Microsoft Solution Providers. (Many are already MCSE qualified.)

If all PCs were the same your only concern would be price. Since they're not, the prudent person looks at the TCO (Total Cost of Ownership). DTK's negligible downtime, rugged dependability (DTK computers helped find the Titanic!), outstanding manageability, and network-savvy technical support work to help keep your total costs well in line.

Right now, while you're thinking about it, logon to our Website at www.dtkcomputer.com, or call 800-289-2385 (BUY-A-DTK), for more information. DTK will help you get your desktop workstation concerns under control.

DTK is a wise choice.

DTK's APRI-31 desktop workstations with the Pentium® Pro processor fit right in, right now! They're NT™ and Netware



### DTK Computer Inc.

Atlanta (770)246-0100 Chicago

Houston

Los Angeles

Miami

**New York** 

(818) 810-0098 (305) 597-8888 (908) 562-8800 (847) 593-3080 (713) 568-6688

second battery. The Armada's expansion unit is the second-most innovative aspect about it. If you want to equip yourself with hardware for a multimedia presentation, or take your notebook out for the day and not worry about plugging it in, just snap this final piece of the puzzle into place. It adds another pair of speakers and can simultaneously hold a third battery and a 4X CD-ROM drive, so you don't have to settle for one or the other.

All notebooks in Compaq's Armada 4100 line come with a nice range of business and leisure software, including ESS Audio Rack, JustConnect, LapLink, Netscape Navigator, and a few games.

#### NO. 9: FUJITSU MONTEGO

PRO: Fairly fast, stylish, light, compact

CON: Not enough data to gauge reliability and service, no CD-ROM drive option

There are few compromises with this system: The \$3199 Fujitsu Montego is fairly



**Fujits**u

fast, light, and compact, and it has a long-lasting battery. It packs a performance wallop for a Pentium-100, and it comes with a couple of nice applications,

Quicken and Lotus SmartSuite. In a nutshell, this is a good notebook for computing on the road. Our main reservation is that Fujitsu has had no time to establish a track record on reliability and service.

Fujitsu cut few design corners in creating its first notebook. The floppy drive is built-in, which is unusual for a notebook this small. The case is stylish and rugged, and the keyboard is comfortable to use. The downsides: The screen looks good, but at 10.4 inches it's on the small side. And at this price, no modem comes bundled or built-in. Another thing missing is an internal CD-ROM drive option. CD-

ROM users will have to look at other notebooks.

Fujitsu supplies well-written and comprehensive documentation with the Montego, as well as a three-year warranty and round-the-clock technical support.

BUDGET NOTEBOOKS

#### This Month's Best Buys

#### NO. 1: TOSHIBA SATELLITE 100CS

PRO: Good value, nice screen and keyboard, vendor is noted for system reliability

CON: No bundled application software



The \$1599 Toshiba Satellite 100CS is a perfect first notebook-reliable, very inexpensive,

and easy to use. This basic Pentium-75 portable doesn't have any of the extras you'll find on more expensive notebooks, such as a super-VGA screen, built-in sound, or even an infrared port, but it's well constructed and comes from

one of the most reputable notebook vendors in the business.

The 100CS has a bright 10.4-inch dualscan display. The keyboard is comfortable and responsive. It's not a particularly impressive performer, but it's fast for a notebook in this price range.

Toshiba doesn't bundle any application software with the 100CS, but you'll find several helpful utilities to get you acquainted with your machine. The printed manuals are well illustrated. An on-screen program monitors battery life, which topped out at around 3.5 hours.

#### NO. 2: IBM THINKPAD 365E

PRO: Exceptional keyboard, above-average battery life, bundled Lotus SmartSuite 96 CON: No wrist rest, no sound, small hard drive



One of the best things to come out of IBM's acquisition of Lotus is that you can get a good set of

programs like Lotus's SmartSuite 96 in a low-cost entry-level notebook like the \$1799 ThinkPad 365E. The notebook itself isn't bad either, although it's not quite as fast as the number one Toshiba

Satellite 100CS.

It's hard to do better than the ThinkPad's keyboard it's roomy and well designed, with full-size <Shift> and <Enter> keys and a set of dedicated function keys. The bouncy action gives it a nice,

responsive feel. Best of all, the keyboard lifts out of the way easily so you can upgrade the memory or replace the battery. At a traveling weight of 7 pounds, the ThinkPad 365E is light, and its 4.3-hour battery life is especially good for a low-end portable. The 10.4-inch dual-scan screen looks bright and clear.

Like the top-ranked Toshiba Satellite 100CS, the ThinkPad 365E has a small 540MB hard drive, which helps keep the

> price of the notebook down. It also lacks built-in audio.

> The ThinkPad 365E comes with an easy-to-follow manual. IBM backs this notebook with a standard warranty of only one year, but technical support is toll-free and avail-

able around the clock.



Toshiba Satellite

#### **New This Month**

The following PCs made our Budget Notebooks chart for the first time this month. For previously tested PCs on the chart, visit our Web page at http://www.pcworld.com/t20pcs.

#### NO. 3: IBM THINKPAD 560

PRO: Very light, small, fast; good dual-scan screen

CON: LCD panel could be stronger

The \$2699 IBM ThinkPad 560 almost has it all: good battery life, sharp screen, comfortable keyboard, nice documenta-

tion, great sound, and petite dimensions. It's fast for a budget portable, and it even has features typically found only in higher-end power notebooks-a lithi-



IBM ThinkPad 560

um ion battery, for example. The display is so good you'll have a hard time telling the difference between this and an activematrix screen.

Our gripes: The extremely thin screen flexes too much. And like most supersmall notebooks (it's only 1.3 inches thick), the 560 does not have a built-in floppy drive. Readers give IBM good marks for system reliability as well as service and support.



IBM ThinkPad 365E

# Only one database makes life easier without trashing it first.

FILEMAKER PRO 3.0. THE ONLY RELATIONAL DATABASE DESIGNED FOR BUSY BUSINESS PEOPLE, NOT GEARHEADS.



Business is booming and you could use a database. But the thought of putting your business on hold while you figure one out doesn't exactly thrill you. That's why there's FileMaker® Pro 3.0 for Windows. Whichever

version of Windows you're running — Windows 95, NT or Windows 3.1 — you can get the job done easier with FileMaker Pro. Just open up the box and start running your business like a well-oiled machine.

FileMaker Pro 3.0 has the features you need. It's got a complete set of database templates to get you started, powerful mail merge capabilities, new word

processing improvements, and automatic

phone dialing. Its ScriptMaker® feature lets you automate routine task and menu commands, helping you be even more efficient.

And its built-in networking support allows many users to share a database simultaneously, even over the Internet.

If you want a database that helps sort out your business

without putting you out of sorts, your decision is clear: FileMaker Pro 3.0 for Windows.

For more information,
visit your nearest reseller, call
Claris at 1-800-293-0617
ext. 1156, or visit us on the
Web at www.claris.com

### FILEMAKER PRO WOWS CRITICS, WINS HEARTS.

"Claris truly supports our ability to be cross-platform and gives us flexibility to choose which Windows environment works best for us."

—Andrew Dyer,
Time Magazine's Technology Manager

"Claris FileMaker Pro 3.0 is one of the few end-user databases that actually lives up to its claims of simplicity."

— PC Computing, 4/96





CLARIS®

Simply powerful software

please call 1-804

to server in the server in the

ries. The Mac OS logo is the Windows logo are https://www.com.org.





See Us At Comdex Las Vegas Convention Center Booth #L572

#### **NO. 7: WINBOOK XP5-P100**

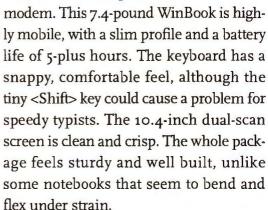
PRO: Nice screen, 28.8-kbps modem

CON: No sound card, small hard drive, questionable reliability

PC WORLD

TEST CENTER

The \$2399 WinBook XP5-P100 is a good value, thanks to a couple of perks you won't usually find in a notebook in this price range: 16MB of RAM, which helps make it fast, and a 28.8-kbps PC Card



In a couple of areas we noticed some corners had been cut. The 543MB hard drive is skimpy by today's standards, and while the WinBook comes with stereo speakers mounted on the display panel, you'll have to pay extra if you want a 16-bit sound controller.

The system comes with a helpful manual, but the standard warranty is for just one year. Our experience with WinBook's tech support staff has been good, but readers responding to our fax-back survey have been far less than enthusiastic about WinBook's service or reliability.

#### NO. 8: ACERNOTE LIGHT 361

PRO: Great price for a P-120, light, good keyboard CON: Sluggish for its CPU class, poor screen

At \$2199, the AcerNote Light 361 notebook is a hot ticket. It's light and has long battery life. Its PC WorldBench score of 124 is low for a Pentium-120 portable with 16MB of RAM, but good for a notebook priced this cheaply. Overall, this notebook is a pretty good budget value.



AcerNote

The portability of the AcerNote Light is a plus: With a battery life of 4.3 hours and a traveling weight of 6.8 pounds, this system is perfect for long trips. The ergo-

nomics are good: The system's keyboard has great full-travel keys, and the <Shift> and <Enter> keys are large, so you're less likely to mistype. The built-in 16-bit audio

> is a nice touch for a budget notebook, and the sound is quite good.

> You do have to be willing to put up with some compromises. We didn't like the case design; it felt overly flexible.

And the 10.4-inch dual-scan screen is dull and supports only 640 by 480 resolution. Furthermore, the touchpad pointing device is small and difficult to manipulate, and there's no CD-ROM drive option.

The AcerNote's three-year warranty is a pleasant surprise. Many low-end notebooks have only a one-year warranty. Acer also includes next-business-day replacement for one year, and toll-free tech support around the clock. And the AcerNote Light comes with some useful applications, including Sidekick 95 and Quicken SE 96. We lack sufficient feedback to rate Acer's system reliability and service.

#### NO. 9: TOSHIBA SATELLITE 110CT

PRO: Sturdy, good screen, built-in AC adapter CON: No sound, slow for its CPU class, no bundled applications

The Toshiba Satellite 110CT is a stylish, well-designed entry-level Pentium for buyers who want an active-matrix display. But the 110CT needs more RAM to perform as fast as most Pentium-100s. With 8MB of RAM and no secondary cache, our test notebook earned a PC WorldBench score of just 98. The average score for P-100 notebooks we've tested with twice as much RAM is 131, about 35 percent faster. That suggests that the extra \$299 you'll pay for an 8MB upgrade module will be money well spent.

Overall, the \$2499 Satellite 110CT is a good value, especially if you want a topnotch display. Its 11.3-inch active-matrix screen is bright and crisp, and can be viewed from a wider range of angles than a dual-scan. It also supports 800 by 600 resolution and 65,536 colors. If you don't need an active-matrix screen, you can save \$500 by buying the dual-scan, 256-color version of the notebook.

Like all Satellites we've tested, the 110CT is sturdy, with a strong latch and well-protected PC Card slots. The keyboard has a nice, responsive feel, and the eraserhead pointing device is easy to use. One of the best features of the Satellite line continues to be its built-in AC adapter, which means all you carry with you on the road is a power cord.

Toshiba cut costs on the 110CT by not supplying any multimedia equipment; there is no 16-bit sound nor an internal CD-ROM drive option. Also, Toshiba does not include any application software. The notebook uses a NiMH battery but still runs for a good 3.5 hours thanks to its competent power management.

In addition to bundling a thorough user

manual, Toshiba puts a lot of help files on the 110CT's hard drive, including information about the system's oneyear warranty and round-the-clock tech



Toshiba Satellite

support. Like many notebook vendors, Toshiba loads Windows 95 for you but doesn't give you the disks. You'll need to create a master set yourself in case anything goes wrong or you need a new driver. A special utility guides you through the procedure, which requires more than 30 floppy disks.

Toshiba still receives good marks for system reliability from readers responding to our ongoing fax-back survey. But in our latest poll, service satisfaction dropped to just fair.

#### Beyond the Top 20

We tested these systems along with the others, but they didn't score high enough to reach the Top 20 Notebook PCs chart. For write-ups, see PC World Online (http://www.pcworld.com/t20pcsnaps).

- ◆ Acma 7210 P/133
- ◆ AMS Power CD P100
- ◆ AMS TravelPro P133
- ◆ Broadax NP8663A
- ◆ ChemBook 5400A-P/75
- ◆ ChemBook 5580 P-166
- ♦ Hertz Z-OptiMedia
- ♦ Olivetti Echos P100C
- ◆ Sager NP8600

If all business users were the same, we'd only have to build one computer. But you're not. Some need ultra-high performance. Some want space-saving systems. And everybody wants to get the most value for their money. Fortunately, there's one product line that covers all the bases. The awardwinning ALR product line.

From slimline Pentium® processor based desktops, to the record-breaking, graphics crunching, dual Pentium Pro chip ready ALR Evolution Dual6, we've got the systems you need to take on today's advanced 32-bit applications and operating systems. Systems that deliver cutting edge performance without putting a big cut in your budget.

And just to make certain that these systems continue being great



performers, we back them with one of the industry's longest warranties – 5 years/36 months.

ALR has the power you need at the price you've been waiting for. So don't wait any longer, call:

1-800-444-4ALR





# Price & Performance Incorporated









#### a. ALR OPTIMA SL Model 5100 With Hard Drive Bundle

- Intel 100-MHz Pentium Processor
- 8-MB RAM (exp. to 128-MB)
- 256-KB "Pipeline Burst" 2nd level cache
- Intel 430HX PCI chipset
- 850-MB IDE hard drive
- 1-MB PCI local bus SVGA video
- three expansion slots (one 32-bit PCI slots, one ISA slots, one shared PCI/ISA slots)
- two 31/2" and one 51/4" drive bays
- one 31/2" 1.44-MB floppy drive
- 125 Watt power supply
- Choice of Microsoft Operating Environments\*
- 104-key Windows 95 compatible Keyboard and ALR 2-button mouse
- 5/36 Warranty with one year on-site service\*\*

\$1049 MSRP

#### b. ALR OPTIMA DT Model 5133 With ALR OPTIMIZER 850 Bundle Pack

- Intel 133-MHz Pentium Processor
- 8-MB RAM (exp. to 128-MB)
- 256-KB "Pipeline Burst" 2nd level cache
- Intel 430HX PCI chipset
- 850-MB IDE hard drive
- 2-MB PCI local bus SVGA video
- four expansion slots (two 32-bit PCI slots, one ISA slots, one shared PCI/ISA slots)
- four 31/2" and three 51/4" drive bays
- 8x IDE CD-ROM drive
- one 31/2" 1.44-MB floppy drive
- 200 Watt power supply
- Choice of Microsoft Operating Environments\*
- 104-key Windows 95 compatible Keyboard and ALR 2-button mouse
- 5/36 Warranty with one year on-site service\*\*

\$1459 MSRP

#### c. ALR OPTIMA MT Model 5200 With ALR OPTIMIZER 1600 Bundle Pack

- Intel 200-MHz Pentium Processor
- 16-MB RAM (exp. to 128-MB)
- 256-KB "Pipeline Burst" 2nd level cache
- Intel 430HX PCI chipset
- 1.6-GB EIDE hard drive
- 2-MB PCI local bus SVGA video
- five expansion slots (two 32-bit PCI slots, two ISA slots, one shared PCVISA slots)
- three 31/2" and three 51/4" drive bays
- 8x IDE CD-ROM drive
- one 31/2" 1.44-MB floppy drive
- 200 Watt power supply
- Choice of Microsoft Operating Environments\*
- 104-key Windows 95 compatible Keyboard and ALR 2-button mouse
- 5/36 Warranty with one year on-site service\*\*

**S2069** MSRP

#### d. ALR EVOLUTION DUAL6 With Base Bundle

pentium

Intel 200-MHz Pentium Pro Processor

PENTIUM.PRO

- · Dual Pentium Pro processor ready
- 16-MB ECC RAM (exp. to 1-GB)
- integrated 256-KB 2nd level cache
- 1.6-GB EIDE hard drive
- · 2-MB PCI local bus SVGA video
- ALR InforManager advanced hardware management system
- seven expansion slots (three 32-bit PCI slots, three ISA slots, one shared PCI/ISA slots)
- three 3½" and three 5¼" drive bays
- one 31/2" 1.44-MB floppy drive
- 315 Watt power supply
- 104-key Windows 95 compatible Keyboard and ALR 2-button mouse
- 5/36 Warranty with one year on-site service\*\* **\$2495** msrp

Circle 13 on reader service card

Monitors sold separately \* Includes choice of MS Windows for Workgro

# mobilized computing in 24-hours without compromise

Modern. Mobile. Multimedia ready. Hitachi M Series notebooks are the perfect choice for professionals who need full-featured, powerful computing to go.

#### **EVERYTHING YOU NEED. BUILT IN.**

CD-ROM drive and stereo speakers. 28.8 modem for fast, reliable communications. PCI 10 Base-T LAN port for convenient LAN connectivity. All built-in, pre-configured and ready to go the first time you power up.

#### MORE THAN MEETS THE EYE.

Powerful Pentium® processing. Over \$600. of additional bundled software for communications, productivity, messaging, internet access and diagnostics. Built-in serial, parallel, XGA, external keyboard and mouse, and wireless infrared port. And maybe best of all, an internal A/C adapter.

Industry Leading 5-Year Warranty

24-Hour, 7 Days/Week Technical Support



#### **KEY FEATURES**

Remote

- 8/16 MB EDO DRAM, UPGRADABLE TO 40/48 MB
- 1 MB PCI GRAPHICS ACCELERATOR
- BUILT-IN 28.8 KBPS DATA/14.4 FAX MODEM
- BUILT-IN 4X CD-ROM (6X ON M133T)
- BUILT-IN AC ADAPTER
- BUILT-IN 10 BASE-T LAN PORT
- 3.5" FLOPPY DRIVE AND CABLE
- INFRARED WIRELESS COMMUNICATIONS PORT
- FULL-SIZE KEYBOARD WITH TRACK POINTER
- SOUNDBLASTER™ PRO COMPATIBLE SOUND

#### **E SERIES**

Call for details on this new lightweight notebook with free 8 MB RAM upgrade.

Starting at:

\$1,999.

#### M120T

1.0 GB HDD 16 MB RAM 4X CD-ROM 28.8 Fax Modem 10Base-T PCI Adapter 11.8" TFT 800x600

\$4,249.

#### M133T

1.0 GB HDD 16MB RAM 6X CD-ROM 28.8 Fax Modem 10Base-T PCI Adapter 11.8" TFT 800x600

\$4,749.



Call 1-888-88-RAPID

**AUSTIN MICRO-SOLUTIONS, INC.** 

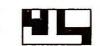
Circle 22 on reader service card

Control

- The Internet should be easier to access.
- The Internet should be easier to navigate.
- ☐ The Internet should be easier.

Now it is Prodigy Internet gives you direct Internet access with the Microsoft Internet Explorer 3.0 web browser along with grest online features like e-mail, that rooms, music and enternationent. And it's yours to try for 20 free hours. What could be easier than that?





# Win an NMC PCW P100

FAX

Have you ever contacted your PC maker for service and support? Or has your PC been troublefree? 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 an NMC PCW P100, a Pentium-100 PC in this month's Top 20. Send in a separate copy of the survey for each of your PCs.

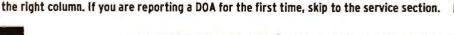
HOW TO ENTER: FOR BEST RESULTS, PHOTOCOPY THIS PAGE. Fax your completed survey to 415/357-4522. Do NOT fax a cover page. Or mail it to PC World. Box 11-SS, c/o 800-SCAN, 543 ill а and

| PRIZE: One entry<br>be awarded throw<br>winners by teleph<br>new winner will t<br>HOW TO FILL OU | y per person. IDG<br>ugh a random dra<br>hone and fax. If <i>F</i><br>be selected. No p<br>I <b>T THE FORM:</b> Pr<br>each digit of yo | ewing. PC World will<br>PC World is unable t<br>urchase necessary.<br>int your name (bloc | ir families are r<br>I make reasona<br>o do so within :<br>Void where pro<br>k capital letter | not eligible. One prize wi<br>ble efforts to contact<br>30 days of the drawing, a |
|--|--|---|---|---|
| How did you ge  8y subscription  | t this copy of PC<br>on On the n   |   | m someone else  |   |
| <b>ABOUT YO</b>  | UR PC  |   |   |   |
| Who is the manu  | facturer of the  | PC you use most fro   | equently?   |   |
| ○ Acer   | Computrend   | O Hewlett-Packard   |   | ○ Tangent   |
| Acma   | O Comtrade   | ○ HiO   | ○ Netis   | Texas Instruments   |
| O ALR  | O CTX  | ○ Hyundai   | O Packard 8ell  |   |
| O Apple  | O Dell   | O IBM   | O Panasonic   | ○ Twinhead  |
| O AST  | O Diamond  | O Insight   | ○ PerComp   | O USA Flex  |
| <ul><li>○ AT&amp;T (NCR)</li><li>○ Austin (IPC)</li></ul>  | O Digital (OEC)  | <ul><li>Intelesys</li><li>Leading Edge</li></ul>  | O Pionex O Polywell   | <ul><li>○ Vektron</li><li>○ VTech (Expotech, Laser</li></ul>                      |
| Adstill (IPC)  | O DTK O EPS  | O Micro Express   | O Quantex   | O WinBook   |
| Blackship  | O Epson  | O Micron  | Robotech  | O Zenith (ZOS)  |
| O Canon  | ○ Everex   | O Midwest Micro   | ○ Samsung   | O Zenon   |
| Compaq   | O Future Tech  | O MIS   | ○ Sharp   | ○ Zeos  |
| O Compudyne  | O Gateway 2000   | O Nat'l Micro   | ○ Swan  | O Other   |
| What size is this  | PC? When   | e did you buy this F  | co Afte   | r ordering, how long did  |
| ○ 0esktop  | MILE   | ocal dealer   |   | ke to get your PC?  |
| O Notebook/lapt  | _  | Mail/phone order  |   | ess than I week   |
| O Handheld   |  | Direct from field sales i   | force O 1-  | 2 weeks   |
| What is the CPU  |  | Membership discount s   | -   | -4 weeks  |
| O PowerPC  |  | Computer superstore   |   | ore than 4 weeks  |
| Pentium  |  | lome electronics store  | Who   | set up your PC?   |
| O 80486  |  | Retail store  |   | ealer/retailer/VAR  |
| 080386   | OV   | alue-added reseller   |   | aff computer technician   |
| Other  | 0.0  | )ther   | ○ Se  | elf or coworker   |
| _  | se this PC? OA   | t home/home office  | O At work   | Both  |
| WHEN YOU   | FIRST GO   | T YOUR PC   |   |   |
|  |  | ify month and year.   | .)  |   |
| O Jan O Mar  | O May O July   | ○ Sept ○ Nov  | O 91  | O 93 O 95   |
|  |  | Oct Oec   | _   | O 94 O 96   |
| When you first s   | et up vour PC. w   | ere any component   | s "dead on arri   | ival" (DOA)?  |
| O Yes O  |  |   |   | (001,)  |
| If so, which com   | ponent was it? (   | Mark all that apply.  | )   |   |
| ○ Battery  | Graphics/vide  | o board O Modern  | /fax board O 1  | Power supply  |
| O CD-ROM   | O Hard drive   | O Monito  | r/screen O S  | Sound board   |
| ○ CPU  | ○ Keyboard   | O Mother  | board O   | Other   |
| O Floppy drive   | ○ Memory   | O Mouse   |   |   |
|  | n occur only afte  |   |   | imes have you had a   |
| •  | are or software?   |   | problem wit   | n this PC?  |
| O Yes O  |  |   | One No proble   | m ever O Three O Four   |
| rrouid you buy t   | his brand of PC a  | iydin:  | O OHE   | O TOU!  |

Please fill in your daytime phone number below. 0 0 0 0 0 0 0 0 0 0 0 20 0 0 0 0 0 30 0 0 0 0 0 0 0 40 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 50 0 0 0 0 0 0 60 0 0 0 0 0 70 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 80 0 90 0 0 0 0 0 0 0 0 0 00 0 0 0 0 NEW PROBLEM REPORT Answer for the most recent problem-other than DOA-not reported in a prior surve When did this problem occur? (Specify month and year.) ○ Jan ○ Mar ○ May ○ July ○ Sept ○ Nov 091 O 93 ○ Feb ○ Apr ○ June ○ Aug ○ Oct ○ Dec 0 96 092 0 94 How long after you purchased your PC did the problem occur? O Less than 1 month O 4-6 months O More than 12 months r) O 1-3 months O 7-12 months O Not sure Did the problem occur as a result of Did the problem occur under adding new hardware or software? warranty? ○ Yes ○ No ○ Oon't know ○ Yes ○ No ○ Don't know What was the problem finally identified as? (Mark all that apply.) O Faulty component ○ Wrong configuration ○ Device conflicts ○ Other ○ Incorrectly installed software ○ Faulty peripheral OS problem O Don't know If a component failed, which one was it? (Mark all that apply.) ○ Battery ○ Modem/fax board ○ Power supply Graphics/video board CD-ROM O Hard drive Monitor/screen O Sound board O CPU Motherboard O Other Keyboard O Mouse O Floppy drive O Memory SERVICE Please use this section to describe the service and support you received for the problem reported above or the DOA reported at left. What types of service and support did Who fixed your PC? you receive? (Mark all that apply.) Manufacturer O Dealer/store where purchased O Phone O System swap O Manufacturer's authorized repair technician On site O Component swap O Self Other O In store Factory return If you received phone service, how long were you on hold? ○ Not at all 1-2 minutes O 6-10 minutes O More than O Less than 1 minute 3-5 minutes 20 minutes 11-20 minutes How long did it take before you talked to the person who finally helped you? O Less than 15 minutes O 2-5 hours O 11-24 hours O 3-5 days O 6-10 hours 15 minutes-1 hour ○ 11/2-2 days O I week or more How long did it take to resolve the problem completely? Was it resolved to your O 1-2 days O More than 1 month satisfaction? O Never resolved 3-7 days O Yes O 8-14 days Awaiting resolution O 15-30 days Based on the service and How would you rate the person(s) who helped you? support you received, Poor Good Excellent would you buy this brand 0 Courtesy 0 0 0 of PC again? 0 0 0 0 0 Knowledge More than four O No O Yes Follow-through O 0 0 0 0 On the whole, how satisfied are you with the service and support you received?

0

Extremely satisfied



If you have had a problem that you have not reported in a previous survey, please fill out

O Two

O No

O Not sure

# Give them Back-UPS Office this holiday and they'll thank you 120 times a month

ake the Multipath Quiz for a chance to win a \$2,000 Shopping Spree

The holiday season is a happy time, unless the overload of flashing lights or a starting furnace causes

ower sag. Then your computer s the price for holiday cheer. A as study by IBM showed that the cal computer experiences power blems up to 120 times a month. act, corrupt power is the largest de cause of computer data loss hardware damage.

Back-UPS Office provides relie power for your entire system. cantaneous battery backup eres uninterrupted operation of CPU, monitor and an external rage device. Full-time surge supssion and site-wiring fault proion spreads a true Multipath" my net under any remaining intesed peripherals, like modems, eers, fax machines and phone ems. Back-UPS Office also proes convenient BlockSafe" outlet cing to handle all size plugs a large transformer blocks.

#### ique Multipath protection ips your PC and data safe

Magging a phone line into your computer doubles your vulability to power problems; add any peripheral, and it triples. s if your AC power-line is shielded, when a surge his an notected peripheral, it can blaze down serial and data lines. toast your expensive PC.

#### ck-UPS Office protects your entire system

line now, protection for your entire system required several devices. But bi-device protection can leave you retherable to line to se and unwanted data thes created by the vokage differential between oxiets. Those glathes are reased with the Back-LTS Office common voltage reference.

Back-UPS Office means true impath" protection dean, sais per to every peripheral, and are battery backup to keep r curring edge system and O/S a crashing, it means protection less by exegrating the security wife suppressor with the er of a 250 VA UPS, guaranimp to \$25,000 see policy details.





"\_for any PC today-especially di you run your business on it -(a UPS) is an indispensable peripheral" - PC MAGAZINE

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













Son-F. (An I amon) receive seems or restrict.

SESSION of Stores was been

stan unaver , or manya.

the words easing computer

Prizes:

First \$2,000 Second: \$1,000 Third:

Complete the time at which apply come and the interest in a second drawing for a fine result. As other most convent by 1257-56. Drawing to be seed 1275-56.



MICHO CENTER





#### WIN A \$2,000 SHOPPING SPREE!

Arome the distinguished contextly (Historian street, the set),  $\frac{14}{2}$  distinguished in the completely and send to APC or either from distributing  $\frac{1}{2}$  or the Meb, for a character and a \$2000 Dropping Spread. When send you a free 60 page hower horsector Handbook just for trying.

| 1. | M. III. | COTTES | TICKETON. | 1215 | 5 | BUDDIESSMOT | Sugar |  |
|----|---------|--------|-----------|------|---|-------------|-------|--|

- ☐ Dataline ☐ Comprise AC ☐ Peripheral AC
- A of the above
- 2. APC we repair or replace any explanema properly attached to a back-UK Office up to ...
  - S25556 □ \$1.000 J \$5,000
- 3. If I this my enternal modern into a surge suppressor and the datalize into the wall my computer is safe from power problems. 

  ☐ True ☐ Face
- 4. My transformer block plugs with Back-UPS Office without covering an entra outlet. C True

| 2 194  | T&e |  |
|--------|-----|--|
| ometre |     |  |

- seeder ETE PUT STE COTEC ME APC! I'M I'M 12 2 DER UNE

= d motivación on scesos permotis\_\_\_\_\_ inest d UPs correcti metados \_\_\_

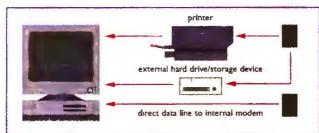
#### Over 6,000,000 satisfied customers insist "Protect ME! with APC".



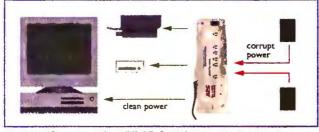
Steve Richbourg Senior Power Quality Engineer Gulf Power Company

"I just got my first Back-UPS Office. I've purchased seven since because people keep stapping by my desk and saying they want it! Recommending power pratection is what I da for o living, and I've never had an upset customer in more than four years recommending APC.

#### Multipath™ Means Total Power Protection



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



The Multipath<sup>™</sup> protection of Bock-UPS® Office<sup>™</sup> shields your peripherals and guards your computer from bad power on every path, providing cleon, safe power (green), to your entire system.

#### Back-UPS Office award-winning features: -

#### Integrates the Security of a Surge Suppressor with the Power of a UPS

Six outlets guard your hardware with full-time surge protection. Three of the six outlets provide instantaneous battery backup to keep your system from crashing in the event of brownout or blackout.

#### Internet Ready Fax/ Modern Protection

Back-UPS Office's built-in phone line/10 Base-T

network cable surge protection prevents surges from damaging internal & external modems, motherboards, 10 Base-T lines,



input/output cards, and other system components.

#### Convenient BlockSafe <sup>™</sup> Outlet Spacing Back-UPS Office's outlets are spaced to accommodate

all size plugs, including large transformer blocks.

#### Master On/Off Switch

One switch conveniently controls power to entire connected system.

#### **Electrical Wiring Fault Indicator Saves** Trouble and Expense

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

#### Circuit Breaker

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

#### **Check Battery Warning Prevents Downtime Before it Occurs**

An LED signals when Back-UPS Office's internal self test finds the battery near the end of its life, giving you 6-8 weeks warning.

#### \$25,000 Equipment Protection Policy

If your properly connected equipment is ever damaged by an AC surge, including surges due to lightning, APC will repair or replace our product and up to \$25,000 of connected equipment for as long as you own your Back-UPS Office. (See policy for details.)

#### **User Replaceable Batteries**

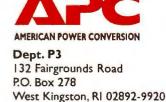
Back-UPS Office has user replaceable batteries that can be be easily swapped out, saving time and expense: no need to return the UPS to the factory for service. Batteries last 3-6 years under normal usage.

#### 2 Year Warranty

Unmatched reliability means you can purchase all APC products with confidence.

You can also register to win at the PowerPage™ on the World Wide Web at http://www.apcc.com

Place Stamp Here



#### CHOOSE THE RIGHT APC PROTECTION

· For advanced PC protection, including automatic voltage regulation, CellGuard battery management and phone line/10BaseT protection, choose the Back-UPS



Pro. For longer runtime choose a higher VA rating.

#### BACK-UPS PRO ADVANCED PC PROTECTION

For Pentium, 486, Win 95, and Business Applications

| <b>Volt-Amp Rating</b> | List Price | Runtime* |
|------------------------|------------|----------|
| 280PNP                 | \$199      | 6 min.   |
| 420PNP                 | \$339      | 8 min.   |
| 650PNP                 | \$419      | 17 min.  |
| 1000**                 | \$589      | 35 min.  |
| 1400**                 | \$759      | 74 min.  |

· For Multipath™ PC and peripheral protection, choose new Back-UPS Office, featuring 6 outlets with guaranteed surge protection, 3 of which provide instantaneous



battery backup, fax/modem protection, and BlockSafe™ outlet spacing for the accommodation of all size plugs and transformer blocks.

#### BACK-UPS OFFICE MULTIPATH™ PROTECTIO

For 386, Entertainment, education & all peripherals

**Volt-Amp Rating** List Price Runtime 250 10 min.

 For Basic PC protection, choose from the Back-UPS family (software not included).



#### BACK-UPS BASIC PC PROTECTION:

For 286, 386, Entertainment, and education

| <b>Volt-Amp Rating</b> | List Price | Runtime* |
|------------------------|------------|----------|
| 200                    | \$119      | -        |
| 280                    | \$139      | 7 min.   |
| 400                    | \$199      | 13 min.  |
| 450                    | \$254      | 24 min.  |
| 600                    | \$359      | 31 min.  |
| 900                    | \$529      | 47 min.  |
| 1250                   | \$689      | 75 min.  |

- For Fileserver protection, ask for our awardwinning Smart-UPS® line (not shown).
- For Datacenter protection, ask about our Matrix-UPS line (not shown).
- For hardware-only surge protection, ask for APC's SurgeArrest™ line (not shown).

\*Runtime shown is for typical Pentium desktop system and may vary with your actual load.

Note: Back-UPS 200 not recommended for Pentium systems
\*\*\*Does not include FREE PowerChute Pro Power Management S

Fax: (401)788-2797 • PowerFax: (800)347-FAXX CompuServe: GO APCSUPPORT • Email: apcinfo@apcc.com (+353)91 702000 Ireland • (+33)05.39.32.03 France (+49)89 958 235 Germany • (+44)753 511022 UK (+44)753 511022 Middle East/Africa • (+39)2 29 40 55 08 Ital (401)789-5735 Latin America • (+1)525 679 9586 Mexico (+7)09 53 66 21 56 Russia • (+83)5295 1988 Japan (+33)(1)64.62.59.00 Europe • (81)(3)5295-1988 Asia/Pacific (401)789-5735 Worldwide

132 Fairgrounds Rd., West Kingston, RI 02892 • (NASDAQ: APC



http://www.apcc.com

© 1996 American Power Conversion. All Rights Reserved. All trademarks are propt of their owners. Specifications subject to change without notice. ABO013

I-888-BUY-APCC ext. 801



# TOP 10 PRINTERS

|   | MONOCHROME WORKGROUP PRINTERS   | Month<br>tested      | Street<br>price<br>(7/23/96) | Overall rating | Speed for plain text (ppm) | Speed for full-<br>page graphics<br>(ppm)/kind | Comments   | Reader<br>service<br>number |
|---|---|----------------------|------------------------------|----------------|----------------------------|--|--|-----------------------------|
| 1 | Lexmark Optra Lx+ 800/891-0331 http://www.lexmark.com                       | July 96              | \$1950                       | 89             | 10.7                       | 1.4/<br>monochrome                             | FEATURES: 16-ppm laser. Standard 4MB of RAM, 600-by-600-dpi resolution (true 1200 dpi with at least 8MB of RAM), 500 sheets input and output. PRO/CON: Excellent print quality, easy-to-read LCD menus on control panel. Somewhat slow, especially printing full-page graphics.                                    | 675                         |
| 2 | Lexmark Optra R+<br>800/891-0331<br>http://www.lexmark.com                  | пеw                  | \$1300                       | 88             | 10.8                       | 1.2/<br>monochrome                             | FEATURES: 16-ppm laser. Standard 4MB of RAM, 600-by-600-dpi resolution (true 1200 dpi with at least 8MB of RAM), 200 sheets input, 250 output. PRO/CON: Print quality, speed, and basic design are similar to the Optra Lx+'s, but paper capacity is lower. Upgraded model costs \$150 less than previous version. | 676                         |
| 3 | HP LaserJet 5M<br>800/752-0900<br>http://www.hp.com                         | July 96              | \$1799                       | 87             | 9.5                        | 1.1/<br>monochrome                             | FEATURES: 12-ppm laser. Standard 6MB of RAM, 600-by-600-dpi resolution, 250 sheets input and output. PRO/CON: Very good print quality; innovative, easy-to-use control panel. Maximum paper capacity is only 750 sheets; most printers on the monochrome chart have a maximum capacity of over 1000.               | 677                         |
| 4 | Okidata OL1200/PS<br>800/654-3282<br>http://www.okidata.com                 | July 96              | \$1399                       | 87             | 8.9                        | 2.3/<br>monochrome                             | FEATURES: 12-ppm LED. Standard 6MB of RAM, 600-by-600-dpi resolution, 500 sheets input, 250 output. PRO/CON: Second-lowest price on monochrome chart; good print quality and decent performance. Control panel is not as intuitive as the Optras' or the LaserJet's.   | 678                         |
| 5 | Genicom microLaser<br>PowerPro/12<br>800/436-4266<br>http://www.genicom.com | July 96              | \$1439                       | 87             | 10.4                       | 2.4/<br>monochrome                             | FEATURES: 12-ppm laser. Standard 3MB of RAM, 600-by-600-dpi resolution, 500 sheets input, 250 output. PRO/CON: Fast, good price. Maximum 500-sheet paper capacity impractical for high-volume offices; on monochrome chart, only this and the HP have a maximum capacity of less than 1000 sheets.                 | 679                         |
| 1 | HP DeskJet 1600CM 800/752-0900 http://www.hp.com                            | July 96              | \$1999                       | 89             | 4.4                        | 0.5/<br>color                                  | FEATURES: 8-ppm monochrome/2-ppm color ink jet. Standard 6MB of RAM, 600-by-600-dpi monochrome, 300-by-300-dpi color. PRO/CON: Inexpensive for good print quality and adequate speed; PostScript and ethernet are included. Ink jet pages, unlike a laser's, are sensitive to moisture and light.                  | 680                         |
| 2 | Xerox XPrint 4920 Plus<br>800/349-3769<br>http://www.xerox.com              | Sept 96              | \$6500                       | 86             | 5.5                        | 0.3/<br>color                                  | FEATURES: 12-ppm monochrome/3-ppm color laser. Standard 16MB of RAM, 600-by-600-dpi monochrome and color. PRO/CON: Superb print quality; optional feeder/printer cabinet (\$1341) gives it the highest maximum paper capacity (1750) of any color laser on the chart. Slow printing full-page graphics.            | 681                         |
| 3 | Tektronix Phaser 550<br>800/835-6100<br>http://www.tek.com                  | July 96              | \$5945                       | 85             | 5.6                        | 0.5/<br>color                                  | FEATURES: 14-ppm monochrome/5-ppm color laser. Standard 8MB of RAM, 600-by-600-dpi monochrome and color (true 1200 dpi with RAM upgrade). PRO/CON: Least-expensive color laser on chart, versatile paper handling accommodates labels. Proprietary RAM is expensive.   | 682                         |
| 4 | HP Color LaserJet 5M<br>800/752-0900<br>http://www.hp.com                   | July 96              | \$7395                       | 85             | 6.9                        | 0.9/<br>color                                  | FEATURES: 12-ppm laser. Standard 6MB of RAM, 600-by-600-dpi monochrome and color, 250 sheets input and output. PRO/CON: Very good print quality; innovative, easy-to-use control panel. Maximum paper capacity is only 750 sheets; all others on the color chart have a maximum of over 1000 sheets.               | 683                         |
| 5 | IBM Color Network Printer<br>800/426-3333<br>http://www.lbm.com             | new                  | \$7649                       | 83             | 3.9                        | 0.6/<br>color                                  | FEATURES: 12-ppm laser. Standard 16MB of RAM, 600-by-600-dpi monochrome and color, 250 sheets input, 500 output. PRO/CON: Very good print quality, top-notch support policies. Slow printing monochrome text; documentation and drivers didn't match at time of testing.   | , an Thursday du Rossie<br> |
|   | Best Buy Window   | vs <b>95-cert</b> if | ied Plug and P               | lay            | ht                         | tp://www.pcworld.c                             | com/t1Oprinters All products:  | 905                         |

HOW WE TEST The overall rating for both monochrome and color workgroup printers is based on print quality (27 percent), price (20 percent), features and ease of use (20 percent), speed (15 percent), service and support (13 percent), and cost of consumables (5 percent). For all ratings, higher is better. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.



EMERGING FROM a five-year noncompete agreement with spin-off company Lexmark, IBM has announced its own line of printers. This month the first of these products to hit the streets,

the Color Network Printer, just makes our Top 10 Printers chart. We like the quality of the IBM's text and color graphics. Its text speed is a little slow compared with that of its peers, but its graphics speed is among the fastest, thanks in good part to the

high-end Fiery controller from EFI. Early versions of the Fiery in color lasers from Canon and Digital printed fuzzy text using Word 7.0, but EFI seems to have fixed the problem—the IBM showed no sign of it. And while the IBM's \$7649 price makes it the most expensive color printer on the chart, it's still the least expensive of the Fiery-driven color lasers.

Setting up the Color Network Printer, however, was harder than we expected. The documentation—five overwhelming volumes—describes how to install the Windows 95 driver, but IBM, eager to ship the printer, did not include the driver itself on the first version of its CD-ROM. We downloaded the driver from IBM's Web site, but it arrived in a compressed DOS batch file that we couldn't install without IBM's help. It was lucky we called: IBM told us the work-arounds to some undocumented bugs in the driver. According to IBM, the CD-ROM will include the driver by the time you read this.

The Canon C LBP 360PS we tested has the same print engine as the IBM Color Network Printer and comparable print quality and speed. It didn't make the chart because at \$10,625, it's too expensive, and it's also too Macintosh oriented. Its caching hard drive is available only to Mac users, and its spooler and downloader work only on AppleTalk networks.

The HP DeskJet 1600CM is still our color Best Buy. This ink jet competes with color lasers by providing good print quality and acceptable speed at a terrific price of only \$1999.

This month we tested three new monochrome printers: the Apple LaserWriter 12/640 PS, the Lexmark 4039 10plus, and an upgraded Lexmark Optra R+. Only the Optra R+ makes the chart, landing in second place. It now comes standard with 4MB of RAM and costs only \$1300 (the previous version had 2MB and cost \$1450). Lexmark also offers an \$869 1500-sheet input feeder that boosts Optra printers' input capacity beyond that of any other workgroup printer we've tested. Speed, print quality, and other features remain the same.

#### LEXMARKS TOP THE CHART

LEXMARK'S higher-end Optra Lx+ is still our monochrome Best Buy. It has better graphics speed and paper capacity than the second-place Optra R+, and its 75,000page monthly duty cycle is highest on the chart. Contrary to information the company provided earlier, however, Lexmark does not offer toll-free technical support.

Apple's \$1599 LaserWriter 12/640 PS just misses the chart. Its text and line art print samples are as crisp as any we've seen, but gray-scale images on photographs look a little jagged on curves, even



BIG BLUE TURNS COLORS: IBM's first color laser, the Color Network Printer, uses the well-regarded Canon engine to produce some of the best color print quality we've seen.

with the printer's PhotoGrade image enhancement. It's the fastest printer we've tested at churning out graphics but relatively slow printing text documents.

Unfortunately, the LaserWriter is not yet Windows 95-certified Plug and Play. And in our lab tests, the LaserWriter had an annoying habit of curling pages. Our lab is warm, but it's not damp; your office's climate may produce different results.

Lexmark's \$1399 4039 10plus is inexpensive but too meagerly configured to make the chart. The printer's standard 2MB of RAM is insufficient for printing our full-page graphics samples at its default 600-dpi resolution; we had to reduce print resolution to 300 dpi to complete the test. When we printed the pages, the 4039 10plus's gray-scale graphics looked muddy. The outdated documentation refers to Windows 3.1 as something new; you have to download Windows 95 drivers from Lexmark's Web site.

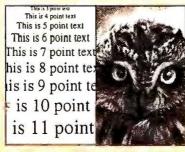
In our September issue, we began listing print speed in pages per minute for text and graphics rather than giving monochrome and color scores. Our Overall ratings in this issue have been adjusted to reflect the new values.

—Dan Littman and Melissa Riofrio

Dan Littman has covered printers and other computer technologies for ten years. Melissa Riofrio is a PC World associate editor. Testing performed by Dave Casini of the PC World Test Center.

#### PRINT QUALITY SAMPLES

#### Good Output From Apple and IBM Printers





This is 6 point text This is 7 point text his is 8 point ter is is 9 point te is 10 point is 11 point

#### APPLE LASERWRITER 12/640 PS

The LaserWriter's text quality is very good. Grayscale prints, while finely shaded, are jagged along the curves-even with the Apple's PhotoGrade enhancement turned on.

#### IBM COLOR NETWORK PRINTER

You'll get well-drawn text and superb color from the Color Network Printer. Grayscale quality, as with many color lasers, suffers from a green or blue tinge, but the shading is evenly cast.

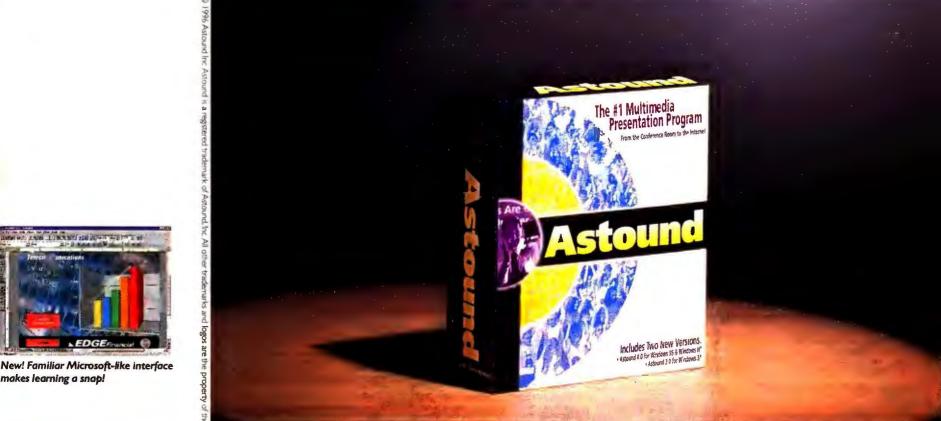
#### LEXMARK 4039 10PLUS

Lexmark's older, low-end workgroup laser prints text well, but its gray-scale Images are disappointingly muddy. Also, we had to upgrade this printer's standard RAM to get it to print full-page graphics.

### From the Conference Room to THE INTERNET...

THE #1 MULTIMEDIA PRESENTATION PROGRAM JUST GOT BETTER.

**Astound Upgrade** 3.1 versions in I package



makes learning a snap!

New! Animation Wizard brings your presentation to life instantly.

New! Take your presentations straight to the Web in a few clicks.











#### Multimedia Power, Internet Publishing - for everyone!

Since its introduction, hundreds of thousands of users and every major computer publication have proclaimed Astound for Windows the standard in multimedia presenting.

Now, introduce yourself to the next generation: Astound 4.0 for Windows 95/NT and Astound 3.0 for Windows 3.1. Combining advanced multimedia and Internet publishing features with the familiar look and feel of Windows 95 and Microsoft Office, Astound makes professional multimedia presenting accessible to anyone.

- Import a PowerPoint presentation or start from scratch, with one of over 100 animated templates.
- Animate objects across slides, complete with sound, graphics, and video.
- Synchronize everything with the powerful Timeline feature.
- Add interactivity including World Wide Web hyperlinks to create self-running "kiosks."
- Deliver your work on disk, via e-mail, on CD ROM, or to the Web-in true HTML format-with Astound's exclusive WYSIWYWeb™t technology.

That's just a taste of the power of Astound. To find out more, or to order, call us.

1-800-890-8621 www.astoundinc.com







# TOP 10 MONITORS

|   | 20- AND 21-INCH MONITORS   | Month<br>tested           | Street<br>price<br>(8/1/96) | Overall<br>rating | Quality of<br>text/graphics | Comments   | Reader<br>service<br>number |
|---|--|---------------------------|-----------------------------|-------------------|-----------------------------|--|-----------------------------|
| 1 | Samsung SyncMaster 20GLsi<br>800/933-4110<br>http://www.sosimple.com             | new                       | \$1285                      | 82                | good/<br>very good          | FEATURES: 20-inch tube (18.4-inch viewable screen), .28mm dot pitch, 77-Hz refresh rate', Level 2b Plug and Play ready', color and screen adjustment software, three-year parts and labor warranty, 24-hour daily toll-free support. PRO/CON: Terrific price, very sharp graphics, ample on-screen menus; small viewable screen.       | 699                         |
| 2 | Compaq QV210<br>800/345-1518<br>http://www.compaq.com                            | retested<br>this<br>month | \$1825                      | 79                | very good/<br>very good     | FEATURES: 21-inch tube (19.5-inch viewable screen), .26mm dot pitch, 85-Hz refresh rate ', Level 2b PnP ready ', three-year warranty on parts, one year on labor, 24-hour daily toll-free support. PRO/CON: \$274 price drop, very sharp text, realistic graphics, uniform brightness; much button pushing needed to adjust screen.    | 700                         |
| 3 | Cornerstone Color 21/88 fp<br>800/562-2552<br>http://www.corimage.com            | retested<br>this<br>month | \$2128                      | 78                | very good/<br>very good     | FEATURES: 21-inch tube (19.7-inch viewable screen), .27mm dot pitch, 87-Hz refresh rate ¹, Level Zab PnP ready ², three-year parts and labor warranty, 11.5-hour weekday toll-free support. PRO/CON: Very crisp text, vivid graphics, big viewable screen, rapid refresh, easy-to-adjust menu; expensive despite \$667 price drop.     | 701                         |
| 4 | ArtMedia TN2185T<br>800/278-6334<br>http://www.artmedia.com                      | new                       | \$1638                      | 78                | very good/<br>good          | FEATURES: 20-inch Trinitron tube (18.7-inch viewable screen), .30mm stripe pitch, 75-Hz refresh rate ¹, Level 2ab PnP ready ², three-year warranty on parts, one year on labor. PRO/CON: Very sharp text, bright graphics, TCO-92 low emissions approved, easy-to-adjust on-screen menu; name implies a bigger model.                  | 702                         |
| 5 | ViewSonic PT810<br>800/888-8583<br>http://www.viewsonic.com                      | new                       | \$1795                      | 76                | good/<br>very good          | FEATURES: 21-inch Diamondtron tube (19.3-inch viewable screen), .30mm stripe pitch, 89-Hz refresh rate¹, Level 2b PnP ready², color calibration software, three-year parts and labor warranty, 11-hour weekday toll-free support. PRO/CON: Accurate color graphics, ample on-screen menus include moiré tool; fussy button controls.   | 703                         |
| 6 | MAG InnoVision MX21F<br>800/827-3998<br>http://www.maginnovision.com             | retested<br>this<br>month | \$1639                      | 76                | very good/<br>very good     | FEATURES: 21-inch tube (19.7-inch viewable screen), .28mm dot pitch, 76-Hz refresh rate ', LCD window, three-year warranty on parts, two years on CRT, one year on labor, 12-hour weekday toll-free support. PRO/CON: Yery sharp text and graphics, big viewable screen; awkward control buttons, no on-screen menus, no PnP.          | 704                         |
| 7 | Cornerstone Color 21/75 fp<br>800/562-2552<br>http://www.corimage.com            | new                       | \$1935                      | 75                | good/<br>very good          | FEATURES: 21-inch tube (19.7-inch viewable screen), .27mm dot pitch, 75-Hz refresh rate 1, Level 2ab PnP ready 2, three-year parts and labor warranty, 11.5-hour weekday toll-free support. PRO/CON: Very good graphics detail, accurate color, big viewable screen, comprehensive on-screen menus, easy to adjust; high price.        | 705                         |
| 8 | Mitsubishi Diamond Scan 20H<br>800/843-2515<br>http://www.mitsubishi-display.com | retested<br>this<br>month | \$1499                      | 75                | satisfactory/<br>good       | FEATURES: 20-inch tube (19.1-inch viewable screen), .28mm dot pitch, 75-Hz refresh rate¹, Level 2b PnP ready², color and screen adjustment software, three-year parts and labor warranty, 8.5-hour weekday toll-free support. PRO/CON: \$52 price drop, big viewable screen, ample on-screen menus, TCO-92 compliant; faint text fuzz. | 706                         |
| 9 | Mitsubishi Diamond Pro 21TX<br>800/843-2515<br>http://www.mitsubishi-display.com | new                       | \$1899                      | 74                | good/<br>good               | FEATURES: 21-inch Diamondtron tube (19.7-inch viewable screen),30mm stripe pitch, 87-Hz refresh rate¹, Level 2b PnP ready², color and screen adjustment software, three-year parts and labor warranty, 8.5-hour weekday toll-free support. PRO/CON: Big viewable screen, ample on-screen menus, TCO-92 compliant; expensive.           | 707                         |
| 0 | CTX 2085<br>800/888-2012   | retested<br>this<br>month | \$1129                      | 72                | satisfactory/<br>good       | FEATURES: 20-inch tube (18.9-inch viewable screen), .28mm dot pitch, 80-Hz refresh rate ¹, Level 2b PnP ready ², color and screen adjustment software, three-year warranty on parts and labor, two years on CRT, 10-hour weekday toll-free support. PRO/CON: Lowest price on chart, easy-to-adjust on-screen menus; fuzzy text.        | 708                         |

<sup>1</sup>Highest refresh rate at 1280 by 1024 resolution. <sup>2</sup> Level 2b Plug and Play monitors and graphics cards can communicate bidirectionally; Level 2ab uses Access.bus to enhance synchronization. However, Windows 95 does not fully utilize monitor Plug and Play.

HOW WE TEST Ten judges rate a monitor's text and graphics quality. We evaluate each unit on how well it displays typical business letters, spreadsheets, Web pages, and scanned images. The overall rating is based on text and graphics quality (25 percent each), features and ease of use (25 percent), price (20 percent), and service and support (5 percent). The best possible overall rating is 100. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.



USING A 20- OR 21-INCH MONITOR is a lot like having an IMAX screen on your desktop. At first, the vast display is overwhelming, but after a week without scrolling or toggling between

applications, you'll wonder how you ever worked without it. Unfortunately, the price of these giant screens can be a jolt—they average \$600 more than 17-inch models. Among 20- and 21-inch monitors, you can spend over \$2100 for a high-end unit or

around \$1100 for a basic one. The good news is that prices have taken a tumble. The Cornerstone Color 21/88 fp, for example, dropped \$667 since our review in May, and the Princeton Graphic Ultra 20, which didn't make the chart, costs about \$100 less than a high-end 17-inch display.

#### SO WHICH ONE'S THE BEST?

ALL TOLD, WE TESTED 14 monitors for this month's review. Using our new test suite, we retested 5 units from last May's Top 10, and 9 new units, including updates of two of the May monitors. (IBM's P200, NEC's MultiSync XP21, and View-Sonic's 21PS have been discontinued.) Of the 14, the \$1285 Samsung SyncMaster 20GLsi earned our top Best Buy. It's the best value if you do a lot of graphics on a tight budget. The 20GLsi is an upgrade to the 20GLs model (number two in May) and includes screen and color calibration software and Plug and Play support. Graphics were so sharp that we spotted a detail we hadn't seen before in one of our sample images—tiny beads of sweat on a runner's brow. Text looked good, but we deducted points for a fuzzy Web-page address. At 18.4 inches, the viewable screen size is also a tad small.

In second place is the \$1825 Compaq QV210. Shedding \$274 since May, this high-end 21-inch monster moves into our other Best Buy spot. Text looked razor sharp, and colors on our sample image of fruit were brilliant. The QV210's onscreen menus are extensive, but the con-

trol panel buttons can be tiring—it takes seven clicks just to center the picture. Fortunately, there are dials to adjust contrast and brightness.

The huge price cut lifted the 21-inch Cornerstone Color 21/88 fp clear up to third place, from number eight. At \$2128, it's still the most expensive monitor reviewed here, but text and graphics were the best of the bunch.

New this month is the \$1638 Art-Media TN2185T in fourth place. This 20inch monitor's forte is text-intensive projects. Tiny type serifs were very sharp on this Trinitron tube. Graphics also looked good, but our sample fruit image looked less appetizing than on other units. This is the only unit we saw that comes with a focus control so the monitor stays sharp as it ages.

The updated ViewSonic PT810 (\$1795) lands in fifth place. Now it can refresh at higher rates, and the on-screen menus are expanded (there's a new moiré control). Unlike its predecessor, which cost \$400 more, the new PT810 displayed graphics a tad better than text in our higher-resolution tests. Our sample runner image looked realistic, but we noticed slightly fuzzy type on our business letter and spreadsheet screens. One thing hasn't changed: The on-screen menus require too much button pressing.

A former Best Buy, the \$1639 MAG InnoVision MX21F shed \$61, but it dropped to number six due to the lack of on-screen menus and Plug and Play sup-



GOOD 'N' PLENTY: For a modest \$1285, Samsung's new 20-inch SyncMaster 20GLsi doesn't compromise on high-end features.

port, and a less extensive warranty.

Four monitors earned the remaining Top 10 slots. The \$1935 Cornerstone Color 21/75 fp (in seventh place) uses a less expensive tube than its 21/88 fp sibling and has a lower refresh rate (75 Hz at 1280 by 1024 versus 87 Hz), but the 21/75 fp is just as adept at high-end graphics. On the other hand, spreadsheet cells looked sharper on the higher-ranking model. Like its sibling, the 21/75 fp is expensive. The number eight Mitsubishi Diamond Scan 20H is followed by its high-end relative, the Diamond Pro 21TX, in ninth place. Both sport ample onscreen menus, adjustment gauges for precise tweaking, and color and image correction software. But the screen quality of both units was not as dazzling as higherranked competitors'. The least expensive monitor on the Top 10 this month is the \$1129 CTX 2085 (formerly in sixth). But so-so image quality in our tough new tests pushed it to the bottom of our chart.

Despite tempting low prices, four new 20-inch monitors didn't make our list: the \$1149 Pacom 9Fes, the \$1099 Princeton Graphic Ultra 20, the \$1180 Techmedia TCM-2000G, and the \$1195 ViewSonic 20G. All use Plug and Play and on-screen menus, but screen quality lacked luster.

—John Goddard 🔳

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

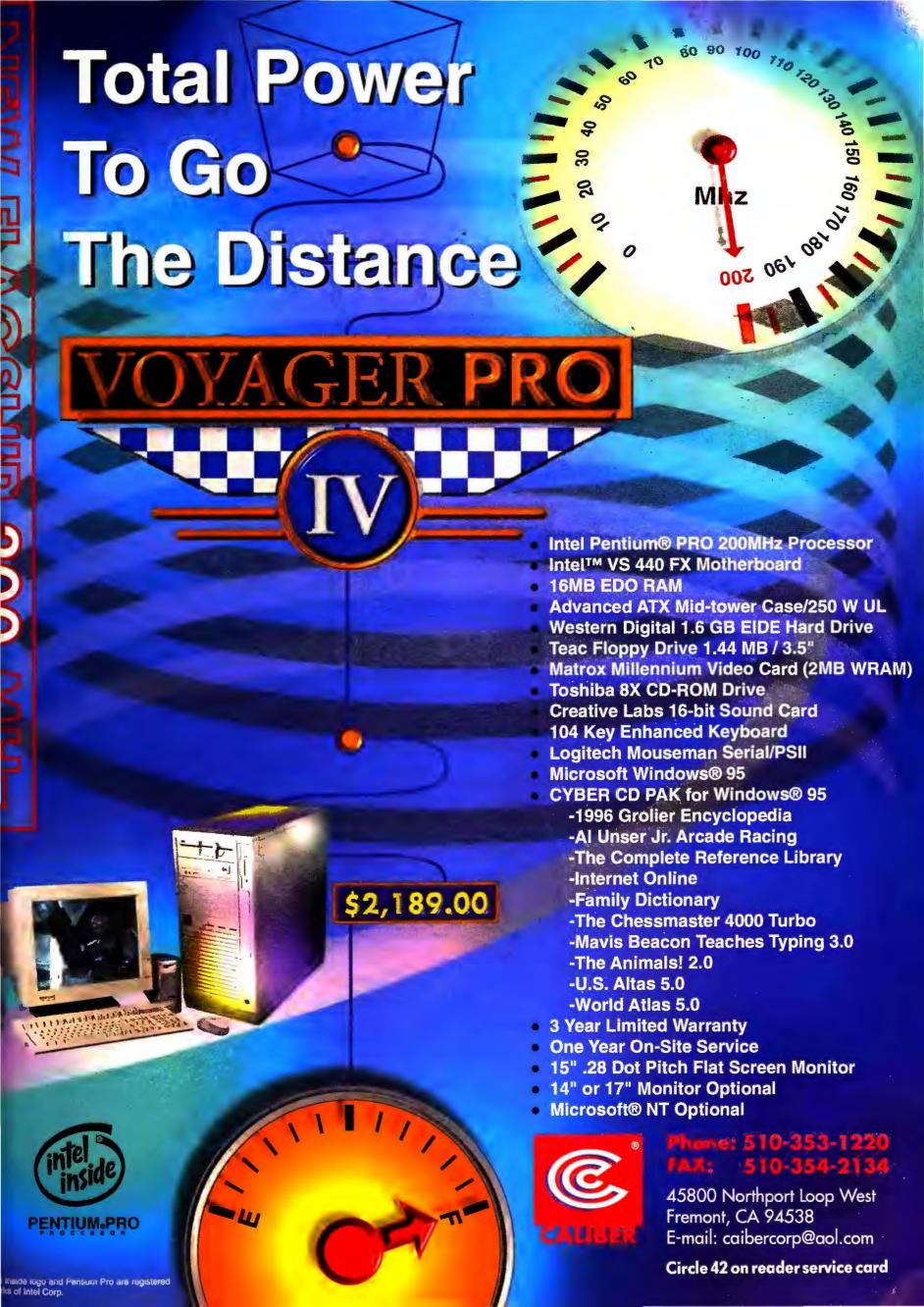
#### Small Questions for Big Thinkers

BEFORE YOU BUY A MONSTER MONITOR. ask yourself a few questions:

Have you considered hidden costs? If you plan to do anything graphical at 1280 by 1024 resolution and in more than 256 colors, you'll need at least 4MB of WRAM or VRAM (about another \$150) on your graphics card. If you can't upgrade the card, expect to pay between \$350 and \$600 for a new one with 4MB of graphics memory on board.

How big is your work space? Make sure to measure where you'll put your monitor before you buy it. A 20- or 21inch model doesn't just sit on your desktop, it dominates it. Most units measure at least 20 inches deep as well.

How will you get this gentle giant into your office? These overgrown monitors look rugged, but the big tube inside is sensitive. Check the packaging for damage before accepting it, and if possible plug in the monitor and see how symmetrical the screen geometry is before you buy the unit. More important: Watch your back when lifting a monitor this big. Bring in a friend or two to help you-on average, these models weigh about 75 pounds.



# MAG-nified performance MAG-nified performance MAG-nificent colo MAG-Technitron



Forget NEC and Sony. Your best value in hi-res comonitors with an advanced Trinitron® CRT Technitron color monitors from MAG InnoVision.

| DX15T 15sfll |            | XE15                            | DX700T     | 17sfll     | XV1                   |  |
|--------------|------------|---------------------------------|------------|------------|-----------------------|--|
| Trinitron®   | Trinitron® | Conventional<br>Flat Squre Tube | Trinitron® | Trinitron® | Convention Flat Squre |  |
| 0.25mm       | 0.25mm     | 0.28mm                          | 0.25mm     | 0.25mm     | 0.28mr                |  |
| 13.9"        | 13.9"      | 13.8"                           | 16"        | 16"        | 15.6"                 |  |

\*\*Viewable (All Technitron color monitors include EPA Energy Star compliant power manage SWEDAC MPRII compliant low emissions, 3-year Limited Warranty; award winning service (extremely land on CFC's used in manufacturing.)

MSRP \$799

ESP \$799

**ESP \$575** 

**VERTICALLY FLAT**—superb image quality a reduced distortion.

ULTRA FINE 0.25mm APERTURE GRILL super sharp focus and definition. The unique technology enhances brilliance and contrast to lever that other monitors can't match.

MICROPROCESSOR—based digital controls deliunrivaled flexibility with Plug & Play ease Windows® 95 compatibility.

NEC's MultiSync® XE15 and XV17+ don't have Sony's Multiscan® 15sfII and 17sfII are more expensive. For the best value in Trinitron®\* color C technology—buy Technitron color monitors from Management InnoVision. Discover why monitor buyers across country are switching to Technitron color monitors from MAG InnoVision. Call 1-800-827-3998 ext. I for the MAG InnoVision Authorized Ultimate Resel near you.







800-827-3998 www.maginnovision.com

Fall '96 Las Vegas Convention Center Booth No. L690

MAG Innovision Co., Inc. • 2801 S. Yale St., Santa Ana, CA 92704 • TEL 800-827-3998 or 714-751-2008 • FAX 714-751-5522 • MAGIC FAX-On-Demand 714-751-0166

1996 MAG Innovision Co., Inc. All rights reserved. The following are trademarks of their respective companies. MAG Innovision and Technitron of MAG Technology Co., Ltd.; Colorific of Sonnetech, Ltd.; Kodak Color Management Software of Eastman Company. Trinfirm and Multiscan of Sony; MultiSync of MEC Technologies. Inc.; Windows of Microsoft Corporation. All other trademarks are the property of their respective owners. As a Energy Star Partner, MAG Innovision has determined that these product the Energy Star Guidelines for energy efficiency. Companisons of prices and specifications of the MAG Innovision DX15T and the DX700T, the Sony Multiscan 15sfll and 17sfll, and the NEC MultiSync XE15 and XV17+ based on information published manufacturers of those monitors as of 8/26/96. Actual price may vary. Specifications subject to change without notice. \*All uses of Trinitron refer to the CRT technology only. The DX15T and DX700T use a Trinitron CRT. Free Colorific Color Management Schrough 12/31/96 for end users (\$49.95 retail value) included with monitor purchase.

CC CCC



# TOP 10 GRAPHICS BOARDS

|            | GRAPHICS BOARDS  | Month<br>tested | Street<br>price<br>(B/9/96) | Overall<br>rating                        | PC WorldBench<br>graphics score | Comments   | Reader<br>service<br>number |
|------------|--|-----------------|-----------------------------|--|---------------------------------|--|-----------------------------|
| 1          | VideoLogic GrafixStar 600<br>800/578-5644<br>http://www.videologic.com   | Oct 96          | \$159                       | 96                                       | 185<br>very good                | FEATURES: 2MB MDRAM, 120-Hz refresh rate at 1024 by 768, bundled multimedia applications, Xing MPEG software, Direct-Video, Tseng Labs ET6000 chip. PRO/CON: Fast with business and graphics programs, inexpensive, excellent utilities, top-notch AVI and MPEG video; no 3-D acceleration.  | 601                         |
| 2          | STB Lightspeed 128 888/234-8750 http://www.stb.com                       | Aug 96          | \$199                       | 95                                       | 186<br>very good                | FEATURES: 2.25MB MDRAM, 120-Hz refresh rate at 1024 by 76B; bilinear video interpolation, DirectVideo, Xing MPEG software, Tseng Labs ET6000 chip. PRO/CON: Great bang for your buck, performs well in business and graphics programs, perfect AVI video playback, excellent MPEG, lifetime warranty; no 3-D acceleration.                 | 602                         |
| 3          | Diamond Stealth 3D 2000XL<br>800/468-5846<br>http://www.diamondmm.com    | Sept 96         | \$179                       | 94                                       | 183<br>very good                | FEATURES: 2MB EDO DRAM, 100-Hz refresh rate at 1024 by 768, 3-D acceleration, bundled games, Mediamatics MPEG software, DirectVideo, S3 Virge chip. PRO/CON: Now comes with Diamond's inControl Tools for controlling the display, performs like a board with costiler memory, excellent MPEG playback; tech support can be hard to reach. | 603                         |
| 4          | Hercules Dynamite 128/Video<br>800/532-0600<br>http://www.hercules.com   | new             | \$229                       | 92                                       | 185<br>very good                | FEATURES: 2MB MDRAM, 90-Hz refresh rate at 1024 by 768, bilinear video interpolation, Xing MPEG software, DirectVideo, Tseng Labs ET6000 chip. PRO/CON: Handles business and graphics programs equally well, nice set of software utilities, toll-free support; weak documentation, no 3-D accleration.                                    | 604                         |
| 5          | Matrox MGA Millennium<br>800/361-1408<br>http://www.matrox.com           | June 96         | \$269                       | 91                                       | 184<br>very good                | FEATURES: 2MB WRAM, 120-Hz refresh rate at 1024 by 768, 3-D acceleration, 3-D software, optional MPEG and TV tuner cards, Compcore MPEG software, DirectVideo, Matrox MGA-2064W chip. PRO/CON: Fast, holds 8MB for high-resolution photo editing, superb AVI video; poor MPEG, expensive.  | 605                         |
| 6          | ATI 3D Xpression<br>905/882-2600<br>http://www.atitech.ca                | Sept 96         | \$159                       | 91                                       | 174<br>good                     | FEATURES: 2MB EDO DRAM, 100-Hz refresh rate at 1024 by 76B, 3-D acceleration, optional MPEG and TV tuner cards, ATI MPEG software, ATI 3D Rage chip. PRO/CON: \$40 price drop, affordable all-in-one board with 3-D functions, faster in Windows than ATI Video Xpression, good MPEG playback; not ideal for high resolutions.             | 606                         |
| roler die. | STB Powergraph 64 Video<br>888/234-8750<br>http://www.stb.com            | June 96         | \$129                       | 91                                       | 175<br>good                     | FEATURES: 2MB EDO DRAM, 120-Hz refresh rate at 1024 by 768, optional MPEG and TV tuner cards, Xing MPEG software; \$3 Trio64V+ chip. PRO/CON: Low price, fast at resolutions above 800 by 600, good MPEG playback, lifetime warranty, toll-free support; not the best choice for image editing or desktop publishing.                      | 607                         |
| 8          | Cardex Challenger EV<br>800/539-2273                                     | Oct 96          | \$179                       | i merinderki mumiki muzikizi.<br>90      | 187<br>very good                | FEATURES: 2.25MB MDRAM, 75-Hz refresh rate at 1024 by 76B, optional TV tuner card, Xing MPEG software, DirectVideo, Tseng Labs ET6000 chip. PRO/CON: Top performer by a hair, great all-around board, excellent AVI playback; low refresh rate, old Windows 3.1 software utilities, poor MPEG playback.                                    | 608                         |
| 9          | Number Nine 9FX Reality 332<br>800/438-6463<br>http://www.nine.com       | new             | \$199                       | 90 :                                     | 180<br>very good                | FEATURES: 2MB EDO DRAM, 120-Hz refresh rate at 1024 by 768, 3-D acceleration, bundled games, DirectVideo, Mediamatics MPEG software, S3 Virge chip. PRO/CON: Gaming board that's also strong in business programs, perfect AVI video, excellent MPEG playback; no toll-free or weekend support.  | 609                         |
| 10         | Diamond Stealth64 Video 2201<br>800/468-5846<br>http://www.diamondmm.com | Oct 96          | sakiisekeeneeneelisi        | estributsitation de la comita da .<br>89 | 172<br>good                     | FEATURES: 2MB EDO DRAM, 100-Hz refresh rate at 1024 by 76B, optional MPEG and TV tuner cards, Mediamatics MPEG software, S3 Trio64V+ chip. PRO/CON: Inexpensive board suited for basic Windows programs, good InControl utilities for customizing the display; choppy AVI, poor MPEG playback.   | 610                         |

HOW WE TEST We tested boards under Windows 95 with PC WorldBench 1.0 at 800 by 600 resolution at 16.8 million colors (reported here) and at 1024 by 768 at 65,536 colors. Boards were tested in a Dell Dimension XPS P133c with 16MB of EDO DRAM and 256K of pipeline-burst secondary cache. Overall rating is based on performance (40 percent), features (30 percent), price (20 percent), and support policies (10 percent). For all ratings, higher is better. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.



TWO BOARDS BASED ON THE HOTTEST new graphics technologies land on this month's chart. The new \$229 Hercules Dynamite 128/Video, ranked fourth, uses the same 128-bit processor

and multibank DRAM as the top-rank VideoLogic board to produce impressive performance. Meanwhile, the new \$199 Number Nine 9FX Reality 332, ranked ninth, handles graphics well and features 3-D acceleration. ■



Avery Ink Jet Labels White and Clear



Avery Laser or Ink Jet Note Cards

THANK YOU



Avery Laser Videotape Labels



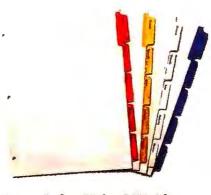
Avery Laser or Ink Jet **Business Cards** 



Avery Laser or Ink Jet Diskette Labels



Avery Laser **Audio Tape Labels** 



Avery Index Maker® Dividers Laser or Ink Jet



Avery LETTER 'N LABELTA Quality Bond Paper and Address Label in One

Labels



You paid all that money for all that technology, it's time you got your money's worth. Avery® has a full line of products that let you make better use of your laser or ink jet printer. They'll keep you organized and working more efficiently, easily. In fact, Avery formats are already in the software you're using. We'll even send you a free sample kit while supplies last. So give us a call. And start getting more out of your printer.

FOR A FREE SAMPLE KIT, CALL TOLL FREE:

1 - 8 8 8 - 2 8 3 - 7 9 7 2





# TOP 10 MODEMS

|         | INTERNAL DESKTOP MODEMS  | Street<br>price<br>(8/15/96) | Overall<br>rating     | Average transfer<br>time per MB | ISA card<br>type | Comments   | Reader<br>service<br>numbe |
|---------|--|------------------------------|-----------------------|---------------------------------|------------------|--|----------------------------|
| 1       | Motorola LifeStyle 28.8<br>800/566-3266<br>http://www.mot.com/modems         | \$175                        | 81                    | 2:32                            | 16-bit           | FEATURES: Fax Class 1, Distinctive Ring, Caller ID detection, phone Jack turns off during connect, QuickLink II software, toll-free support 9 hours per weekday, PRO/CON: Top performer on chart, toll-free support, very good documentation, easy installation; pricey for a modem without voice features.            | 720                        |
| 2       | Cardinal MVP288IS 800/775-0899 http://www.cardtech.com                       | \$189                        | 77                    | 2:48                            | 8-bit            | FEATURES: V.FC, Fax Class 1 and 2 (protocol), supports MNP-10EC cellular error control protocol, FlashROM, Voice-View, voice mail, full-duplex speakerphone and mike, FaxWorks 3.0, lifetime warranty. PRO/CON: One of the best feature sets we've seen, installation was a breeze; a bit pricey and bulky.            | 721                        |
| 3       | U.S. Robotics Sportster<br>Faxmodem<br>800/342-5877<br>http://www.usr.com    | \$159                        | 76                    | 2:48                            | 8-bit            | FEATURES: 33.6-kbps, V.FC, Fax Class 1 and 2.0 (standard), OuickLink II fax/data software, five-year warranty, support 10 hours per weekday. PRO/CON: Good price, only modem on chart that offers a choice of Plug and Play or manual installation, excellent software bundle; unremarkable performance.               | 722                        |
| 1       | Zoom V.34l FaxModem Model 275<br>800/631-3116<br>http://www.zoomtel.com      | \$109                        | 76                    | 2:51                            | 8-bit            | FEATURES: V.FC, MNP-10EC, Fax Class 1 and 2 (protocol), Comit for Windows and WinFax Lite, Distinctive Ring, seven-year warranty, support 14.5 hours per weekday, weekend hours. PRO/CON: Least expensive modem on chart, backed by very good support policies; basic features, a little slow, hard to install.        | 723                        |
| 5       | Hayes Total Internet Solution<br>770/840-9200<br>http://www.hayes.com        | \$163                        | 76                    | 2:54                            | 16-bit           | FEATURES: V.FC, Fax Class 1 and 2 (protocol), Distinctive Ring, SmartCom Message Center LE fax/data software, toll-free tech support. PRO/CON: One of the best packages for getting up on the Internet quickly, installation was very easy, very good support policies; slow performer.                                | 724                        |
| 5       | Hayes Total Gaming Solution<br>770/840-9200<br>http://www.hayes.com          | \$259                        | 75                    | 2:47                            | 16-bit           | FEATURES: V.FC, Fax Class 1 and 2 (protocol), voice mail, DSVD, VoiceView, full-duplex speakerphone, Distinctive Ring, Caller ID, toll-free support. PRO/CON: Painless installation, extensive support for voice/data line sharing, comes with an ample software bundle; most expensive package on chart.              | 725                        |
| ners.   | E-Tech Bullet PC288MX<br>800/328-5538<br>http://www.bulletel.com             | \$152                        | 75                    | 2:42                            | 8-bit            | FEATURES: V.32ter, Fax Class 1, 2 (protocol), and 2.0 (standard), Comit Lite for Windows and WinFax Lite, two-year warranty, toll-free tech support, overnight replacement. PRO/CON: Above-average speed, decent price; minimal documentation, minimal feature set, installation could require a call to tech support. | 726                        |
| )<br>(h | Microcom DeskPorte 28.8S<br>800/822-8224<br>http://www.microcom.com          | \$143                        | a. da sun derender    | 2:47                            | 8-bit            | FEATURES: V.FC, Fax Class 1 and 2 (protocol), MNP-10EC cellular protocol, Distinctive Ring, FaxWorks 3.0, five-year warranty, tech support available 12 hours per weekday. PRO/CON: Attractive price, friendly documentation; card is not Plug and Play and doesn't have much in the way of features.                  | 727                        |
| . 21.   | Boca Bocamodem V.34 28800bps<br>561/997-7202<br>http://www.bocaresearch.com  | \$179                        | 75                    | 2:44                            | 8-bit            | FEATURES: V.FC, Fax Class 1 and 2 (protocol), FaxWorks 3.0, five-year warranty, 10.5 hours per weekday of technical support. PRO/CON: A little faster than the average, small, manuals are quite understandable; pricey for a non-Plug and Play modem that doesn't come with any extras.                               | 728                        |
| 0       | Boca V.34 Office Communicator<br>561/997-7202<br>http://www.bocaresearch.com | \$199                        | noverhadeskishoperum. | 2:51                            | 16-bit           | FEATURES: V.FC, Fax Class 1 and 2 (protocol), voice mail, VoiceView, full-duplex speakerphone, FaxWorks 3.0, five-year warranty, support 10.5 hours per weekday. PRO/CON: Good voice features, very good software bundle; expensive, a little slow, long card may be hard to fit in some PCs.                          | 729                        |

HOW WE TEST We test a pair of identical modems on a simulated phone network. For the phone line test, we send a text file over 55 line conditions. For the file type test, we send five files—a graphics, text, program, and compressed file, and a mixture of those four file types—over one line condition. We average the results of the two tests. The overall rating is based on performance (43 percent), features (26 percent), price (12 percent), support (10 percent), and ease of use (9 percent). Data based on tests designed and conducted by the PC World Test Center. All rights reserved.



MOTOROLA'S LIFESTYLE 28.8 has unmatched speed and a painless installation procedure even a neophyte can love, making it our most highly recommended unit. The runner-up modem from

Cardinal clocked only average data transfer rates on our test bench, but it's chock-full of features, including voice mail, full-duplex speakerphone, and a mike, and it's a cinch to install. For our full review of the Top 10 modems, see page 190.

# **GET MORE**



# MORE

MORE READERS

MORE SOFTWARE

MORE TIPS

# PC WORLD ONLINE DELIVERS!

Now that you're racking up hours on the Net, where can you go to get the most up-to-date information on today's best PC products? The same source you've always trusted — PC World magazine — online!

PC World Online is the leading online resource for PC buyers and users. We provide you with

more of the information you need to make fast and effective decisions. PC World Online offers daily news reports, analysis and commentary; productivity-oriented messaging and conferencing; product reviews, interactive buyers guides; RealAudio files; downloadable demos and reports from the PC World Test Center; naturallanguage article searches; databases of tips, FAQ's and technical support resources; and real-time expert assistance and advice.

PC World Online Spotlights for November 1996:

- PC World News Radio Rides the Net Waves
- Cover Story: Upgrades!
   Memory, CPUs, Graphics
   Accelerators ...and More
- Special Section: Internet! Publish on the Web; Tools
- PC World Online Annex: Community Setting for the Lighter-Side of Computing
- Interactive Buyers Guide: Build the Dream Machine that Meets Your Criteria
- Sign Up for 15 FREE Daily "Tip-a-Day" Newsletters http://www.pcworld.com/tips

Got a hot tip, a biting critique, a technical question? Post it on one of our message boards, and get a quick response from one of our savvy editors or other readers. PC World Online does more than just bring articles to readers; we bring the experience of editors, industry experts, and hardware and software specialists.

You can't miss PC World Online because we're everywhere. Explore our sites on America Online, CompuServe, Prodigy, The Microsoft Network and the Web.

PC World Online delivers it all: hundreds of thousands of online readers, thousands of downloadable software files, thousands of pages to view, daily updates, and hundreds of online-exclusive features. If you need the latest on the best, then get everything you want and more. PC World Online! Just point and click!

MORE REVIEWS

MORE INTERACTIVITY

> MORE ANSWERS



America Online: keyword pcworld

CompuServe: go pcworld

• Prodigy: jump poworld

• The Microsoft Network: go poworld

Web: http://www.pcworld.co

Circle 172 on reader service card

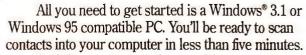


The Smart Business Card Reader. The Easiest Way To Get Contacts Into Your Computer.

Drop everything. And get rid of those Rolodex®cards. Now you can have all your contacts right where you want them. In your computer, in one touch.

With The Smart Business Card Reader, you just pick up a business card and drop it in. There's nothing else to do, because everything you need is built in. Our intelligent software recognizes a contact's name, company, address, and phone number and places it all in a contact database. A second touch will even send it

to contact managers like ACT!, Maximizer, ECCO and more.



And if you want to make your life even easier, you'll pick up The Smart Label Printer® so you can create address labels directly from your database.

To get your hands on The Smart Business Card Reader, call 1-800-688-0817.

E-mail us at info@seikosmart.com or on the Web at www.seikosmart.com





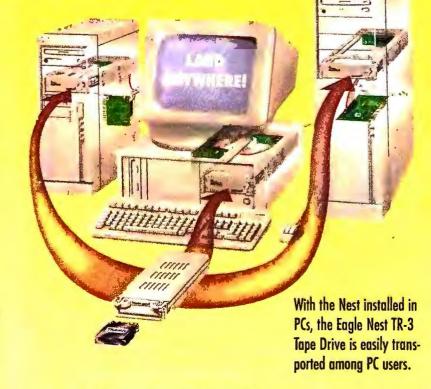


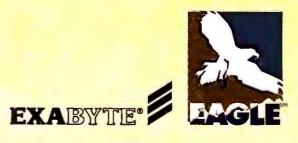


Now, easily share one tape drive among many PCs with the Eagle Nest TR-3 Tape Drive—and get the lowest-cost-per-megabyte data storage solution available today.

- No cables like parallel port
   No more bulky transformer
   No cords to disconnect
- Store up to 4.4 GB
  Choose the tape that's right for you.
- Faster Than Parallel Port
  Typically, twice as fast
- Great for multiple-PC offices and workstation backup
  Transport files between home and office PCs.
  Just remove the tape drive and take it with you.

All Exabyte products come with a two-year standard warranty AND toll-free, worldwide technical support. So, land anywhere with the Eagle Nest TR-3 Tape Drive! Contact us for more information.





1 800-EXABYTE
Visit our web sight at: http://www.exabyte.com

# Anatomy

0.28mm/0.26mm NI Flat Screen CRT

Rich full sound, excellent highs and thunderous lows

Designed for Microsoft Windows 95

Energy Efficient, Low Radiation

Movies, video conferencing, music, CAD-CAM



70/72 Hz High Refresh Rate

16.1" viewable

MPR II, DHHS

Multimedia, Plug-n-Play ready

Software driven color balance

Easy to access front panel controls, OSD - On Screen Display setting controls

# of Excellence.

Now experience true multimedia with bright colors, excellent focus and high fidelity sound with Delta's *NEW* 17" Multimedia Monitor.

ntroducing Delta's 17" Multimedia Monitor the DB-1765 series (16.1" viewable). Delta Products has been making monitors for others for over ten years. Now they are coming direct to you with this years most exciting multimedia, Plug-n-Play monitor.

Whether you are using it for word processing, music, or sophisticated CAD-CAM programs,

Delta will make viewing a pleasure. Delta's line of 15" (13.8" viewable) and 17" Multimedia Monitors are quality built to rigid technical standards. Available in flat screen with super fine dot pitch, the 15" and 17" monitors come with up to 1280 x 1024 NI full screen resolution, plus software driven, easy-to-use color balance for fine tuning.

As with all multimedia sound is everything. Built into every Delta Multimedia Monitor are state-of-the-art speakers producing excellent highs, and thunderous lows, giving you that extra edge of excitement when playing your favorite action CD.

Delta brand monitors are extremely well priced for major savings, and are backed with a 3-year warranty\*. To learn more about this or other fine Delta products, as well as a dealer near you, call our toll free number now. Of course, distributor inquiries are always welcomed.

1-888-88DELTA
1-510-770-0660



ISO9002





© 1996 Delta Products Corporation. All specifications are subject to change. All other trademarks or trade names are the property of their respective companies. \*2-year parts and labor, 3rd year limited warranty. Write: Monitor Sales - 3225 Laurelview Court, Fremont, CA.

### Dig Deeper!

# Listen!

thousands of

Interact!



Check out <u>PC World's</u> award-winning Web site — an interactive gateway to even more of the powerful PC-buying and how-to information you're looking for-

http://www.pcworld.com



FREE offer! Register with <u>PC World Online</u>, and each day we'll e-mail you the computing tips of your choice absolutely FREE! Select from:

- Microsoft Windows 95
- Netscape Navigator
- Shareware Picks
- Microsoft Office
- Macintosh

- Microsoft Publisher
  - Lotus Notes
  - Lotus SmartSuite
  - Microsoft Windows NT
  - Cool Web Sites

- Bugs & Fixes
- Computer Industry Gossip
- Microsoft Internet Explorer
- Tangled Web (Soap Opera)
- PC Games

We'll also keep you abreast of exciting new content, features and contests through our weekly newsletter, PC World Watch.

Register today at:

http://www.pcworld.com/tips4free



# PC WORLD 65% Savings Plus a Free CD

Yes. Send me PC WORLD and my free PC WORLD Shareware CD-ROM! I'll pay just \$24.95 for 12 monthly issues—65% off the annual newsstand rate.

Also, please rush my FREE CD-ROM!

| N | A | M | E |
|---|---|---|---|
|   |   |   |   |

COMPANY

ADDRESS

#### CITY / STATE / ZIP

Please allow 6-8 weeks for delivery of your first issue, Canadian and Mexican orders please add \$20 USD per subscription for postage plus 7% GST (#R124669680). All other countries send \$70.95 USD to PC World, P.O. Box 55029, Boulder CO 80322-5029. Printed in the USA. Savings based on newsstand rate of \$71.40

4MLA3



# PC WORLD ESTATE CD-ROM

Loaded with over 100 great Shareware programs-including complete applications, add-ons, utilities, internet tools and the best in shareware games. This CD-ROM is yours absolutely FREE! PIERSE VOUT ACCEPT CIFT!



#### **BUSINESS REPLY MAIL**

FIRST-CLASS MAIL PERMIT NO. 1262 BOULDER CO

**POSTAGE WILL BE PAID BY ADDRESSEE** 

# PC WORLD

SUBSCRIPTION DEPARTMENT PO BOX 51833 BOULDER CO 80323-1833 NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES





# 

### Digital Bones, Oliver Stone, and the Great Unknown

#### **SKELETON CRUISE**

CAN'T REMEMBER MORE than one line of the "hip bone's connected to the..." song? If so, you're due for an anatomy refresher course, and you've got two new CD-ROMs to get you started.

Far more serious and straightforward is DK Multimedia's The Ultimate 3D Skeleton. which focuses entirely on the human body's 206 bones and offers lots of helpful pronunciations, animations, and images. You can turn bones around in 3-D

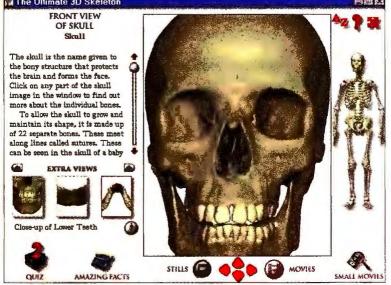
> views, jump to related facts, do quizzes, and copy and print images and text. Written in a dry, encyclopedia-like style, this title isn't as fun or innovative as A.D.A.M. But make no bones about it: Both programs display an impressive body of knowledge.

> > —James Oliver Cury

#### A.D.A.M. The Inside Story, 1997 Edition

GRADE: A; PRICE: \$40 street; A.D.A.M. Software; 800/955-9920.

READER SERVICE NO. 730



3D SKELETON: A clean interface gives you access to 3-D views, animations, and pronunciations for all the bones in the body.

A.D.A.M. Software's A.D.A.M. The Inside

Story combines detailed, customizable anatomy illustrations with appealing

humor. You can specify how you want to

view a body—by gender, by skin color,

with or without fig leaf, and so on. Engag-

ing and comedic animation, narrated by

Adam and Eve, explain how the body's 12

systems work. The 1997 edition lets you view the skull, heart, and lungs using

stunning 3-D models. The disc also

includes interactive learning games,

quizzes, and Internet links. And now you

can print those colorful illustrations,

Christina Wood

although you still can't copy the text.

#### The Ultimate 3D Skeleton

GRADE: B; PRICE: \$30 street; DK Multimedia; 800/356-6575.

READER SERVICE NO. 731

#### WHO'S ON FIRST?

BASED ON THE popular book of the same name, The Baseball Encyclopedia CD-ROM includes exhaustive, searchable statistics on every major-league batter, pitcher, manager, and team in history—and throws in some choice video clips as well. You can also use the disc's links to World Wide Web sites and download the latest updates, such as box scores.

Fans of statistical analyst Bill James will enjoy the interactive game, based on his

approach, that lets you build your own baseball team and see how it would fare in a virtual league. You can then pit your team against others playing on the Internet. The Baseball Encyclopedia doesn't offer the elegant graphics or solid storytelling found in Microsoft's Complete Baseball, but for statistics enthusiasts this CD-ROM, while not a home run, does clear the bases. —Derk Richardson ▶

#### Tee Time

IN REAL LIFE, you may be the world's worst golfer, but Enteractive's Picture Perfect Golf lets you become a pro in your dreams. In this entertaining CD-ROM game, you tee-off at the world-renowned Harbour Town Golf Links, photorealistically captured here. The \$200 version of the game comes with an external golf club that you plug into your PC's serial port. As you swing the club, an infrared light beam passes over a base unit, launching the cyber-golf ball. This club is no substitute for the real thing: All the elements of a good golf swing-stance, balance, control-don't matter here as much as speed and direction. -Angela Freeman

#### Picture Perfect Golf

GRADE: B; PRICE: \$199.95 list (club and software), \$29.95 list (software only); Enteractive Inc., 800/433-4464.

READER SERVICE NO. 733



GOLF AT THE SPEED OF LIGHT: With the Virtual Reality Golf Club, it's easy swinging.

#### The Baseball Encyclopedia

GRADE: B+; \$49.95 list; Macmillan Digital USA; 800/910-0099.

READER SERVICE NO. 732

#### **NIXON: STICKS AND STONE**

LET ME MAKE THIS perfectly clear: You don't have to be a Nixon apologist to see through Nixon: The CD-ROM, supposedly an in-depth examination of the late former president. It offers thousands of pages of documents (many previously unpublished), transcripts of the infamous White House tapes, historical photos and video footage, and the contributions of Watergate-era staffers. But this disc is essentially an ad for Oliver Stone's recent film. Snooping through a 3-D White House, you're subjected to far too many clips of Anthony Hopkins aping the darkest and most pathetic sides of ol' Milhous. As Stone notes in his video interview, Watergate "is an old and painful thing for Americans to go through." Amen. — D.R.

Nixon: The CD-ROM

GRADE: C-; PRICE: \$39.95 list; Graphix Zone, Inc.; 800/828-3838.

READER SERVICE NO. 734

#### HOMEWORK HELPER

WHEN I WAS a student, I had to walk barefoot to the library, in the snow. But now there's the Mindscape Student Reference Library, a handy collection of ten reference books on one CD-ROM. MSRL doesn't have as much multimedia content as its competitor, Microsoft Bookshelf, and its Internet link is simply a loosely filtered search on existing Word Wide Web search engines. Still, MSRL lets you batch-print in sequential order maps, articles, or other elements, and it automatically generates a bibliography of all bookmarked items. In short, you can research a report on, say, Uruguay and still have

• U.S. households with annual incomes from \$25,000 to \$34,000 that own a PC: 23 percent

 U.S. households with incomes over \$60,000 that own a PC: 66 percent

SOURCE: THE CHILDREN'S PARTNERSHIP

time for a round of Doom. These kids today have it made. —Glenn McDonald Mindscape Student Reference Library GRADE: B; PRICE: \$34.99 list; Mindscape; 800/234-3088.

READER SERVICE NO. 735

#### JUST DOWNRIGHT WEIRD

I'VE SPENT MORE nights scaring myself silly watching X-Files than I dare admit. And now this: The Unexplained, an interactive documentary about all things creepy and weird. This disc is packed with an audio narrative, complemented by essays and vivid photography, that guides you through topics such as Earth Mysteries, Ghosts and Spirits, and Mysterious Beings. There's a lot to learn—for example, I thought that spontaneous human combustion was merely a fun topic for dinner parties. But according to The Unexplained, actual exploding bodies have been documented. The essays can be difficult to read, and the narration sometimes skips ahead before you're ready. But overall, The Unexplained is engaging; the ghost section alone is guaranteed to raise goose bumps. -Gabrielle Mitchell

#### The Unexplained

GRADE B+; PRICE: \$30 street; FlagTower Multimedia; 800/338-2006.

READER SERVICE NO. 736

#### **MATH MADNESS**

EVER BUILT A CAR using a lobster and a perfume atomizer? Here's your chance. Designed to hone early math skills of kids ages 4 to 8, Infinity City features 50 creative activities, many of which focus on real-life tasks such as telling time, counting money, and categorizing items. Enter one of the ten colorful activity sites (which include a junkyard and a grocery store), select one of the five wacky Gigglebone Gang characters, and the fun begins. Whether they're bopping to one of Zack the Taxi Driver's catchy tunes or helping Chester the Raccoon tell time at the Guggen Time Museum, kids will keep coming back to Infinity City. —Anne Kandra **Infinity City** 

GRADE: A; PRICE: \$30 street; Headbone Interactive: 206/323-0073.

READER SERVICE NO. 737

#### KEEPING UP

#### NOT-SO-VIRTUAL CITIES

WHETHER YOU'RE a tourist in a new city or a local resident trying to keep

> tabs on your town, you'll want to check out CitySearch (http: //www.citysearch .com), a new Web site devoted to comings and goings

in major U.S. cities. You'll find everything from local movie and sports team schedules to city council and school board agendas. So far, CitySearch offers comprehensive Web pages for Pasadena, California; Chapel Hill, Durham, and Raleigh, North Carolina; and New York City. The La Crescenta, California-based start-up expects to add nine more U.S. cities soon, including Chicago, Dallas,

#### BIG INFO FOR SMALL BUSINESS

Minneapolis, and Seattle.

NO SINGLE WEB SITE can tell you everything you need to know about marketing your small business, but AT&T Business Network (http://www.bnet.att.com) comes close. It includes daily news updates plus links to hundreds of business-related sites-from government resources to specialized publications for marketing, legal, or technology news. The personal business section has links to travel sites, personal-finance Web pages, and job-hunting resources. Right now everything on the site is free, but over time AT&T will begin charging for some services.

#### THE LOWDOWN ON LAWYERS

WANT TO GET THE SCOOP on a lawyer

before you start racking up the hourly fees? Check out the Martindale-Hubbell directory and attorney locator (http://www.mar tindale.com), It's the online version of the

well-respected national directory of baraccredited lawyers. Some listings are bare bones, including only name, address, specialty, and educational background, but others include detailed information about honors, affiliations, and more.

-Roberta Furger

Seagate's all-new TapeStor drives are the effortless, affordable way to store and protect your valuable information.

You'll never need to worry again about

system failures, power outages, or accidental deletion of files.

With TapeStor, you'll have immediate access to all your backed up data.

Our stylish vertical design features an integrated

power supply and cable. Whether you choose the 800 MB or 3.2 GB model, you'll have plenty of reliable capacity for backing up, archiving, or transferring your files.

TapeStor drives install in seconds, connecting to the floppy disk controller or parallel port of your IBM compatible PC or workstation. The kit includes everything needed for installation, including a 4-step installation poster. Each TapeStor drive also comes with Tape-It™ for Seagate, a unique drag and drop backup and file management software program. This Win95 compatible program makes your tape drive look just like another disc drive, for easy copying and transfer of files between disc and tape.

Seagate TapeStor drives use industry standard Travan media (the latest in tape storage technology), and are fully compatible with other Travan and QIC-compliant tapes. For more information, contact your local computer retailer, visit our website at www.seagate.com, or call 800-626-6637.

The all-new TapeStor drives from Seagate. Easy to use. Easy to install. Hard to do without.



Seagate and the Seagate logo are registered trademarks and TapeStor is a trademark of Seagate Technology, Inc. All other trademarks are the property of their respective owners. 61996 Seagate Technology, Inc.

## TOP 5 HOME PCs

| <i>y</i> . | SYSTEMS  | Street<br>price<br>(8/5/96) | Overall<br>rating | PC World-<br>Bench<br>score | Reliability/<br>service<br>rating | Setup<br>rating | Comments  | Reader<br>service<br>number |
|------------|--|-----------------------------|-------------------|-----------------------------|-----------------------------------|-----------------|---|-----------------------------|
| 1          | Hewlett-Packard<br>Pavilion 7130P<br>800/724-6631<br>http://www.hp.com | \$2348                      | 77                | 154<br>good                 | best/<br>best                     | very good       | FEATURES: P-133, 16MB of RAM, 1.6GB hard disk, 6X CD-ROM drive, 2B.8-kbps fax-modem with voice mail and speakerphone, 15-inch monitor, built-in color scanner. PRO/CON: Snapshot-size color scanner and image editing software. Very easy setup, great software including Microsoft Encarta, Quicken, and SimCity 2000. | 709                         |
| 2          | Micron Home MPC<br>800/438-3343<br>http://www.micron.com               | \$3049                      | 75                | 215<br>outstanding          | best/<br>best                     | good            | FEATURES: P-200, 32MB of RAM, 1.2GB hard disk, BX CD-ROM drive, 28.8-kbps fax-modem with voice mail, 17-inch monitor. PRO/CON: True power machine for home or home office. Very high price buys blazing speed and a big monitor. Nice software package includes Ouicken, Microsoft Encarta, and MechWarrior 2.          | 710                         |
| 3          | Compaq Presario 4712<br>800/345-1518<br>http://www.compaq.com          | \$2698                      | 75                | 188<br>very good            | best/<br>fair                     | good            | FEATURES: P-166, 24M8 of RAM, 2.5GB hard disk, 6X CO-ROM drive, 33.6-kbps fax-modem with DSVO, voice mail, and speakerphone, 15-inch monitor. PRO/CON: Great home office communications center. DSVO allows for simultaneous voice and data connections. Price is a little high. Limited software package.              | 711                         |
| 4          | Nexar 9000<br>508/836-8700<br>http://www.nexr.com                      | \$2299                      | 75                | 150<br>good                 | 1                                 | satisfactory    | FEATURES: P-166, 16MB of RAM, 1.2GB hard disk, BX CO-ROM drive, 2B.B-kbps fax-modem with voice mail, 15-inch monitor. PRO/CON: Good price. Easy access to the CPU, memory chips, and cache modules and easy hard disk exchange make for quick upgrades. So-so software package and mediocre setup rating.               | 712                         |
| 5          | Gateway 2000 P5-166 Family PC<br>800/846-2000<br>http://www.gw2K.com   | \$2449                      | 75                | 199<br>outstanding          | fair/<br>fair                     | good            | FEATURES: P-166, 16MB of RAM, 2.5GB hard disk, 8X CO-ROM drive, 17-inch monitor. PRO/CON: Very fast, good price, big hard drive and monitor. Available only through mail order. Gateway's so-so reliability rating and phone-based support make this system one for the confident user.                                 | 713                         |
|            | Best Buy http://www.pc   | world.com/top               | 5soho             |                             |                                   |                 | All products:   | 910                         |

HOW WE TEST The overall rating is based on reliability and service (30 percent), price (20 percent), PC WorldBench performance (20 percent), setup (10 percent), compatibility (10 percent), and extra features (10 percent). Reliability and service ratings are based on results of PC World's Reliability and Service survey. Insufficient data.



PROVING JUST HOW UNPREDICTABLE the home PC market has become, this month's Top 5 chart features new PCs from Nexar and Compag, and a new number

one—Hewlett-Packard's Pentium-133-based Pavilion 7130P.

The Pavilion is actually an updated version of a preproduction model we reviewed in June. Besides offering a substantial performance improvement, this HP has the best setup we've ever seen. It

offers a built-in scanner for photographs up to 5 by 7 inches, and a great family software package.

Micron reappears on the chart at number two this month with a newly configured popular Home upgrades via the removable side panel.

MPC. The machine now sports a Pentium-200 processor and 32MB of RAM, making it the fastest home system ever. Its \$3049 price isn't for users on a budget, but if you're looking for a powerful PC

that can crunch large spreadsheets or run demanding CD-ROMs, then Micron's Home MPC is the one

for you.

Making its debut in the Top 5 is the Pentium-166 Nexar 9000.

diocre marks for its lack of color-coded cables to ease setup. Two machines return from last month's chart. The third-place Compaq Presario 4712 is a good choice for a home office communications hub. The Pentium-166 unit has 24MB of RAM, a 33.6-kbps modem, and a host of telephony features.

Solid performance and a low price of \$2299 land it at number four, but what

makes the Nexar unique is its easy upgradability. A removable side panel gives

you fast access to the clearly marked CPU,

memory, and cache modules, and the hard drive is also designed for hassle-free

exchange. However, the Nexar gets me-

Still holding its own after two months in the Top 5 is the Gateway 2000 P5-166 Family PC. The other systems' more sophisticated features and easier setup dropped the P5-166 to fifth place.

-Kirk Steers

Kirk Steers is a contributing editor for PC World. Testing performed by Ulrike Diehlmann of the PC World Test Center.



Your Full Line Monitor Source from 9" to 21"

## WITH A CromaClear SMILE

Snite

LEADING EDGE

CROMACLEAR™

CRT TECHNOLOGY

THIS SOPHISTICATED

PRODUCES ASTONISHING COLOR SATURATION

AND CLARITY, SHARPLY DEFINED TEXT AND GRAPHICS, AND A 3D LIKE DEPTH.

THE PATENTED CROMACLEAR TM CRT INCORPORATES THE BEST ATTRIBUTES OF THE "APERTURE GRILL" (CLEAR GRAPHICS) AND THE "DOT MATRIX" (CLEAR TEXT) CRT MASKING TECHNOLOGY INTO THE RADICALLY NEW 0.25 MM "SLOT PITCH" MASKING

TECHNOLOGY CALLED CROMACLEAR ... CLEARLY THE

SLOT PITCH

TECHNOLOGY

MASKING

INDUSTRY LEADER .

SMILE'S PRICE PERFORMANCE "REV 5 SERIES" INCLUDES

15" AND 17" MONITORS SPECIFICALLY DESIGNED TO FULFILL THE NEEDS OF THE SOPHISTICATED POWER USER FROM CAD/CAM/CAE TO PROFESSIONAL DESKTOP PUBLISHING AND GRAPHIC DESIGN. SIMPLY PUT, YOU'LL ENJOY THE BRIGHTEST, SHARPEST, CLEAREST IMAGES IN THE INDUSTRY ...JUST WHAT YOU'VE COME TO EXPECT FROM OUR...

Picture Perfect Smiles.



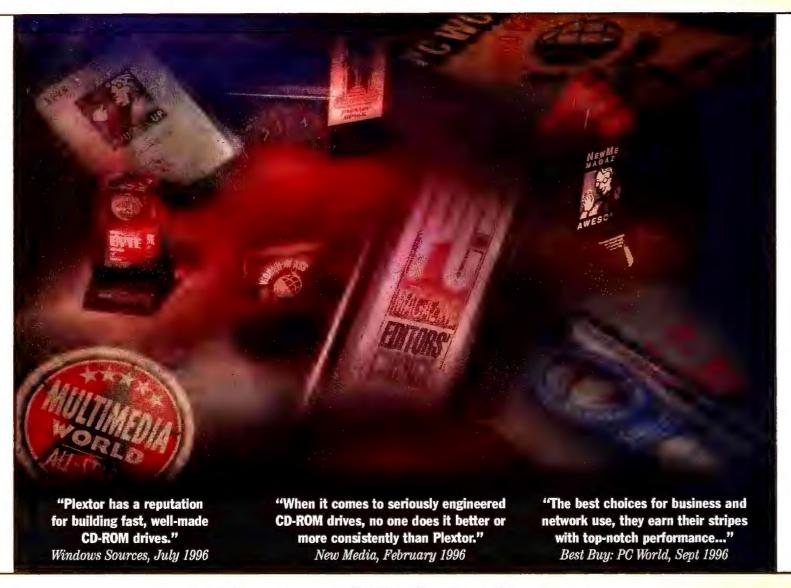
To receive further information about our total line of manitors, call tall free 1(800) 876-4532 or NJ 1 (201) 772-3661 or E-mail...SMILEKFC@AOL.com
SMILE USA California and New Jersy • SMILE Worldwide Germany, France, 8enelux UK, Pocific Rim Smile is the U.S. subsidiary and a registered trademark of Kuo Feng Carporation...A worldwide 150-9002 certified leader in manufacturing of reliable, price-performance manitors. (All other products named in this ad are trademarks or registered trademarks and are the property of their respective companies.







## Truth in Advertising.



## **Plextor CD Solutions.**

The critics of the techno-world say it best. Plextor CD products set the benchmark for professional quality and performance.

Utmost reliability. All Plextor's products adhere to the strictest standards of quality. From the durable metal construction of our CD drives, to the fault tolerance of our CD-ROM servers, Plextor virtually eliminates downtime.

Leading edge PC maker, Micron Electronics Inc., agrees with the critics. That's why only Plextor CD-ROM drives make it into their top-of-the-line computers.

For solo users and networks alike, Plextor CD-ROM drives consistently deliver blistering fast performance—nothing out there is faster. And for intense data searches, mega-chunk transfers,

smooth-motion video, and seamless animation – even running virtual reality programs in real time – no other CD-ROM drive compares.

We provide professional quality CD-ROM drives, CD-R drives, CD-ROM towers, and CD-ROM servers that give on-line access to a multitude of drives simultaneously. And look for our soon-to-be-released 200 disc CD-ROM changer. Whatever your needs, Plextor provides the industry's best.

Be your own critic. Log on for complete reviews, specs and what's new at http://www.plextor.com. Or call 1-800-4PLEXTOR

for the Plextor devotee nearest you.



CD-ROM Drives

CD-R Drives CD-ROM Towers

12PleX

Now

Available!

CD-ROM Network Servers CD-ROM Jukeboxes







higher quality

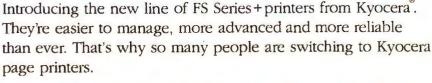
"Give Me One Good Reason Why I Should Switch To Kyocera Printers."

network management

And Support

Kyocera offers a broad range of FS-Series + printers:

- 600 dpi
- 10 and 18 ppm
- SNMP support
- Cartridge-free
- Multiprotocol support
- Modular paper-handling
- Duplexing
- 15-bin sorter with mailbox option
- Energy Star compliant
- Compact design



Call 1-800-232-6797, Dept. 1016 To Apply For A Free 30-Day Trial.\*

Call today and find out why Kyocera is the new force in network and workgroup printers.







©1996 Kyocera Electronics. Inc. Kyocera is a registered trademark of Kyocera Corporation. Energy Star does not represent EPA endorsements of any product or service.

All other product or service names mentioned herein may be trademarks or registered trademarks of their respective owners. "Free to qualified respondents.

## Cool Tools for Win 95 (and Win 3.x)

EVERYONE LAUGHED. I didn't even think it was possible. But it's true: I finally upgraded to Windows 95. I'm enjoying most of Win 95, but it's not perfect. Fortunately, I found three programs that should have been built into Win 95. (And Win 3.x diehards, there are versions for you, too.)

Take Win 95's Explorer. It's better than Win 3.x's File Manager; but sorry, still no cigar. A great substitute is MicroHelp's PowerDesk ExplorerPlus. ExplorerPlus impressed me right away because it can be set up to display multiple drive windows upon loading. And it supplies an amazing array of toolbar buttons-copy to, move, delete, recycle bin, open and tile a new window, DOS window-all customizable with drag and drop.

To peek inside files, simply select one and open an ExplorerPlus viewer pane. There's also a DOS command line, and a drive bar that lets you switch to another drive with a single click.

Another great feature: ExplorerPlus can be configured to emulate keystrokes for the DOS version of Norton Commander or Xtree Pro for Windows. For old DOS and Win 3.x hounds like me, this makes the move to Win 95 a lot easier.

Still using Win 3.x? Don't fret: There's WizManager Pro, a File Manager add-on written by Mijenix, the same company that created ExplorerPlus for MicroHelp. Though it can't match all of Explorer-Plus's features, it comes close. A time-limited version is available on Mijenix's Web site (http://www.mijenix.com).

#### TAKING THE TASKBAR TO TASK

I DIDN'T REALIZE how much better Win 95's Taskbar could be until I loaded Micro-Help's other gem: PowerDesk Toolbar.

This program offers dozens of handy

When I first installed ZipFolders, I was startled. It appeared to transform all my ZIP files into new folders.

ways to access everyday Win 95 functions. For example, it displays icons of all my printers so I can switch instantly between devices or print files by dragging and dropping them from the desktop. It also monitors resource levels, and provides a DOS command line and one-click access to shutting down the system or changing screen settings. The Toolbar can integrate into Win 95's Taskbar, attach to another screen edge, or float on the desktop.

PowerDesk Toolbar is also infinitely customizable. I took dozens of items that I use regularly—specific applications, key files, folders, and Start menus-and dragged them onto the Toolbar. Voilà! One-click access to everything.

MicroHelp puts PowerDesk Toolbar and ExplorerPlus onto one disk for under \$50. Or grab a time-limited evaluation copy of both apps from MicroHelp's Web site (http://www.microhelp.com).

#### ZIP? YOU'RE ZAPPED

I SAVED THE BEST for last. Is anything more cumbersome than unarchiv-

> ing ZIP files? Now, that hassle is history, thanks to ZipFolders. Simply put, this program makes a ZIP file act as if it's unzipped: Everything inside a ZIP file becomes as accessible as the contents of any other file on your drive. You can read zipped text files and run apps without

decompressing them. When you check for viruses or do a search, ZIP files act just like regular files.

When I installed ZipFolders, I was startled. It appeared to transform all my ZIP files into new folders. Each folder held the contents of the ZIP file and used that file's name. Actually, the ZIP files remained compressed on my hard drive, but the software made them look like folders—kinda like virtual folders. ZipFolders works in Win 95, Win 3.x, and DOS (from within Windows). A time-limited version is available on Mijenix's Web site.

You probably have some cool Windows 95 tools, too. Tell me all about them at steve\_bass@pcworld.com.

#### PowerDesk ExplorerPlus, PowerDesk Toolbar

\$49.95 for both; MicroHelp; 800/777-3322, 770/516-0899, 770/516-1099 (fax); http://www .microhelp.com

READER SERVICE NO. 714

#### WizManager Pro, ZipFolders

\$39.95, \$29.95; Mijenix; 800/645-3649, 608/277-1981, 608/277-1971 (fax); http://www .mijenix.com

READER SERVICE NO. 715

Contributing Editor Steve Bass, a licensed marriage and family therapist, is president of the Pasadena IBM Users Group.

SOUND ADVICE

# The Best Speakers for \$200 or Less

For as little as \$99, you can find speakers that produce sound to satisfy serious gamers and office audiophiles alike.

#### BY DIANE MEHTA

WHEN YOU POP QUAKE IN YOUR CD-ROM drive, you want the full effect of Trent Reznor's fantastically creepy soundtrack. Clear, realistic audio makes any multimedia or music CD more enjoyable. PC speaker prices can range up to almost \$1000, but for about \$200 or less, we found a slew of two- and three-piece sets that produce high-quality sound.

#### M7 Title Reviews

Two new games re-create Civil War dramas, and two simulations put you behind the wheel in world-class car races. We also take ten other titles for a spin this month.

#### M10 Hardware Reviews

Heighten your multimedia pleasure: Check out our Top 5 CD-ROM drives and sound boards.

#### M21 0&A

Solutions to your multimedia problems.

## The smallest, lightest, brightest multimedia projector is now an even brighter choice.



 ${
m T_{urn\ your\ bright\ ideas}}$ into brilliance. Introducing the Epson ELP-3300, the world's smallest, lightest and brightest multimedia projector. Now you can make brilliant presentations anytime and anywhere without turning off the lights.

The world leader in high performance, portable projectors. The revolutionary ELP-3300 shines 75% brighter than ordinary single-LCD projectors, is about the size of a briefcase and weighs less than 17 pounds. Epson's breakthrough prism technology and three separate Poly-Silicon LCD's generate incredible detail, visibly better brightness (350 lumens) and superior color reproduction.

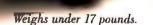
Easy-to-Use & Versatile. In just seconds, you can connect to any PC, Mac, VCR or camcorder. The ELP-3300 supports full-motion video, colorful text, animated graphics and stereo sound to address a broad range of presentation needs. And for added confidence on the road, Epson's exclusive Extra Care Road Service Program can offer a replacement unit, usually overnight.

Call for a free video. Call 1-800-442-1977, ask for operator 3088 and we'll send you a free video on the benefits of the revolutionary ELP-3300. Or visit our Web site at http://www.epson.com and see for yourself why Epson is the brighter choice.





Epson's Prism Technology, and 3 advanced LCD's (not just 1) produce the brightest, high-quality images.



YOU'VE GOT TO SEE IT IN



COLOR."

#### **JAZZ 3D JS-300**

WITH AN INNOVATIVE design that provides separate, adjustable 3-D settings for music, theater, and games, Jazz's new speakers let you reset them to the type of audio you're running;



NEC's impressive 3-D stereo sound technology. The music setting really highlights the vocals on my Nina Hagen CD; the theater setting yields a wide, balanced sound; and the game selection produces high-intensity, loud audio-perfect for Doom. To keep the design sleek, the bass, treble, and volume controls are inset, so you must rotate them with your thumb instead of twisting them. The Jazz is the best choice for budget-conscious shoppers looking for a two-piece system.

\$99 street; Jazz; 818/336-2689 READER SERVICE NO. 775

**ROLAND MA-12CP POWERED-**

SPEAKER SET

HEAVY IN BOTH weight and output, Roland's MA-12CP units produce strong, spacious sound and deep bass tones, so if you like Led Zeppelin or simply want "big sound," these are a good choice. The disadvantage



Some of the ten systems here use 3-D sound technologies that deepen and widen the audio. They make the screech of your tires and the roar of your engine as you maneuver a hairpin turn in Grand Prix II sound a little too real. Others include subwoofers for thunderous bass effects—perfect for blasting away enemy thugs in Crusader. And if you like to play your Luciano Pavarotti CD while you cruise the Web, some of the high-end units in this roundup may rival your home stereo system's sound. In addition, all the 2- and 3-piece sets reviewed here provide magnetic shielding to avoid interference with your monitor or hard disk.

We hooked up each sound system to a Gateway 2000 PC and played various multimedia games and audio CDs. We paid close attention to ease of use as well as each speaker's footprint and appearance, but were primarily concerned with sound quality and price. Although the three-piece systems (those with a subwoofer) usually produce better sound, that isn't always the case. For example, the two-piece Jazz 3D JS-300 speakers, using NEC's 3-D stereo sound technology, yielded audio comparable to some of the threepiece sets we evaluated. However, the Nakamichi SP3d's two speakers and subwoofer—our Best Buy system—offered the most gutwrenching, enveloping sound, with Atlantic's, Creative Labs', and Yamaha's systems all following close behind.

When you're shopping, bring your favorite CD to the store, turn up the volume, and fiddle with the controls. Let your ears be the judge.

#### TWO-PIECE SYSTEMS

**AUDIO-TECHNICA MMS557** 2-WAY 2-CHANNEL **AC POWERED SPEAKERS** 



CONSIDER THESE the high end of the low end. Even without a subwoofer, the MMS557's two-way woofer and tweeter produce deep, spacious sounds, albeit not nearly as nuanced and clean as the Nakamichi speakers. The MMS557's speakers are a bit boxy, but their black color and short stands enhance their looks. You don't have to plug them into the wall because they feature battery-free use (they have an internal power supply). They also have a built-in two-channel amplifier. If you need inexpensive, easy-to-use speakers, these are your ticket. \$100 street; Audio-Technica; 330/686-2600

READER SERVICE NO. 774

is that they weigh 5.2 pounds apiece. The advantage is that each speaker is powered separately, so you can adjust volume, bass, and treble on each, allowing you to highlight bass on one satellite and treble on the other. If you want versatile, heavyduty speakers with hearty sound quality-and you don't mind paying the high price they command—these are worth putting on your short list.

\$199 street; Roland; 213/685-5141 READER SERVICE NO. 776

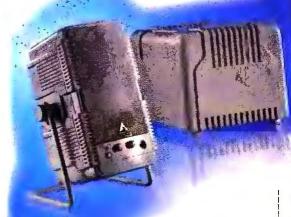
#### THREE-PIECE SYSTEMS

#### **ALTEC LANSING ACS45 POWERCUBE MULTIMEDIA**

THE THREE-PIECE PowerCube speaker system includes two well-designed satellite cube speakers and a heavy, resonant bass subwoofer for low frequency response. At \$99 including the subwoofer, the PowerCube system is a good, cheap buy, but the sound isn't nearly as good as the top sets we tried that cost almost twice as much. The bass adds depth but doesn't make you feel as if the

#### ATLANTIC M110 SPEAKERS AND M105 BASS TOASTER SUBWOOFER

WITH SMALL but sturdy satellites and Atlantic's Bass Toaster subwoofer, prepare yourself for a virtual theater of sound. On a par with the Best Buy Nakamichi speakers,



Atlantic M110 Speakers and M105 Bass Toaster Subwoofer

this set provides a spacious, enveloping sound that, with the prominent bass, might just make you forget you're working on a computer. When I played Portishead and closed my eyes, the sound was so resonant that I forgot I was at the office until someone asked me to

> turn the volume down. If you're an avid music listener, you should seriously consider these. The treble adjustment extends the sound quality even more,

and overall you get good tonal balance at different volumes.

\$200 street; Atlantic Technology; 617/762-6300 READER SERVICE NO. 778

#### SBS380 SPEAKERS AND SBW500 SUBWOOFER

CREATIVE LABS' NEW Sound Blaster speaker line is sure to give other manufacturers a run for their money.

CREATIVE LABS SOUND BLASTER

The SBS380 speakers (\$99) plus a resonant \$99 SBW500 subwoofer emit sound quality comparable to the Nakamichi system. The speakers use Creative Labs' 3D Stereo Enhancement

Technology to achieve a wideranging sound. The subwoofer adds such a deep dimension that it will entrance audiophiles. Whether I played Itzak Perlman or Massive Attack, these speakers were dynamite. The only drawback is in the design: The bass and treble controls are combined into one knob on



the side of the right speaker. Except for the volume button, adjustments may be slightly inconvenient.

\$198 street; Creative Labs; 800/998-1000

READER SERVICE NO.779

## SPEAKER SYSTEM

#### Altec Lansing ACS45 PowerCube Multimedia Speaker System

audio is actually surrounding you. The two satellites are sleek, small, and come with detachable stands. Altec Lansing's innovative "electronic volume controls" on the top of the right speaker consist of two buttons that let you adjust the sound level. The bass adjustment, though, is inconveniently located on the back of the subwoofer.

\$99 street; Altec Lansing; 800/648-6663 READER SERVICE NO. 777

#### SPEAKERS

FEATURES

Volume

\* Best Buy 💽 Yes 🔘 No

Bass

#### TWO-PIECE SYSTEMS Audio-Technica MMS557 Roland MA-12CP 2-Way 2-Channel AC Jazz 3D JS-300 Powered-**Powered Speakers** Speaker Set Satellite height x width x depth (inches) 9 x 5.5 x 6 8.6 x 5.2 x 6.5 10 x 5 x 5 Subwoofer height x width x depth (inches) Separate bass and treble controls Location of controls front front front front front front Claimed watts per channel (satellites/subwoofer) 10/-14/-10/-

#### LABTEC LCS-2612 GAMER SERIES

THE LABTEC SPEAKERS produce bright, full audio with clear bass and strong highs. Their sound isn't quite up to that of the Nakamichi speakers, but this system well worth the investment. The Labtec satellites come with mounting brackets to attach to your computer, eliminating the tangle of wires typical of free-floating desk speakers. A sleek desk-based subwoofer sits below the right speaker and has controls on the front. If you're into minimalist design and require high-qual-



ity sound without spending too much, these are a good choice.

\$150 street; Labtec; 360/896-2000 READER SERVICE NO. 780

#### NAKAMICHI SP3D



THE MERCEDES OF computer speakers, these compact SP3d units have well-defined audio

with resonant bass, an impressive frequency range for highs and lows, and "presence" that lets you simulate being at a live performance. The SP3ds use SRS Labs' Sound Retrieval System 3-D stereo technology, producing an enveloping,

Nakamichi SP3d panoramic sound that surpasses all others. This is the system that has earned the

privilege of playing your Mozart and Beethoven CDs. You can attach the satellites to your monitor, change their angles,

or leave them on your desk with the subwoofer, which looks a bit like a spaceship. These high-performance units produce sound that's out of this world.

\$190 street; Nakamichi; 310/538-8150 READER SERVICE NO. 781

#### **SONY SRS-PC300D**

THE SONY SRS-PC300D speakers and subwoofer put out spacious audio that won't disappoint demanding users. Although it's not quite on the level of the Nakamichi SP3D, the sound quality should please multimedia



the PC as a stereo substitute. Almost everything sounds good on these units. You can attach the small cubeke satellites to your monitor, which results in fuller sound than if placed on the desktop. The subwoofer has a mixing switch that lets you combine audio from two sources.

\$170 street; Sony Electronics; 800/352-7669 READER SERVICE NO. 782

#### YAMAHA SYSTEM 45

SPORTING TWO off-white rectangular satellites and a subwoofer, Yama-

ha's speakers are in



a league with Nakamichi's (although they do cost a little more). If you're into arcade-quality sound and a physical, high-performance bass, you'll love these. With dual stereo inputs, you can play games or listen to music without switching cables. The subwoofer's low frequency response adds greater presence than the stand-alone satellites provide. The set's available in snazzy

black, which should please fashionconscious multimedia users.

\$200 street; Yamaha; 714/522-9011

EADER SERVICE NO. 783

Diane Mehta is an associate editor for PC World.

#### THREE-PIECE SYSTEMS

| Altec Lansing ACS45 PowerCube Multimedia Speaker System   | Atlantic M110 Speakers<br>and M105 Bass Toaster<br>Subwoofer   | Creative Labs Sound<br>Blaster SBS380 speakers<br>and SBW500 subwoofer | Labtec<br>LCS-2612<br>Gamer Series      | Nakamichi<br>SP3d*                    | Sony<br>SRS-PC300D   | Yamaha<br>System 45  |
|---|--|--|---|---------------------------------------|--|--|
| 4.5 x 4 x 4.5   | 7 x 4 x 4.5  | 9 x 4.3 x 5.8  | 5.5 x 3 x 3.3                           | 5.2 x 3.9 x 6.8                       | 3.8 x 4 x 3.4  | 9.6 x 3.7 x 6.1  |
| 5.5 x 11 x 7  | 6.6 x 7.1 x 10.2   | 6.1 x 11.9 x 12.3  | 5.3 x 3.5 x 6.3                         | 7.5 x 7.9 x 7.9                       | 10.8 x 5.3 x 8.8   | 7.9 x 11 x 10.2  |
| יייי איייי איייי איייי איייי איייי אייייי איייי<br>איייי איייי איי | The state of the s | 0  | • · · · · · · · · · · · · · · · · · · · | · · · · · · · · · · · · · · · · · · · | د دو دو د مو د د د و د د د د د موده کار د د د د موده کار د د د د د موده کار د د د د موده کار د د د د د موده کا<br>پر انگریز<br>پر انگریز کار در  | and the state of t |
| top   | front  | side   | front                                   | front                                 | front  | front  |
| back  | back of subwoofer  | side   | front                                   | front                                 | front  | front  |
|   | front  | side   | front                                   | front                                 | and the second of the second o | front  |
| 6/20  | 3/22   | 10/25  | 4/12                                    | 6/13                                  | 12.5/25  | 10/25  |

## Why pay for cellular phone service if you only want it for emergency use?

The SOS Phone offers a 24-hour call center to connect you with your emergency roadside service, 911 service or family members in the event of an emergency.



Press the Tow button and your emergency road service will be dispatched to tow your automobile.

To tell you the truth, I am not interested in owning a cellular phone...except for use in an emergency. What would I do if my car broke down on the interstate or ran out of gas on some deserted back road? How would I get help? Like most women, I have the safety of my children to consider.

Last month, I inquired about cellular phone service. I was surprised to find out how expensive it was, even for the most basic calling plans! I just couldn't justify spending that much for something I may never need. Then a good friend told about a product she thought would solve my problem. It's the SOS Phone—a cellular phone service designed exclusively for emergency use!

What does it do? With the touch of a button, the SOS Phone will connect me to a roadside emergency service, a 911 service or a trained SOS operator, 24 hours a day. If I ever need help, I know it's just a phone call away.

Emergency assistance. By pressing the "tow" button, I'll be connected with my emergency roadside service provider. Or, if I don't have one, the SOS operator can recom-

The 911 button will connect you to 911 police or other emergency services, and the call is absolutely free!

mend one to me and dispatch them immediately.

The "911" button will connect me to the 911 emergency service in my areabest of all, the call is absolutely free!

Personalized service. Each SOS Phone has a serial number that is recorded at the Call Center, so each time I use my phone, the operators will know that it is me calling, and will greet me by name. Plus, my SOS Emergency Record will appear instantly on the computer screen and the operator will connect me with the person or emergency service I need.

Not just for emergencies. If I just want to call home to tell



my husband that the kids and I are running late, I can! By pressing the "call" button, I'll reach an operator. When I ask the operator to call home, I'll be connected automatically. And because the Call Center has my list of 10 most-used phone numbers, I don't even have to recite the number!

Great for teens. The SOS Phone is also a great thing to have around for my stepdaughter. I can rest assured that she'll always be able to get in touch with us (or an emergency service) if she needs to.

Cost control. Unlike ordinary cellular phone plans, the SOS Phone doesn't have any minimum usage requirements or any other stipulations that could change the price I expect to pay each month.

Plus, without my password, the only non-emergency calls my stepdaughter can make are to our 10 pre-

set phone numbers. I can even specify a maximum credit limit per month to eliminate the surprise of outrageous monthly bills!



Use the Call button to talk to an SOS operator or be connected to someone on your preset list of numbers.

begin to tell you how much confidence the SOS Phone has given me and my family. Why not try it yourself? If you don't enjoy its convenience and security, return it within 90 days for a "No Questions Asked" refund. It also comes with a three-year manufacturer's limited repair or replacement warranty.

SOS Phone . . . . . . . . . . . . . . . \$99 \$12 S&H

12-month service contract required for this price. Requires a one-time non-refundable activation fee of \$25 and a monthly charge of \$9.95. Calls made on the Call button are billed to your credit card at \$1.45 per minute. (That rate includes all local, long-distance, cellular and roaming fees.) For outgoing calls only.

Please mention promotional code 1788-MM-1105. For fastest service call toll-free 24 hours a day

800-238-5322 🕽 🚅









2820 Waterford Lake Drive, Suite 102 Midlothian, VA 23113

Circle 52 on reader service card

### Battle Simulations Bring Civil War to Life



ROBERT E. LEE: CIVIL WAR GENERAL from Sierra Online lets you lead either side in the war.

ENTERTAINMENT

THE LEGACY OF Robert E. Lee, the preeminent Confederate army general, lives on in two compelling CD-ROM battle simulations, Robert E. Lee: Civil War General and American Civil War.

Robert E. Lee: Civil War General sets a new standard for graphical Civil War pre-

National Overviews Build Force: Status

Corps and Division Orders

Benjamin Butler
Brigades: 4

Strength: 9858
Artillery: 2

Location: 65,8
Objective: 64,11
Entremehment: 5
Retreat level:Fatigue: 0 f Rested
Experience: 1 f Untried
Morale: 44

Command: 7

Comps

Supply city

Chambersburg

Withington

O Transfer brigades to Washington

Army stabits

O Transfer brigades to Washington

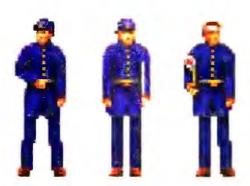
INTERACTIVE MAGIC'S American Civil War features a detailed play system that includes every battle in the conflict.

Corps and Divisio.

sentation, with live-action video reenactments, animated battles, and a beautifully designed interface. The disc captures the emotional toll of the conflict, and the melancholy of the famous general. This captivating strategy game simulates six famous battles and one fictional skirmish involving Lee's Army of Virginia. Also

included, but somewhat upstaged by the captivating game play, is a rich, multimedia Civil War reference section.

You lead either the Union Army of the Potomac or the Confederate Army of Virginia, battling a computer or human opponent (via modem) through individual skirmishes or the entire campaign. The game's stunning graphics will



appeal to strategy fans, while Civil War buffs will love the attention to detail. A beautifully rendered terrain map helps you keep your bearings; and unlike with many military sims, an intuitive interface makes it easy to monitor troop strength, health, morale, and firepower.

Sierra Online's Robert E. Lee: Civil War General balances the chesslike strategy of troop deployment with the human side of war. Nightfall on the battlefield is not to be missed, as strife and bloodshed are magically transformed into a peaceful, almost dreamlike scene, complete with crackling campfires and rows of tents where columns of men once stood.

Like Sierra Online's title, Interactive Magic's American Civil War is a battle simulation that allows you to lead either

side. It offsets uninspired graphics and a dearth of animation and multimedia features with a realistic, detailed play system that includes every battle in the conflict.

A bundled reference CD-ROM offers useful historical background on the game's numerous political factors, including the possibility of European intervention, the South's position on slavery, and even the capabilities of various generals.

Just as you must plan acquisition of supplies, you must raise troops either by presidential appeal or by financial enticements (conscription is not an option). Capturing cities that possess a significant capacity for manufacturing weapons is strategically important in the game.

American Civil War's interface could be more intuitive; and without a single-screen overhead view, scrolling around the large U.S. terrain map gets tedious. As battle simulations go, this one is not a quick study. But if you're fascinated >

by the politics behind the fighting, this disc will reward you with hours of extended play. -Mark Cohen

#### Robert E. Lee: Civil War General

\$59.95 list; Sierra Online; 800/326-6654, http://www.sierra.com Grade A-

READER SERVICE NO. 761

#### American Civil War

\$36 street; Interactive Magic; 919/461-0722, http://www.imagicgames.com Grade: B

READER SERVICE NO. 762

#### **RACE RELATIONS**

HAVE YOU EVER FELT the urge to peel out at a stoplight, leaving layers of rubber smoking on the asphalt? Or screech around hairpin turns at breakneck speed without worrying about winding up in the morgue or in jail?

er settings, car suspension, and type of transmission. Control is so smooth that even a rank amateur who can barely manage to parallel park can be a contender in no time. Keyboard controls work fine, but a steering wheel and pedals would enhance the racing effect.

Sierra Online's IndyCar Racing II takes a different approach. The mechanics at Sierra chose to emphasize realism, making the game's controls so sensitive that only the most experienced drivers can hope to cross the finish line unscathed.

Fortunately, among the game's myriad options is the ability to turn off all car damage. Also, you can adjust race views, get custom tune-ups, and even personalize your car's paint job at a body shop.

While not as impressive graphically as



GRAND PRIX II's animation and effects make the racing game a marvel.

Computer racing games like Grand Prix II and IndyCar Racing II are as close as most of us will ever get to that fantasy. The two sequels perform a thorough tune-up, if not a total overhaul, on their popular predecessors.

Grand Prix II from MicroProse truly has it all, from picture-perfect animation (which lets you use your side mirrors to keep an eye on approaching opponents) to realistic racetrack sound effects, including skids, crashes, even the squeaks of squeegees as pit crews wash your windows.

You join a Formula One team and face pro drivers in a single race or a full season's competition. Not just a marvel to see and hear, Grand Prix II lets you set plenty of race-day options, such as weathGrand Prix II, IndyCar Racing II more than compensates by demanding advanced driving skill and offering extended play. -Hugh Foster

#### **Grand Prix II**

\$59.95 list; MicroProse; 800/695-4263.

Grade: A-

READER SERVICE NO. 763

#### IndyCar Racing II

\$59.95 list; Sierra Online; 800/757-7707.

Grade: B

READER SERVICE NO. 764

#### **WAR GAMES FROM A TO...**

THERE ARE TWO kinds of war gamers: those who like to carefully recruit troops, build structures, and plan strategies, and those who just like to blow stuff up. If you're one of the latter, then Z is the answer to all your pyrotechnic prayers.

Z, a fantastic DOS strategy game set in the distant future, requires you to control and deploy an army of crude cyborg sol-



YOUR ROBOT ARMY fights on five planets.

diers who prefer chugging six-packs to firing six-shooters.

In this variation on capture the flag, you guide robot units to commandeer vehicles, blow away enemies, and gain control of enemy territory. Your forces fight through 20 levels on five planets with varying terrain and difficulty.

The impressive graphics show amazing attention to detail, from brilliant 3-D explosions complete with shrapnel and flying debris to wildlife



that scurries about on the battleground. The music complements the battles perfectly. And best of all, the sound effects and voice-overs that taunt you are decidedly in your face, as in "What are you doing, you moron?"

If you're a hard-core action fan, you've



Z'S CYBORGS prefer brew to battle.

already waited too long to own this title. In my book, Z definitely rates an A.

—Shane Mooney

\$54.95 list; Virgin Interactive; 800/874-4607.

READER SERVICE NO. 765

Write tomorrow



As affordable CD technology creates new opportunities in multimedia, software development and archiving, TDK Recordable Compact Discs (CD-R's) ensure the integrity of your information Designed to provide optimum reliability and durability, our write-once recordable CD-R's are available in two sizes and four recording lengths. In addition, they are compatible with a range of high-speed CD-ROM drives and audio CD players.

Forward thinking. You'll find it in all TDK data storage media; from our Magneto-Optical Disks (MO) engineered for speed and capacity and our Helical-Scan and QIC Data Cartridges built for mass storage requirements, to our

100% error-free Floppy Disks.

You bring your vision. We'll provide the means to save, retrieve and distribute your data. For information, call 1-800-835-8273 or visit our Web site.

http://www.tdk.com

Fast Forward Now.





BEEN THERE, DONE THAT. That's how I felt after playing Microsoft's new Hellbender. Don't get me wrong, this sequel to Fury3 is a fun 3-D action game—just not the most original to come along.

Microsoft could have called it Fury Direct for its support of the new DirectX technologies and its similarity to Fury3. Hellbender supports Direct3D, which should make for even better graphics if your system sports one of the new 3-D accelerators, though I couldn't get a beta copy of the disc to sense my Matrox Millennium's Direct3D support.

Since the days of Fury3, when you battled Bions for the future of the world, you've retired as a fighter pilot. But now the supposedly vanquished enemy Bions suddenly return—with a vengeance. They take out nearly all your pilots in a well-executed opening sequence, leaving nothing but little old you standing between the ruthless Bions and the planet's defenseless citizenry. You emerge from retire-



HELLBENDER. THE SEQUEL to Furv3. launches fresh waves of ruthless Bions.

ment quickly to swoop and twist through seven worlds of aboveground and underground action to eliminate the enemy. There's plenty of joystick jerking throughout to keep you busy.

The graphics are fine, but the game's combat gets repetitious pretty quickly. Hellbender supports the usual multiple views, and Sidewinder Pro owners will

love its support of all the joystick's features.

But why bother to pay for this shooter when you can download a fully playable demo for free? If you can stand the 10.5MB demo size (13MB if you don't have DirectX 2.0), try downloading it from its page within the Microsoft Web site

(http://www.microsoft.com/games/ hellbender) before resorting to shelling out the 45 bucks. —Ean Houts

#### Helibender

\$45 street; Microsoft; 800/426-9400. Grade: C READER SERVICE NO. 766

#### MECHWARRIOR II REDUX

IN A STRANGE TWIST, MechWarrior enthusiasts now have a year-old DOS game released for Windows 95, and a year-old Windows 95 game released for

## TOP 5 CD-ROM DRIVES

| r | CD-ROM DRIVES   | Month<br>tested | Street<br>price<br>(8/29/96) | Overall rating | Multimedia<br>performance<br>score | Comments  | Reader<br>service<br>number |
|---|---|-----------------|------------------------------|----------------|------------------------------------|---|-----------------------------|
| 1 | Sony CSD-880E<br>800/352-7669<br>http://www.sel.sony.com/SEL/ccpg | Oct 96          | \$140                        | 90             | 79                                 | FEATURES: 8X internal drive; Enhanced IDE; tray-feed mechanism with clips for side-mounted use; adapter card. PRO/CON: Good overall performance, reasonable price, generous daily and weekend support, large 256K buffer; no bundled software, no toll-free support.                  | 689                         |
| 2 | Plextor 8Plex<br>800/886-3935                                     | Aug 96          | \$309                        | 90             | 90                                 | FEATURES: 8X internal drive; SCSI bus; caddy-feed mechanism; driver support for Windows 3.1, 95, and NT, and OS/2 and Mac. PRO/CON: Fastest drive tested, two-year warranty, solid design; expensive, SCSI card not included, no weekend support.                                     | 690                         |
| 3 | Teac CD-58E 8X CD-ROM Drive Kit 213/726-0303                      | Aug 96          | \$149                        | 89             | 84                                 | FEATURES: NT drivers added; 8X internal drive; Enhanced IDE; tray-feed mechanism with clips for side-mounted use. PRO/CON: Strong performer, reasonable price; no software bundle, limited I28K buffer, no Mac or OS/2 drivers, no weekend support, no toll-free support.             | 691                         |
| 4 | NEC MultiSpin 6V<br>800/632-4636<br>http://www.nec.com            | Aug 96          | \$99                         | 87             | 65                                 | FEATURES: 6X internal drive; Enhanced IDE; tray-feed mechanism with clips for side-mounted operation; includes adapter card and cables for Sound Blaster card. PRO/CON: Inexpensive, toll-free phone support; slowest performance in Top 5, no software bundle, no weekend support.   | 692                         |
| 5 | GoldStar GCD-R580B<br>800/243-0000<br>http://www.goldstar.com     | Aug 96          | \$160                        | 87             | 77                                 | FEATURES: 8X internal drive; Enhanced IDE; tray-feed mechanism with clips for side-mounted operation; driver support for Windows 3.1, 95, and NT, and OS/2. PRO/CON: 11-hour weekday toll-free support, generous 256K buffer; no weekend support, no software bundle, no Mac drivers. | 693                         |

DESPITE A WHOPPING \$90 price drop this month, the Plextor 8Plex fell from its perch at the top of the chart. Sony's CSD-880E captured the number one spot thanks to its \$50 price cut to \$140. The top two drives are neck and neck overall, though, with neither unit running far enough ahead to warrant a Best Buy. Meanwhile, Teac also lowered the price of its drive by \$50, so the CD-58E moved into third place. This month we tested NEC's new 8X drive, the MultiSpin 8V CD-ROM Reader. Although it was faster than NEC's 6V in most benchmarks, the 8V ran significantly slower than the 6V in the CD-Tach throughput test and lagged in the PhotoLab test. At \$149, it also costs \$50 more than the 6V.

HOW WE TEST All drives are tested on a Gateway 2000 P5-166XL with 16MB of RAM and Windows 95. At 1024 by 768 at 256 colors, we run Macromedia Director 5.0 I/O benchmark, Microsoft Encarta 96 script, PowerFinder PhoneDisc 96 timed name search, and MindScape CyberSpeed game installation. We also run a 98-image slide show in Corel PhotoLab and run the CD-Tach low-level CD-ROM benchmark utility. The overall rating is based on performance (40 percent), features (30 percent), price (20 percent), and support (10 percent). For all ratings, higher is better. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

282-M10 PC WORLD NOVEMBER 1996

All products: 907

download NetMech free at Activision's Web site.

—Shane Mooney

#### Ghost Bear's Legacy

\$29.95 list; Activision; 800/477-3650. Grade: **B** 

#### NetMech

\$14.95 list (free at http://www.activision.com); Activision; 800/477-3650. Grade: **B** 

READER SERVICE NO. 768

#### ALL ABOUT EVE

PETER GABRIEL and friends offer a chance to reclaim a bit of paved-over paradise in the CD-ROM game **Eve**. But this paradise should have stayed lost.

Eve, a primordial music-and-art adventure, is pretentious beyond belief. The disc blends Gabriel's music with artwork by four international figures (Yayoi Kusama, Helen Chadwick, Cathy de Monchaux, and Nils-Udo).

DOS. That's good news no matter which operating system you call home.

For the Windows 95 faithful, there's the MechWarrior II expansion pack,

Ghost Bear's Legacy. In the

original MechWarrior II, competing Wolf and Jade Falcon clans battle for control using mechs immense, walking war machines.

In Ghost Bear's Legacy, the two clans, weak from all that fighting, allow a dormant clan to rise from the ice to conquer the Inner Sphere and regain its stolen genetic heritage. Legacy adds two new environments, Snow/Ice and Underwater, as well as 14 new mechs and 6 new weapons. In addition, most of the 12 missions seem more substantial than those found in MechWarrior II.

Legacy's main drawback: It forces you to start again as a rookie in a new clan. I'd prefer more missions for the original clans starting somewhere in the middle. But some of these tough missions are well

thought out and involve strategy as opposed to having you just wander around blowing away any mech unfortunate enough to cross your path.

The multiplayer component of Mech-Warrior II, NetMech, was previously available only for Windows. DOS diehards had to wait a year for a version they could play, but their patience is well rewarded. Net-Mech offers more than a dozen missions,

PC WORLD

## TOP 5 SOUND BOARDS

|   | SOUND BOARDS   | Month tested | Street<br>price<br>(8/1/96) | Overall<br>rating    | Audio<br>score | Comments  | Reader<br>service<br>number |
|---|--|--------------|-----------------------------|----------------------|----------------|---|-----------------------------|
| 1 | Creative Labs Sound Blaster<br>AWE32 PnP 800/998-5227<br>http://www.creativelabs.com | June 96      | \$250                       | 92                   | 92             | FEATURES: Plug and Play; 512K of RAM expandable to 28MB for downloadable MIDI sounds; DSP for MIDI effects; Sound Font editing software. PRO/CON: Top-quality wavetable sound, flexible MIDI composition software, trouble-free installation, good frequency response; noisy microphone.                  | 694                         |
| 2 | CrystaLake Model 110<br>503/222-2603<br>http://www.crystalake.com                    | Aug 96       | \$169                       | 92                   | 87             | <b>FEATURES:</b> Plug and Play; 3-D sound with adjustable center, fill, and effect depth; stereo microphone input. <b>PRO/CON:</b> High-quality wavetable MIDI sound, realistic 3-D sound effects, good frequency response, low price, three-year warranty; poor cross-talk figures, no reverb or chorus. | 695                         |
| 3 | CrystaLake Model 140<br>503/222-2603<br>http://www.crystalake.com                    | June 96      | \$229                       | 92                   | 87             | FEATURES: \$40 price drop; Plug and Play; 3-D sound with adjustable center, fill, and effect depth, reverb and chorus; stereo microphone input. PRO/CON: Great wavetable MIDI sound, realistic 3-D sound effects, low noise, good frequency response, three-year warranty; poor cross-talk figures.       | 696                         |
| 4 | Creative Labs Sound Blaster 32<br>800/998-5227<br>http://www.creativelabs.com        | June 96      | \$149                       | 92                   | 90             | FEATURES: Plug and Play; OK of RAM expandable to 28MB for downloadable MIDI sounds. PRO/CON: Top-quality wavetable sound, good frequency response, low price, trouble-free installation; poor frequency response on microphone input.   | 697                         |
| 5 | Advanced Gravis UltraSound Plug & Play Pro 800/663-8558 http://www.gravis.com        | May 96       | \$199                       | 899<br>See fee files | 85             | FEATURES: Plug and Play; 512K of RAM upgradable to 8MB. PRO/CON: Excellent audio performance, good microphone input, professional-grade wave editing and MIDI software, affordable price, easy installation; mediocre MIDI sound, awkward procedures for switching game and MIDI modes in DOS.            | 698                         |

All products: 90

NO CARD CAPTURED a Best Buy, but the top four contenders all deserve a close look. The Sound Blaster AWE32 PnP, Creative Labs' best sound board, continues to outshine all comers, with the richest features in the group. However, only a fraction of a point separates it from the fourth-place board overall. This month we tested Core Dynamics' DynaSonix Pro.

Its outstanding feature, a ten-band graphic equalizer utility, lets you adjust different audio frequencies to your tastes. The board also includes SRS surround sound with adjustable level and center fill, and an extra output for optional rear speakers. Still, the DynaSonix managed only a ninth-place ranking, mainly due to its unexceptional audio test results.

HOW WE TEST All sound boards are tested on an Audio Precision System Two audio test set to determine their frequency response, cross talk, noise, distortion, and other audio characteristics. We judge each board's MIDI (Musical Instrument Digital Interface) and wave audio quality by comparing sample sounds against original source material on digital audio tape. The overall rating is based on the following weighting of factors: performance (40 percent), features (25 percent), price (25 percent), and support (10 percent). For all ratings, higher is better. Data based on tests designed and conducted by Liberman Sound. All rights reserved.

NOVEMBER 1996 PC WORLD 282-M11



PETER GABRIEL'S EVE CD-ROM launches you on a quest to return Earth to paradise.

The game begins with a scene in which you maneuver a sperm into a ripe ovum. You then travel through similar, mysterious portals from one evolving landscape to another. Eventually, if you're lucky, you'll find Eve (who disap-

pears shortly after the game begins) so you can save the land from its muddy state and restore the good earth.

To reopen the gates of paradise, you must wend your way through various locales, such as the Human Relations Room, that contain hidden clues and puzzles. At stops along the way, you bump into artists, writers, teachers, and scientists who offer insights into the nature of love.

If you're a Gabriel fan, you'll enjoy the pulsing, minimalist music; if not, you might find the soundtrack soporific. Fortunately, once you've completed the puzzles, you can break the monotony by creating your own musical performances with bits of Gabriel's songs; then you can combine these with the game's videos to form digital extravaganzas.

While the artwork is exquisite and the panoramic view of the evolving world breathtaking, the game moves at the pace of evolution—very slowly. Devotees of Gabriel and some of the featured artists

might like the disc. But others will find this game about paradise to be less than idyllic. —Stacey Miller

\$39.95 list; Starwave; 800/457-8646. Grade: D READER SERVICE NO. 769

#### **ANARCHY BUSTERS**

IT'S THE DISTANT future, and human society has disintegrated into violent factions. In Shellshock, a tank simulation with attitude, you belong to a ragtag inner-city gang armed with an M13 Predator battle tank. Your mission: Eliminate anarchy on a planet gone mad and restore world order.

As combat action games go, Shellshock is standard fare. The goal throughout 25 levels is to eliminate bad guys, rescue hostages, and pay attention to what your boss says—not exactly groundbreaking stuff. In between levels, you can talk to fellow gang members, although the conversations serve little purpose, and the inner-city dialects sound like they're spoken by B-actors in a sound booth.

Play is fast, but the graphics resemble those in Wolfenstein. That would be fine if this were 1995, but today I expect a sim to offer better graphics than last year's shareware. Ironically, Shellshock is most rewarding when you're killed in action. In a memorial sequence, your comrades create a large graffiti mural in your honor, all to the driving rhythm of a hip-hop beat. San Francisco 49er William Floyd, a.k.a. Bar None, supplies the music that resonates throughout the game. A multiplayer option lets you battle up to eight of your friends.

Overall, Shellshock is an inadequate attempt at a tank simulation. After only a few levels of play, you'll find it hard to sustain any excitement; and completing all 25 levels seems utterly pointless. Even with the hip-hop soundtrack, Shellshock rings hollow. —Matthew Sanner

#### Shellshock

\$49.95 list; Eidos Interactive; 415/616-2022. Grade: D

READER SERVICE NO. 770

#### TOPS IN HOPS

DO YOU HAVE a head for beer? Then let brewmaster Michael Jackson's World Beer Hunter lead you to some of the finest specimens known to modern civilization.



IN SHELLSHOCK, a tank simulation, you must eliminate anarchy and restore global peace.

You've got a CD-ROM drive, a wavetable sound card and you've got computer speakers with the power and fidelity of a 1963 transistor radio.

You've got to get Yamaha YST™ Multimedia Speakers.

It doesn't matter if you're conquering virtual alien hordes or calming your nerves with a Vivaldi CD while

balancing the check book.

Yamaha YST multimedia
speakers release the stunning audio performance that's
already right there in your computer.

Try playing an audio CD in your CD ROM drive to hear how your speakers really stack up. If you had Yamaha YST speakers you'd hear smooth, crisp, clean sound. And you'd have plenty of power—with ratings from 5 watts per speaker to 45 watts of total amplifier power.

Active Servo
Technology
Thanks to Yamaha active servo technology the speakers, amplifier, and enclosure actually interact to deliver deep, tight, satisfying bass.
The kind of bass that brings energy and excitement to music and computer games. And for the ultimate in bass power and performance

you've got to have a subwoofer. For a complete satellite/subwoofer system choose the System 35 or System 45. Or add the MSW10 subwoofer to your existing speakers to bring them to life.

And if you look at the bottom of this page, you'll find a computer retailer who's got Yamaha multimedia speakers. You've got to go get them.







YST-MSW10 Sub-woofer



SHOULD SOUND.

System 45 Multimedia Speakers

Yamaha multimedia speakers MSRP from \$59.95 - \$249.95 at these fine retailers.













To receive product literature, call (800) 823-6414 Ext. 502. ©1996 Yamaha Corporation of America, Computer Related Products, 6600 Orangethorpe Avenue, Buena Park, CA 90620.

All rights reserved. Yamaha, YST, and the Yamaha logo are registered trademarks of Yamaha Corporation of America.

Like Discovery Channel's first Beer Hunter disc, which focused on U.S. brews, this authoritative guide overflows with insights into the rich cultural heritage of beers and breweries. Interactive maps, audio clips, and videos hop with



**WORLD BEER HUNTER profiles over 300** brews and 400 breweries around the globe.

details about more than 300 beers, including such exotic beverages as Gueuze Girardin (a world-class mix of apple, sherry, hay, and wood flavors).

You can sample descriptions of aperitif

beers, dessert brews, and nightcaps; browse Jackson's recommendations for the perfect accompaniments to fine meals; and then note your preferences and comments in a virtual Personal Pub. You can also drop by Jackson's Web site

> (http://www.beerhunter.com), which offers listings of beer festivals and related events, articles about brewing, a bulletin board, and other features that serious beer lovers should enjoy.

Once again, Jackson gives both obscure and renowned beers the respect others reserve for fine wines and brandies. The only things missing are foam on your disk drive and

the aroma of barley malt wafting from your monitor. —Steve Bennett

#### World Beer Hunter

\$40 street; Discovery Channel Multimedia; 800/678-3343, http://www.discovery.com Grade: B+

READER SERVICE NO. 771

#### SHALLOW EXPLORATION

FOR ITS 150TH anniversary, the Smithsonian Institution assembled a touring exhibition of some 300 objects from its 16 museums. As a gift-shop memento of this collection, 150 Years of America's Smithsonian is okay, but it fails as either a proxy museum experience or an in-depth information resource.

The CD-ROM offers a single, magnifiable slide of each specimen—no 3-D walkaround views and no multiple slides showing the object from different perspectives. Color reproduction is poor: The text accompanying a photo of azurite remarks on "the intense blue of this specimen," but you see a crystal of murky indi-

go. Inset color videos





Grab video images from any VCR, TV, camcorder into your PC



Take a snapshot of your favorite video from any video source in 16.8 million colors. You can use it for your cool web page publishing, multimedia presentations, disk-based catalogs, personal photo album, image database, digital greeting cards, newsletters, E-mails and more. The applications are only limited by your imagination.

#### It's Easy to use

- Simply plug in GrabIT and connect it to a video source
  - Preview motion video as it sequences through 6 preview screens
  - Simply click [save] button on one of the 6 screens to complete

Unique software interface. When capturing from a full motion video, it is not always easy to get the right picture at the right instance. GrabIT gives you 6 frames to choose from at any one time. No frustration from getting the right image.

#### **FEATURES**

- Grab images in 16.8 million colors
- Preview in full-color
- Real-time motion sequence preview
- Real-time color adjustment during preview
- Easy parallel-port connection
- No power adapter or batteries required (Powered by the Desktop PC or Notebook PC)
- Includes video cable, keyboard-powered cable for desktop, keyboard-powered cable for notebook, keyboard port extender and parallel port extender cable.
- Free PhotoMorph 2 Software CD-ROM

Available at





## Includes \$99 worth of Award-Winning <a href="PhotoMorph 2">PhotoMorph 2</a> software CD-ROM. A Powerful Video Editing and Morphing Software

PhotoMorph 2 is undoubtedly the most highly acclaimed video special effects package ever created for the Windows PC. Its claim to fame is simple: bring images, stock photos, and video clips to create compelling, high quality video productions with ease. With six elegant effects editors and hundreds of special effects, a complete plette of video amazement makers can be found in PhotoMorph 2. The CD-ROM includes PhotoMorph 2 software, PhotoMorph 2 tutorials, over 250 images ready to be used in your video products, nearly 100 PhotoMorph projects and much more.



Visit our web site at http://www.aimslab.com

AIMS Lab Inc., 46560 Fremont Blvd #105, Fremont CA 94538. Phone 510.661.2525 Fax 510.252.1572 © 1996 AIMS Lab Inc. GrabIT is a registered trademark of AIMS Lab Inc.

All other trademarks or registered trademarks are property of their respective owners.



Professional studio quality video for your PC,

#### because

miroVIDEO DC30 PCI bus mastering provides the fastest data rates (up to 6 MB/sec), the highest resolution (up to 720x480, 4:2:2 YUV TrueColor) with the best image quality (3.5:1 compression).

CD quality audio with great lip synchronization,

#### because

miroVIDEO DC30 integrates audio with video on a single board so you don't miss a beat. Real-time video-overlay,

#### because

miroVIDEO DC30
displays full-motion
video directly on the PC
monitor at all times.
True WYSIWYG video
during capture, edit and
print-to-tape.

Optimal hard disk usage,

#### because

miroVIDEO DC30 has fully adjustable video resolution and compression settings and can automatically select the best setting for your system. High-speed video editing,

#### eelleved.

miroVIDEO DC30 comes complete with Adobe Premiere 4.2 full version (a \$795 value) and has specialized hardware and world-class drivers to accelerate wideo editing.



Professional digital video and audio editing system:

- ► PCI bus mastering technology, for the fastest data rates up to 6 MByte/sec.
- ▶ On-board CD audio
- ► Windows 95 Plug & Play
- Input and output for S-VHS, Hi8, VHS, Video8
- ► All standards: NTSC, PAL, Secam at CCIR 601 pixel format and square pixels

Call us for more information: 1-800-249-miro (6476)







IN ADVENTURE TRAVEL's simple interface, you click on a camcorder to view videos.

jerky on a Pentium-90, and audio clips are disappointingly sparse.

The disc augments the visual displays with brief, sloppily written, unreliable text and narrations. A discussion of the Mesozoic Era implies that sharks emerged later in geological history than dinosaurs, though the first sharks existed millions of years before the first dinosaurs. A section on art called "An American Vision" concludes with works by two European sculptors-Auguste Rodin and Henry Moorewithout explanation.

For \$40, you should be able to buy a coffee-table book with excellent color photographs and thorough, well-informed text. A comparably priced CD-ROM with inferior graphics, meager multimedia components, and inaccurate text is no bargain. - Steven Gray

150 Years of America's Smithsonian \$39.95 list; Macmillan Digital U.S.A.; 800/910-0099. Grade: C-

READER SERVICE NO. 772

#### THE VIRTUAL EXPLORER

ARMCHAIR EXPLORERS be warned: The Ultimate Guide to Adventure Travel may not appeal to the faint of heart. The disc's 130 adventures include trekking, mountaineering, and white-water rafting in remote, unexplored regions of the world.

The CD-ROM contains interactive maps and breathtaking videos and photos that might prod you toward an Indiana Jones-style vacation. And if you're really serious, you can preview a trip on the disc, and then book it with Mountain Travel-Sobek, the firm that launched the adventure travel industry, via the company's Web site (http://www.mtsobek.com/mts).

You select various types of adventures according to activity, skills required, cost, continent you want to visit, and so on. As you take virtual excursions, you can jot down your observations in a handy electronic notebook.

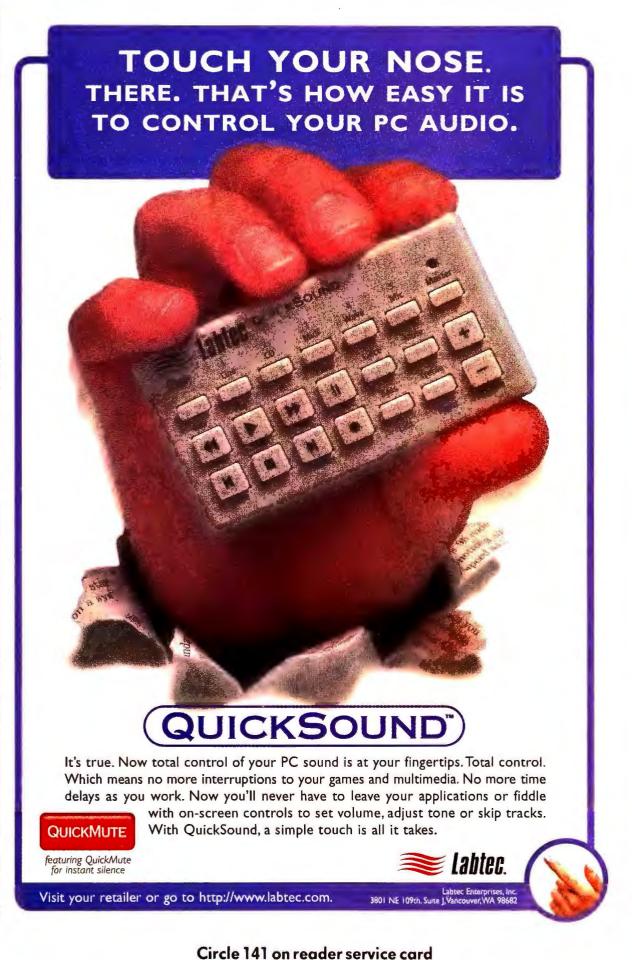
Clever icons simplify your travels around the disc. To get help, you click on a first-aid kit. To go online, you click on a photo of a laptop computer (Adventure Travel lets you set up an Internet account with Earthlink when you install the CD-ROM). To view videos of trips, treks, cultures, and so on, click on a camcorder.

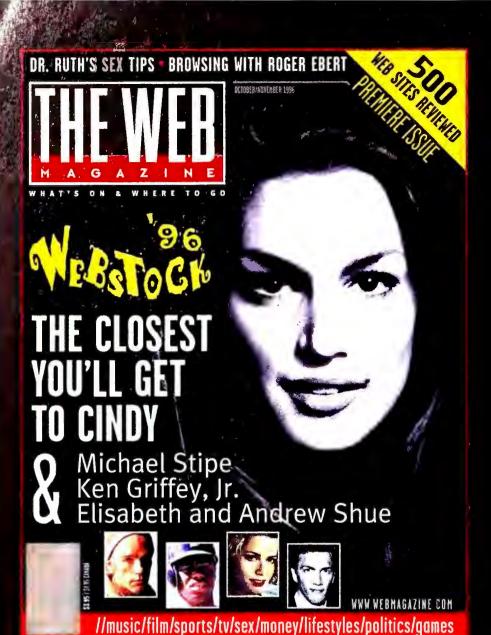
Who knows, you might just be inspired to book that trip of your dreams and release the explorer within. —Steve Bennett

#### The Ultimate Guide to Adventure Travel

\$40 list; Graphix Zone; 800/828-3838; http:// www.gzone.com Grade: B+

READER SERVICE NO. 773





### CALL 1-800-932-6241x3333 (1-800-WEBMAG-1)

to Reserve Your Special Charter Subscription Today and Save 68% Off the Cover Price!



# MAKETHE MOST OF YOUR TIME ONLINE

THE WEB Magazine is the ultimate monthly cyberspace guide to the new digital pop culture. Each issue rates over 500 Web sites, identifying the good, the bad, the bizarre, and the ugly in a wide range of categories. From Music to Money, Sports to Sex, THE WEB Magazine does the work and leaves the play to you. Hip and irreverent, it's a cool-looking magazine you'll want to hang onto.

fax your order to 415-882-0936 or subscribe online at http://www.webmagazine.com/subs

U.S. subscription price \$14.97 for twelve issues. Foreign orders please add \$46.00 postage. Canadian orders add \$18.00 postage plus 7% GST(#R1246696.80)

Savings based on annual newsstand cover price of \$47.40.



DynaSonix<sup>™</sup> 3-D: The Gamer's Choice!

DynaSonix<sup>™</sup> 3-D is a high performance wavetable synthesis card with SRS<sup>™</sup> 3-D surround sound. It comes with full duplex Internet telephony (Webtalk<sup>™</sup>), games, and music software. Offers great sound at an affordable price!

DynaFx™: The Ultimate Multimedia Authoring Solution!

DynaFx<sup>™</sup> is a Multimedia video authoring solution that combines a television and video capture card, along with Director's Chair<sup>™</sup>, an easy to use Multimedia authoring application. It comes complete with a software MPEG encoder and is VDOLive<sup>™</sup> compatible. It is capable of digitizing, editing, and playing back video on your computer.

DynaGraFx 3-D™: The Premier Graphics & Gaming Card!

DynaGraFx 3-D<sup>™</sup> is a high performance DirectX<sup>™</sup> accelerator with wavetable audio. It offers real-time photorealistic 3-D graphics, full-motion video, video based special effects, concurrent high fidelity SRS<sup>™</sup> 3-D surround sound, and a dual Sega<sup>™</sup> game port.

Visit your retailer and ask for the incredible new concept for Personal Computers

...PERSONAL THEATER™ from the experts at Core Dynamics.



8 Thomas, Suite 100 Irvine, California 92618 Tel 714-699-0108 Fax 714-699-0113 http://www.core-dynamics.com See Us @ Comdex Booth M561





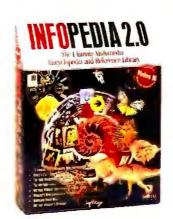


# Spend less time searching and more time learning!

Set your work apart with the ultimate multimedia encyclopedia and reference library. INFOPEDIA 2.0 is a complete 29-volume encyclopedia and seven keepat-your-fingertips reference books.

Simply click on any topic and INFOPEDIA searches all eight references at once, instantly providing you with relevant articles, videos, photos, animations and sounds! Or browse more than 200,000 articles using INFOPEDIA's easy-to-use single-window interface. You can jump to related articles, mark articles for future retrieval, even print out a customized research report. INFOPEDIA makes it easy to find any information you need—without leaving home.

- 29-volume Funk & Wagnalls New Encyclopedia
- Roget's 21st Century Thesaurus
- The 1995 World Almanac® & Book of Facts®
- The Merriam-Webster Dictionary of Quotations
- Merriam-Webster's Dictionary of English Usage
- Webster's New Biographical Dictionary
- Hammond World Atlas
- Merriam-Webster's Dictionary



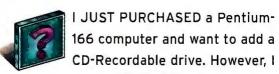
## NFOPEDIA 2.0

Softkey International Inc., One Athenaeum Street, Cambridge, MA 02142 USA 1-800-227-5609, www.softkey.com. ©1996 Softkey Multimedia Inc. All trademarks are the property of their respective holders.

Circle 130 on reader service card

## Does 6X CD-ROM Plus 4X CD-R Equal Disaster?

BY PATRICK MARSHALL AND TOM MARSHALL



already have a 6X CD-ROM drive and am worried that it may conflict with the 4Xread/2X-write Sony Spressa CD-R drive that I want to buy. Will the difference in speed between the CD-R and CD-ROM drives cause a problem?

Billy Hennecke, Internet YOU SHOULDN'T HAVE ANY conflicts if you add a CD-Recordable drive. The Sony Spressa is a SCSI device, and you can daisy-chain up to seven different SCSI devices-including other CD drivesfrom the same controller card. Just remember that the Spressa requires a bus-mastering SCSI adapter, like the Adaptec 1542 model. Such adapters differ from other controllers in that they have their own processor on board, so they offload the I/O work from the computer's CPU. This is much more efficient on the SCSI bus-drives that don't use a bus-mastering card will take a performance hit.

#### **SEEING SPOTS**

A DISCOLORED SPOT recently appeared on the upper left corner of my monitor. A similar effect on my television disappears when I press the

TV's degauss button. However, my monitor has no such feature. What can I do?

Michael Haproff, Internet JUST BECAUSE YOU DON'T see a button doesn't mean your monitor doesn't degauss (a degausser, or demagnetizer, neutralizes a magnetic field). Many new monitors automatically degauss when

they're turned on. Your monitor's manual will give you this information.

If your monitor doesn't have a built-in degaussing feature, you can use an external degausser. Those \$15 tape-head degaussers you see in record stores might work, but you may have to go to an electronics store and buy a TV degaussing coil. Either way, all you have to do is hold the degausser up to your display. If that doesn't work, you may have defective or damaged phosphors in the screen, in which case you'll have to replace the monitor—or live with the bad spot.

#### **GET.AVIS UP AND RUNNING**

I RECENTLY DOWNLOADED a 27MB ZIP file from the Internet. After I unzipped the file, I found that it contained five .avi files. When I try to play any of them I get an error message in the video window: 'Video not available. Cannot find 'vids.ULTI' decompressor'. How can I get the .avi files to run?

Michael Koszenski, Lexington, Kentucky

Multimedia Properties Audio Video MIDI CD Music Advanced limedia gevices: Multimedia Drivers Audio Devices MIDI Devices and Instruments

Mixer Devices

Line Input Devices

Media Control Devices [MCI] QuickTime for Windows [MCI] VDOLive MCI Driver & Engine CD Audio Device (Media Control) molympeg.dll MIDI Sequencer Device (Media Control) Motion Video Device (Media Control) PIONEER LaserDisc Device (Media Control) VISCA VCR Device (Media Control) Wave Audio Device (Media Control) Video Compression Codecs

Audio Compression Codecs Cancel

WINDOWS 95 MAKES IT EASY to find out what types of media control devices you already have installed.

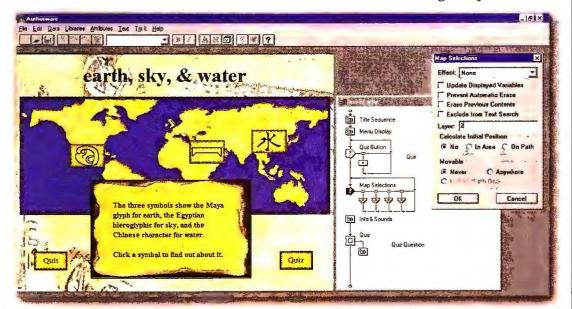
JUDGING FROM THE error message, two scenarios are likely: Either you don't have the right video decompression files, or the files you have are corrupt. You can reinstall support for video compression and decompression in Windows 3.1 and Windows 95 by following these steps:

1. In Windows 3.1, open the system.ini

#### Give Your Presentation a Zippier Pace

IF THE COMMAND BUTTONS you've customized in your Authorware multimedia presentation respond too slowly when you place your mouse pointer over a button, it's because the buttons are on the same layer as the other multimedia elements. To solve the problem, you must put the buttons on a higher layer. Do this by placing the Interaction icon the buttons are attached to in any layer higher than the default, or background, layer-which is called O. From Authorware's main screen, select the Interaction icon and click the Effects option in the Attributes menu. Then insert the desired layer number in the layer field. The higher the number, the closer to the "front" the button will be. Also, make sure the buttons use the same palette as your Authorware piece.

K. Stabler, Montgomery, Alabama



IF YOU MOVE THE BUTTONS in your presentation to a layer higher than the other components', you'll get much better performance.

file in an ASCII text editor (make a backup copy first, in case anything goes wrong). You may want to use Windows' Notepad, located in the Accessories Group of the Startup menu.

2. Next, go to the system.ini [Drivers] section and jot down the names of files you see listed that begin with vidc and end with dll. Then in DOS, delete the files that you just noted. For example, if you find

the line vidc.cvid=ulti.dll in system.ini, delete the file ulti.dll. Then delete all lines in the [Drivers] section of system.ini that begin with vidc.

3. Run the Windows setup program again to reinstall the drivers.

For Windows 95, follow these steps:

1. First, launch the Control Panel, then open the Add/Remove Programs utility. Click the Windows Setup tab, and select Multimedia, then Details.

- **2.** Next, click the *Video Compression* check box in order to deselect it, and then click OK. Reboot your computer, and repeat the first two steps.
- **3.** Click the Video Compression check box to select it, then OK. Reboot the PC again.

If you still find yourself unable to run the .avi files, double-click the Multimedia icon in the Control Panel and select the Advanced tab. Then double-click Media Control Devices and then the Motion Video Device item in the list that appears, and make certain that Use this Media Control device is selected.

If you still can't run the .avi files, they may have been compressed with a thirdparty program that Windows doesn't support. In that case, you'll have to get the appropriate driver or compression/ decompression utility (codec), and install it. Check the site from which you downloaded the .avi files for any information about the codec.

#### LIVE FROM THE INTERNET



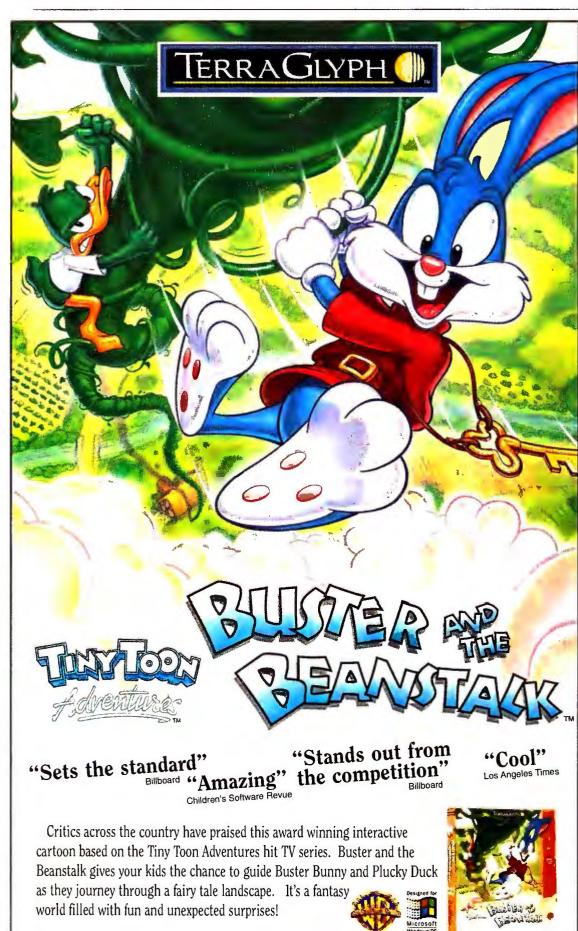
HOW CAN I VIEW live video from the Internet? I currently use the NCSA Mosaic browser.

John Havercroft, Internet YOU WILL NEED TO USE a video decoder. For television-quality video (approximately 30 frames per second), data transfer requires a speed of about 27 megabits per second, which is 1000 times faster than most analog modems. So you'll have to receive compressed data and then decompress it before you can view the video.

There are several video compression technologies that will stream the file, allowing you to view the video as you download it. The most popular are VDOnet's VDOLive and Xing Technology's StreamWorks. Both products work with most Web browsers, including NCSA Mosaic.

The snag is that video compression/ decompression isn't standardized in the industry, so if a site offers a video that's compressed with, say, VDOLive, you'll need the VDOLive client on your computer to view it. In most cases, you can download the client software from the site that's broadcasting the video.

Another related snag: Even with compression, standard copper telephone lines



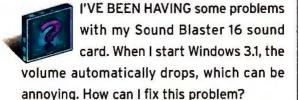
can't deliver the data fast enough for smooth video. An ISDN connection and modem will transfer data about four times faster than a 33.6-kbps modem on a normal phone line, but even that's on the slow side for video. At 1.54 mbps, a highspeed T1 line offers much better performance but is far too expensive for most individuals. In the next few years, cable modems promise to ease the bandwidth crunch, since they will offer speeds of up to 3 mbps.

Blaster-compatible card, your sound card drivers may not be installed properly. Remember that MIDI files, such as canyon.mid, are in a different format than the .wav files you find in the Sound utility, and they require different drivers. Try reinstalling the software that came with your card.

Alternatively, it's likely your card is a MIDI synthesizer, not a standard Sound Blaster-compatible sound card capable of playing .wav audio files. Check your sound board documentation to determine if it does play .way files.

Patrick Marshall is research manager for InfoWorld's Reviews and Testing department. Tom Marshall is a freelance writer specializing in computer technology. Multimedia Q&A welcomes your questions and solutions. See page 12 for contact information.

#### **RESTORE VOLUME LEVEL**



Chris Siska, Internet WINDOWS 3.1 WON'T LET you adjust sound levels, but your Sound Blaster 16's Creative Mixer utility can do the job. There are actually two mixers—one for DOS and one for Windows. Using each, you can set different sound levels for DOS and for Windows.

To use the Windows Mixer, locate the Mixer icon in the Sound Blaster program group and double-click it. The utility that pops up offers a bank of sliders for adjusting not only the overall volume, but also the amount of bass and treble for your speakers and microphone. The new settings will be saved automatically when you exit the Mixer.

#### **SOUND OF SILENCE**

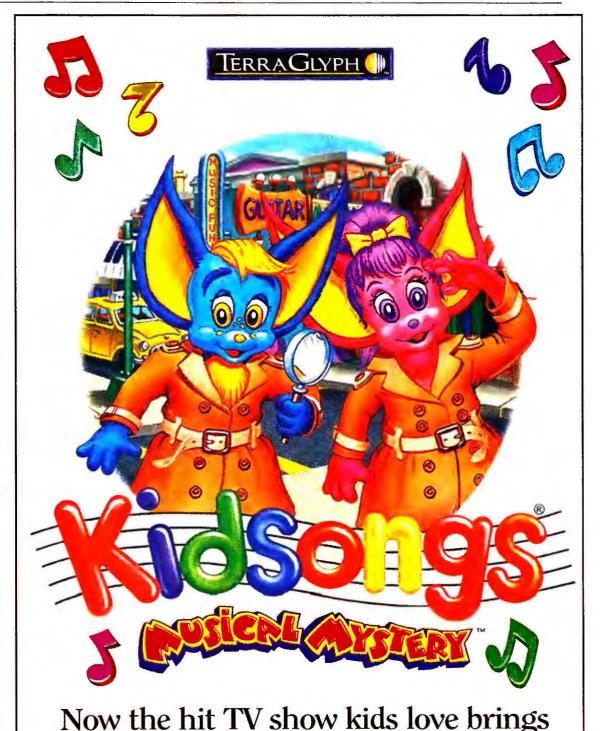
MY SOUND CARD can play some of the sound files that come with Windows, but not all of them. For example, I can play canyon.mid, but whenever I

choose the Sound icon from the Control Panel, nothing seems to work.

Brad Austin.

Martha's Vineyard, Massachusetts YOU DON'T SAY WHICH sound card you're using, and whether it's Sound Blaster compatible, which makes the problem tough to diagnose. But it may be due to one of two causes.

Assuming that you have a Sound



Windows is a registered trademark of Microsoft Corporation. Kidsongs® is a trademark of Warner Bros. Records Inc.

its musical magic to interactivity!

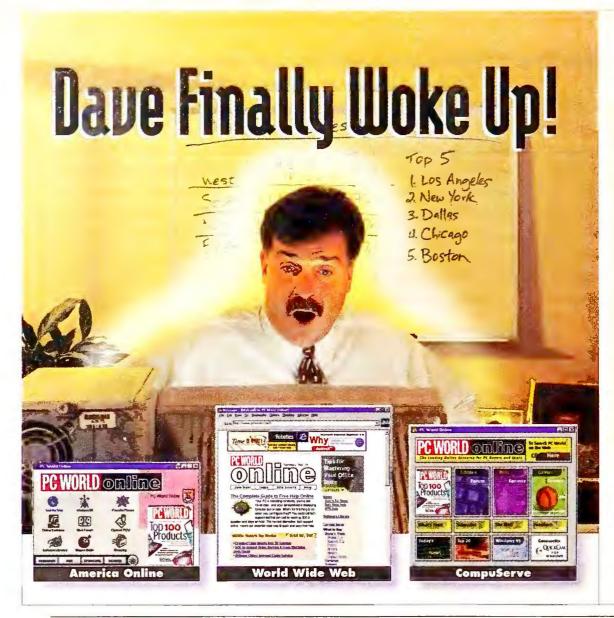
Your kids will join the irrepressible Billy and Ruby Biggle as they

journey through a melodious landscape to recover lost instruments for

Professor Majorchord's big concert. Beautifully animated, Kidsongs

Musical Mystery also teaches memory skills in a fun, musical

fashion. And, of course, it offers lots of chances to sing along.



If you want to get more from your PC experience, connect to PC World Online the online resource for PC buyers and users!

#### **PC World Online Spotlights** for November 1996:

- PC World News Radio Rides the Net Waves! Listen to Today's News and **Interviews with Industry Leaders**
- Cover Story: Upgrades! Memory, **CPUs, Graphics Accelerators ...and** More! How Much is Enough?
- Special Section: Internet! Publish on the Web; Today's Best Authoring Tools
- PC World Online Annex: Community **Environment for the Lighter-Side**
- Interactive Buyers Guide: Allows You to Build the Dream Machine that Best Meets Your Own Criteria
- Get 15 FREE Daily E-mail Newsletters from PC World Online & TipWorld http://www.pcworld.com/tips



- + Prodigy: jump poworld
- MSN: go to pcworld
- CompuServe: go pcworld
- America Online: keyword pcworld

ADVERTISER INDEX

Web: http://www.pcworld.com

#### AULTIMEDIA EDITION R. S. No. Product **SPEAKERS** Audio-Technica MMS557 2-Way 2-Channel AC Powered Speakers M2 Jazz 3D JS-300 M2 775 Roland MA-12CP Powered Speaker Set 776 M2 Altec Lansing ACS45 777 PowerCube Multimedia Speaker System **M3** Atlantic M110 778 Speakers & M105 Bass Toaster Subwoofer **M3** Creative Labs Sound Blaster SBS380 779 Speakers & SBW500 Subwoofer **M3** 780 Labtec LCS-2612 Gamer Series M4 781 Nakamichi SP3d M4 Sony SRS-PC300D 782 M4 Yamaha System 45 783 M4 **CD-ROM DRIVES** Sony CSD-880E 689 M10 690 Plextor 8Plex M10 Teac CD-58E 8X CD-ROM Drive Kit 691 M10 **NEC MultiSpin 6V** 692 M10 GoldStar GCD-R580B 693 M10 SOUND BOARDS 694 Creative Lahs Sound Blaster AWE32 PnP M11

| K. S. NO. | Product Page Nu                                | innei |
|-----------|--|-------|
| 696       | CrystaLake Model 140                           | M11   |
| 697       | Creative Labs Sound Blaster 32                 | M11   |
| 698       | Advanced Gravis UltraSound Plug & Play         | M11   |
| TITLE     |  |       |
| 761       | Sierra Online Robert E. Lee: Civil War General | M7    |
| 762       | Interactive Magic American Civil War           | М7    |
| 763       | MicroProse Grand Prix II                       | M8    |
| 764       | Sierra Online IndyCar Racing II                | M8    |
| 765       | Virgin Interactive Z                           | M8    |
| 766       | Microsoft Hellbender                           | M10   |
| 767       | Activision Ghost Bear's Legacy                 | M10   |
| 768       | Activision NetMech                             | M10   |
| 769       | Starwave Eve                                   | M11   |
| 770       | Eidos Interactive Shellshock                   | M12   |
| 771       | Discovery Channel                              |       |
|           | Multimedia World Beer Hunter                   | M12   |
| 772       | Macmillan Digital U.S.A.                       |       |
|           | 150 Years of America's Smithsonian             | M14   |
| 773       | Graphix Zone                                   |       |
|           | The Ultimate Guide to Adventure Travel         | M17   |

|        | ***                    |        |
|--------|------------------------|--------|
| Card # | Advertiser             | Page # |
| 19     | AIMS Labs              | M15    |
| 52     | Comtrad Industries     | M6     |
| 62     | Core Dynamics          | M19    |
|        | Epson                  | M2     |
| 141    | Labtec                 | M17    |
| 150    | Miro Computer Products | M16    |
| 197    | SC & T International   | M14    |
| 130    | Softkey                | M20    |
| ~-     | TDK Electronics        | M9     |
| 216    | Terraglyph             | M22    |
| 215    | Terraglyph             | M23    |
| 258    | Yamaha Corporation     | M13    |

#### It could be a best seller. ut it's free.

You can't buy the Consumer Information Catalog. But you can get it, free! Send for your guide to over 200 free or low-cost government publications. Write:

Consumer Information Center Department BEST, Pueblo, CO 81009

695

CrystaLake Model 110

M11

## **MORE PC** ESS MONEY

- Intel® Enhanced PCI set
- 64-bit 3D Video based on ATI 264GT Series, w/2MB EDO RAM
  16-bit Creative Labs Plug and Play Sound with Wave Table Upgrade Option
  High Performance MPEG & CDi Full Screen, Full Motion Movie Playback
- Tool-free Ergonomic Mid-Tower or Slim-Desktop Case Enclosure
  Windows 95 Pre-Installed, with CD
- 104 key Windows95 Keyboard, Ergonomic Mouse

Over 200MHz Clock Speed Support
PnP Flash BIOS, Super I/O Design
Extremely High Processor Upgradeability Architecture

#### **CLR Infinity PT5-A100**

100 MHz Pentium® Processor, 16 MB EDO RAM, 512 KB Pipeline Burst Coche 1.2 GB E-IDE Hard Drive, 8x E-IDE CD-ROM Drive CLR VisionPra Calar Manitor, MPR-II Low Rodiotion 1280x1024 N.I., 0.28mm DP, On-Screen Digital Disploy, Anti-Stotic, Plug & Ploy

\$1495

#### CLR Infinity PT5-A133

133 MHz Pentium® Processor 16 MB EDO RAM, 512 KB Pipeline Burst Cache 2.1 GB E-IDE Hord Drive, 8x E-IDE CD-ROM Drive 15" CLR VisianPra Color Monitor, MPR-II Low Rodiotion 1280x1024 N.I., 0.28mm DP, On-Screen Digital Disploy, Anti-Static, Plug & Ploy Lotus Smort Suite 96, with CD

1745

with 166 MHz Pentium® Processor with 200 MHz Pentium® Processor \$1975 \$2095

#### **CLR Infinity PT5-A200**

200 MHz Pentium® Pracessor 32 MB EDO RAM, 512 KB Pipeline Burst Coche 3.2 GB E-IDE Hord Drive, 12x E-IDE CD-ROM Drive 17" Calar Monitor, MPR-II Low Rodiatian, 0.28mm DP Lotus Smart Suite 96, with CD

\$2695

#### **CLR Infinity PT6-A200**

200 MHz Pentium® Pro Processor 256 KB Internol Cache, 32 MB Burst EDO RAM 3.2 GB E-IDE Hord Drive, 12x E-IDE CD-ROM Drive 17" Color Monitor, MPR-II Law Radiotion, 0.28mm DP Windows NT Workstotion Pre-instolled, with CD Lotus Smart Suite 96, with CD

with 512 KB Internol L2 Coche

\$3195 \$3795

Options (all systems)

-17" Monitor Upgrode 28.8 Data/Fax Modem 8 MB EDO RAM Upgrode SCSI Options 128bit Video Options

We ore Flexible in System Canfigurations!

\$350 \$110 \$60 call

**CALL NOW TO ORDER** 



1-800-622-5592 Internet http://www.clrusa.com

Mon - Fri 9am to 9pm EST

MasterCard, VISA, Discover,

Business Lease Available

American Express

(C) CompuLink Research, Inc. All prices and specifications are subject to change without notice. CampuLink Research, Inc. cannat be held responsible for amissions/errars in typography or phatography. Your Cannection to Infinity and Technology without Compromise and the CLR lago are trademarks of CompuLink Research, Inc. Intel and Intel inside are registered trademarks of Intel Carparation. Microsoft is a registered trademark, and Windows, Windows/95 and Windows/NT and the Windows lagos are trademarks of Microsoft Carparation. All other trademarks or tradenames are the property of the respective campanies. 30-day maney back guarantee daes not include ariginal ar return shipping and handling charges, and applies only to CampuLink (CLR) brand products, and begins from the date of shipment. All returns require a Return Authorization Number and must be shipped in the original packaging and condition, prepaid and insured

Circle 53 on reader service card

Latest Technology

- Top Performance
- Best Price
- Aesthetically Detailed Design
- Ease of Access to Internal Components
- Simple Cost-Effective Upgrade
- 3 Year Limited Warranty
- 30 Day Money Back Guarantee

«The CLR Infinity delivers. Top-flight performance at a good price.» PC Magazine, January 23, 1996

«... it delivers an enviable combination of quality, performance, and price, and we recomended it without reservation.» BEST BUY AWARD

COMPUTER BUYER'S GUIDE AND HANDED May, June 1





Technology without compromise \*

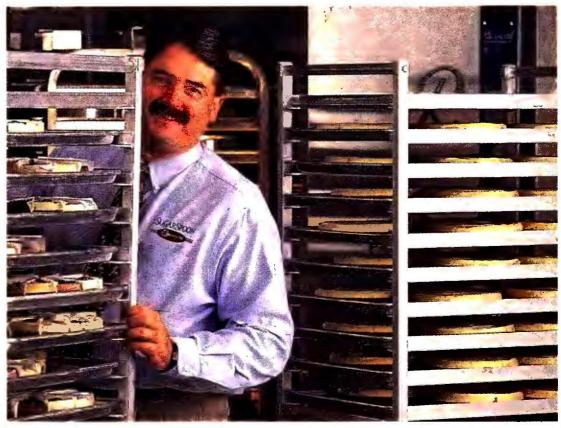
CompuLink Research, Inc. 3949 Commerce Parkway Miramar, FL 33025

Tel: 954-450-7061. Fax: 954-450-7062 BBS: 954-450-8056

#### REAL PROBLEM. REAL SOLUTION

286 Answer Line

How do you create a Web site that gets great results for your firm?—John Van Sickle



JOHN VAN SICKLE FOUND a Web site recipe for Sugar Spoon All Natural Cheesecakes.

A WEB SITE HAS BECOME about as de riqueur as a business card. But there are definite do's and don'ts when setting up a Web site to market your business. This month, John Van Sickle, who heads the international sales division for Sugar Spoon All Natural Cheesecakes in Lincoln, Nebraska (http://www.sugarspoon .com), tells how his company turned a bland Web site into a big hit. —Editor

THESE DAYS, EVERYONE has Web-footed dreams: "All I have to do is slap a picture of my Whizbang Widgets on a home page, the world will come running, and I'll retire by 50!" But as we found out, there's a lot more to making a Web site successful than just, well, having one.

Our 15-year old company—a subsidiary of Lincoln AG Product, Inc.—is in the cheesecake business. No, not centerfold photography: We bake creamy desserts and ship them all over the world. Besides ordering our cheesecakes through our 800 number, people can buy our cakes through flower services, door-to-door executive services, catalogs, and yes, the World Wide Web.

Like every other retail business, we do our share of direct mail, print, and radio advertising. Unfortunately, these media can be exorbitantly expensive: Our last direct mail campaign cost over \$115,000 to produce and mail brochures to 100,000 people.

Back in August 1993, when Web-build-

ing software first hit the streets, we considered experimenting with this new medium for reaching customers. As it turned out, we were one of the first retail businesses to set up a Web site.

Since the University of Nebraska at Lincoln was one of the original Internet hub sites, we didn't have any trouble locating a variety of Internet service providers. The problem was finding the right one.

Too many of the ISPs we talked to were Al's Garage types—people at the beginning stages of their ISP business who had no clue how to make a Web site compelling or what we'd need to do. We finally hired a local firm, Global Internet Network Services, that had experts on staff with the perspective we wanted.

We began working with our ISP to create the site, using the Web's simple Hypertext Markup Language. The ISP also registered our domain and created a private directory for us.

#### PROBLEM: MAKING THE SITE EFFECTIVE

SETTING UP THE technical side was the easy part. Learning how to make the site effective was much harder.

Our first lesson was in graphics: We posted pictures of luscious chocolate and raspberry cheesecakes, but quickly found out our customers were growing old waiting for the pictures to download.

So we revised our site by including fewer graphics and more text, writing the most mouth-watering copy we could muster. Besides sales information, we offered information about the history of cheesecakes and of our company.

But people didn't seem to find that very appetizing. During our peak holiday season, the site scored only about 5000 hits. What's more, there was no way to get feedback from those customers.

We were learning that to make the site

really work, it had to be fun, informative, and very interactive.

Our candor about Internet security taught us another, expensive lesson. We posted a notice on our site telling customers that if they used our online form to order a cheesecake by credit card, we



SUGAR SPOON QUADRUPLED peak activity at its site by learning to work on the Web.

could not absolutely guarantee that the transaction was secure—though our ISP provides excellent security. Orders dropped significantly.

#### WEB-WISE SOLUTIONS

Here are five steps you can take to make sure that your Web site gets results:

Find a good Internet service provider. Look for one that has good ideas and good service, but that also sets realistic expectations.

Get interactive. Make your site fun, informative, and useful. Make it easy for customers to post requests or reach your staff directly by e-mail.

Don't overdo the graphics. Dial-up modems don't have the patience for elaborate photos and video clips. Instead, try to avoid heavy graphics in favor of lively, well-written text.

Keep it simple. People can get lost in a site that hawks too many wares or is overloaded with bells and whistles.

Make ordering easy. For example, save your customers from having to do math by including the price of shipping and handling in the total cost.

#### **SOLUTION: WORKING THE WEB** THE WAY CUSTOMERS WANT

WE EASED OUR CUSTOMERS' security concerns by revising the order form, adding that they could give us their credit card information by fax or by calling our 800 number.

> We worked with our ISP to put in an e-mail function so people could send us comments or ask questions. We made it possible for people to send messages to Chloe, our baker, and to get on our mailing list. We added a "Win a Cheesecake" contest, put up a Flavor of the Month, and even provided some recipes.

Most important, we added a form that people could fill in to tell us more about themselves and

what kind of products they'd like. For example, we've found that many people would like us to produce sugar-free or lowfat cheesecakes.

At the same time, we concentrated on keeping the interface and features simple, so customers could find things quickly.

Our Web site now really works for us and for our customers. Our peak season traffic has climbed from 5000 to 20,000 hits a month. Though the site has produced only a modest 5 percent increase in overall revenues, our advertising costs have dropped dramatically. (We pay just \$350 a month—and an occasional cheesecake—to our ISP for all services.) And we now have a worldwide presence for the price of a domestic one.

The Web site has also improved our internal processes. Because our customers input their own information, we have fewer typos and other data entry 🐍 problems common to telephone sales.

Although our Web site still hasn't made us rich after three years online, learning to do it right is finally paying off.

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.

#### CONTENTS

#### ANSWER LINE

- 288 Apply downloaded patches
- 286 Prepare your computer for the year 2000-if you really need to do so
- 288 Stop Windows 95's hard-disk aerobics
- 286 Switch from Owerty to Dvorak keyboard for faster typing

#### WINDOWS TIPS

- 292 **Build custom file lists**
- 294 Create new folders fast
- 298 Fake long document names in Win 3.x
- 298 Get additional memory
- 292 Minimize open windows with a single keystroke
- 298 Speed up control panel commands

#### APPLICATION TIPS

- 301 Add a graphic to your envelopes
- 302 Change envelope location of bar codes
- 302 Clock time intervals in any spreadsheet
- 304 Create timeline charts
- 302 Edit Word's custom dictionaries
- 302 Improve performance in WordPerfect 7
- 302 Indent paragraphs in Word
- Insert a future date in Word 301
- 306 Track your actions with flag fields
- 304 Use Excel's debug window to learn Visual **Basic for Applications**

#### INTERNET TIPS

- 308 Figure out intranets
- 308 Get Trumpet Winsock off the phone
- 310 Keep tabs on election results
- 308 Make your e-mail more efficient
- 310 Manage your browser's disk cache
- 308 Optimize your bookmarks
- 308 Plug Acrobat into your browser
- 308 Copy and share your Netscape Navigator bookmark list

#### HARDWARE TIPS

- 312 Find practical disk drive standards
- 312 Fix serial port problems

#### MULTIMEDIA TIPS

- 314 Add game ports to your notebook
- 314 Make your own ActiveMovie clips
- 314 Play MPEG video files

#### UPGRADE GUIDE

318 Set up your new PC



DON'T MISS ADDITIONAL HERE'S HOW information on crucial business products, including an expanded version of our

R

step-by-step Upgrade Guide column. Check out PC World Online's broadened Here's How coverage at http:// www.pcworld.com/hereshow.html.

#### Happy 2000-or 1900! ◆ Qwerty versus Dvorak ◆ Stop a hard disk from churning

#### **DOOMSDAY 2000?**

I'VE HEARD THAT at the turn of the century, computers all over the world are going to get confused about whether it's the year 2000 or 1900 and go haywire. How do I protect myself from

> Vincent Caintic, Williamson, West Virginia

THE PROBLEM IS REAL for many companies that rely on custom-written

databases. Most software developers didn't figure on their (mostly mainframe- and minicomputerbased) programs being around at the turn of the century, so they created date fields

and variables with only

chronological chaos?

two digits. Any company that relies on such a program risks organizational disaster if it fails to correct the problem before the millennium.

Most of us can relax, however. If you use off-the-shelf software, including DOS and Windows, January 1, 2000 (a Saturday, thank goodness), will undoubtedly come and go just like any other day, as far as your PC is concerned.

If you don't believe me, leap forward into the aughts by entering the command date 01-01-2000 at the DOS prompt. (Entering just the last two digits of the year generates an 'Invalid date' error, as does entering a four-digit year number in the pre-Reagan years.)

#### SHOULD YOU TRADE IN YOUR **QWERTY KEYBOARD FOR A DVORAK?**

I'VE HEARD THAT the Dvorak keyboard is more efficient and would like to try it out. Do I need to buy a

new Dvorak-layout keyboard, or can I buy a keyboard that lets me switch between the Dvorak and standard Qwerty layouts? Or is there a software utility that will just remap the keys on my current keyboard?

Jon Rau, Vancouver, Washington

KEYS ON THE FIRST mass-produced typewriters, manufactured in the 1870s, were arranged in alphabetical order, and often jammed when early hunt-and-peckers struck adjacent letters sequentially. To reduce jamming, inventor Christopher Sholes came up with the "Qwerty" layout in which common letter pairs are spaced farther apart, but the new layout also made typing physically more difficult.

> By the 1930s, typewriters had become

less prone to jamming, so University of Washington professor August Dvorak developed a new keyboard design by placing the most commonly

used letters on the home row (see FIGURE 1). But because of market factors any OS/2 user could explain, Sholes's inferior design has remained the standard.

Switching to the Dvorak keyboard layout could make you a faster, less

frustrated typist, but consider these caveats: If, like me, you've spent years cranking up to a measly 35 words per minute as a touch typist, get ready to start all over again. You'll Dvorak layout, such as

Mindscape's wonderful Mavis Beacon Teaches Typing, and you'll need a few weeks when you can afford to be less productive at the keyboard.

And remember, it's still a Qwerty world out there. If you frequently work on other people's computers or typewriters as a temp or consultant, you'll have to remain nimble in Qwerty, so think twice about defecting to Dvorak.

Windows 3.1, 95, and NT let you change to the Dvorak layout in just a few clicks. In Windows 95 and NT 4.0, double-click the Keyboard icon in the Control Panel, select the Language tab, click the Properties button, choose United States-Dvorak from the 'Keyboard layout' drop-down list, then click OK twice. Windows will trouble you for its installation disk, but once you provide it, the new setting will take effect immediately without making you exit and restart Windows.

In Windows 3.1 and earlier versions of Windows NT, click the International icon in the Control Panel, and pick US-Dvorak from the Keyboard Layout drop-down list. If you're using a DOS version later than 5.0, download the MS-DOS Supplemental Disk (dos62sp.exe) from Microsoft's FTP site (ftp://ftp.microsoft.com/ peropsys/msdos/public/supplmnt/) or from CompuServe (go msl). You can also get the disk for \$10 by calling 800/426-9400. You'll find an OS/2 3.0 Dvorak keyboard conversion utility with instructions at IBM's FTP site (ftp://ftp.software .ibm.com/ps/ews/dvorkb/).

Once you've made the software switch, the computer's keys think they're on the Dvorak side of the looking glass, but the key-top labels are still arranged Qwertyfashion. For about \$40, you could buy a



need a typing tutorial pro- FIGURE 1: REMAP YOUR KEYBOARD, AND YOUR BRAIN, to gram that supports the Professor August Dvorak's more efficient design.

second keyboard, pop out the keys (use a dull pencil), then put them back in Dvorak order. You can also purchase key-top labels that display just the Dvorak layout, or both layouts, from Hooleon or Keytime.

If you're rolling in dough, Northgate makes several more-expensive keyboards that switch between Qwerty and Dvorak modes. These keyboards relieve you of having to change the layout in software, as described above.

Since I have more than one computer, I decided to convert one to the Dvorak

# "I love Page Scan Color Pro for its high quality, but its versatility always amazes me."

-Erik Flink Medical Journalist by day. Web-Master by night

Smart, compact design scans books and other bound in the erials without tearing out pages it works equally well as a multiple page streeted scrimes.

Full TWAIN compliance lets you scan directly into hundreds of applications.

Helpful customer support is readily available.

24-bit color and 400dpi give you more life-like images than the competition.

Boardless design makes installation a breeze. There is no need to open up your computer. 0

Adobe® PhotoDeluxe, Xerox® Textbridge® and DocuMagix™ PaperMaster™ software provide the most accurate imaging quality and allow you to import text with no re-typing.



PageScan" Color Pro, from Logiteche: the leader in peripheral and imaging technology. For FaxBack information call: 1-800-245-0000, Document 8310. Or give us a call at 1-800-936-0083 and visit us on the Web at WINDOWS 95

www.logitech.com



layout and train as often as possible with Mavis Beacon. By the end of my first hour, I'd achieved a humbling 10 wpm on my home row keys.

Mavis Beacon Teaches Typing \$40; Mindscape;
 415/897-9900

READER SERVICE NO. 716

Dvorak conversion labels \$21.95; Hooleon Corp.;
 800/937-1337

READER SERVICE NO. 717

 Clear-sticker overlay \$12.50; Keytime; 206/522-8973

READER SERVICE NO. 718

 OmniKey Ultra-T and OmniKey Ultra-F keyboards \$129 each, OmniKey 101NI and OmniKey 102 keyboards \$89 each; Northgate; 800/548-1993

READER SERVICE NO. 719

## STOP WINDOWS 95'S HARD DISK AEROBICS

WINDOWS 95 SEEMS to be giving my hard disk a hard time. Even when I have no applications open,

the drive often spontaneously starts grinding away for about 20 seconds for no apparent reason. I have 16MB of RAM and a large swap file, and I defragment the drive every few days. Since I have so much RAM installed, I tried fixing the problem by disabling the swap file, but I just get 'out of memory' messages when I try to run more than a couple of small applications. Is something wrong with my Windows configuration?

Rick Channing, New London,

Connecticut

NO, BUT YOU'VE DISCOVERED that Windows 95's dynamic swap file is a restless beast. When there's no virtual memory

Virtual Memory

These settings can adversely affect system performance and should be adjusted by advanced users and system administrators only.

Virtual memory

Let Windows manage my virtual memory settings (recommended)

C Let me specify my own virtual memory settings

Hard disk: C:\ 177MB Free

Mighnum: 20

Maximum: 177

Disable virtual memory (not recommended).

FIGURE 2: GIVE YOUR HARD DISK A REST by enlarging Windows 95's swap file.

swap file, Windows takes up as much as 12MB of RAM just for itself, which is why you run out of memory quickly when the swap file is disabled. Most of the grinding you're hearing is Windows reducing the size of the swap file during periods of low memory usage. With no applications running and 16MB of RAM, Windows waits for a moment of inactivity, then starts shrinking the swap file down to free disk space.

Unless disk space is tight, you can minimize this activity by increasing the minimum size of the swap file to about 20MB. To do so, double-click the *System* icon in the Control Panel, click the *Performance* tab in the System Properties dialog box, and click

the Virtual Memory button. In the Virtual Memory dialog box, select Let me specify my own virtual memory settings, enter 20 in the Minimum field, then click OK, Yes, and Close (see FIGURE 2). When you restart Windows, your swap file will be much less agitated.

# WHERE DO BUG FIXES COME FROM?

THROUGH READING PC World's

Bug Watch column [now called

Bugs and Fixes], I've discovered

that many of the programs I use have bugs and that there are "patches" I can download to fix those bugs. What are patches? How do I use one after I download it? And how do I avoid applying the patch incorrectly?

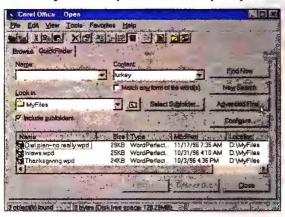
Mark Levin,

Sapporo, Japan NOT TO WORRY; if you've managed to successfully download the patch file, you've already cleared the biggest hurdle. Still, if you're a first-time bug fixer, let me give you a few pointers.

Patches come in two varieties. The first does its work as soon as you run it. BIOS upgrades typically fall into this category. Usually you can run this kind of patch from any directory on your hard disk, although in a very few cases you must copy the file to a floppy first. If so, you'll likely see

# Find Every Last Document

IF COREL OFFICE PROFESSIONAL 7 FOR WINDOWS 95 can't find a file on your PC, it isn't there. Corel's QuickFinder supplements standard browse and preview capabilities with Boolean text searches and several other tools—including the ability to search on synonyms.



instructions to that effect on the online service, BBS, or Web page from which you downloaded the patch.

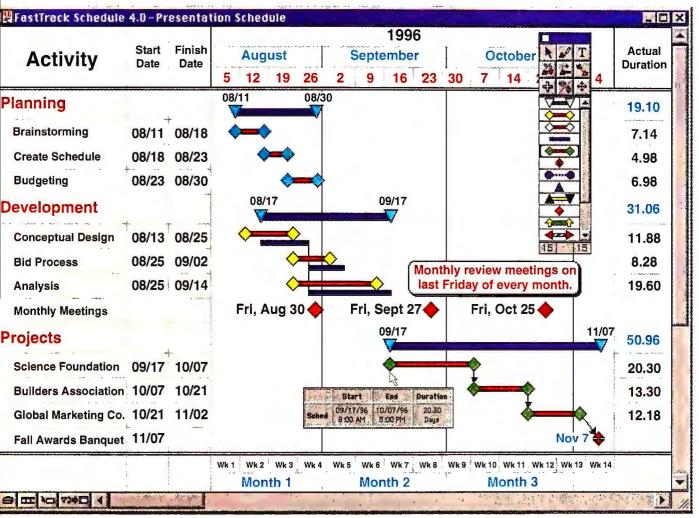
The second type of patch comes as a collection of files compressed into one or more archive files to speed and simplify downloading. Since decompressing one of these tends to dump a bunch of cryptically named files into whatever directory the archive file (usually a .zip or selfextracting .exe file) is in, I recommend always creating a new directory and moving the archive file there first before extraction. That way, you can delete the extracted files easily after the patch process is complete. Check the decompressed files for a readme.txt, readme.1st, or read.me file, which usually explains the steps you need to follow.

When you're finished, copy the original patch or archive file to a safe, easily accessible location, such as a well-labeled floppy disk, in case you have to reinstall the original application and need to reapply the patch.

Find additional tips at http://www.pcworld.com/hereshow.html.

Answer Line welcomes your questions and tips and pays \$50 for published items. Contributing Editor Scott Spanbauer is author of The No B.S. Guide to Windows 95 (No Starch Press, 1996, 800/420-7240). See page 12 for contact information.

# You can't stay on schedule if you on't have one.



# FastTrack Schedule 4.0

Simple Scheduling. Impressive Power.

astTrack Schedule 4.0 lets you create and update presentation-quality schedules quickly and easily. Whether you need a quick scheduler r a full tracking system, FastTrack Schedule 4.0 offers the combination of Flexibility, Ease of Use and Power all in one program! ake a quick look at some of the features found in FastTrack Schedule 4.0. Simple Scheduling and impressive power are as easy as...1,2,3.



Timescales from Hours to Fiscal Years Link Options • Find & Replace Paste in Graphics & Add Textblocks Custom Bar and Milestone Styles Page Breaks • Shift Items in Work Units Capture Schedule Defaults • Hide Graph Layout Options for Multi-columnar Reports Durations in Work Hours & Work Days



# **Ease of Use**

- On Line Help Systems Tool Tips
- Bubble Help Action Columns
- Control Palette Auto Scrolling
- Bar Tracking Window
   Select All
- Interactive Page Preview Layer
- Cursor Tracking Window Quick Corner
- Templates
   Floating Toolbox
- Autofit Schedule Auto Resize Row Height



- Scheduled, Revised & Actual Dates
- · Custom Work Calendar
- Filters & Sorts
   Task Dependencies
- Outline task to show sublevels
- Import & Export Data as ASCII text
- · Network versions File Locking, Passwording
- Now available for Windows 3.1, NT and 95.

To order, for more information or for a free demo call today!

**800.450.1984** http://www.aecsoft.com

Circle 14 on reader service card





Tersion X.O. Bitt.





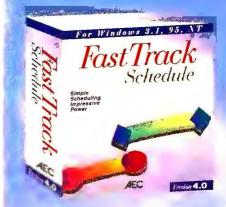
Schedule... matches or exceeds

"FastTrack

the competing products in all aspects of project scheduling."

Windows

Magazine



S O F T W A F EC Software, Inc., 22611-113 Markey Ct., Sterling, VA 20166 USA • Phone 703,450,1980 • FAX 703,450,9786 • http://www.aecsoft. red trademarks of Microsoft Corporation, Macintosh Is a registered trademark, and Power Macintosh is a trademark of Apple Computer, Inc.



# K OF KNUCKLES TO JAW. THE GROTESQUE PING OF PIPE CULL. THE REVOLTING SLICE OF SWORD THROUGH FLESH.

# L DELIGHTFULLY EXPRESSED BY THE COMPAQ PRESARIO.



The Compaq Presario 8000 Series isn't

for everyone. It's for that certain breed of multimedia enthusiast who likes a computer that, well, goes to 11.

After all, the Presario 8000 Series is the most advanced multimedia home computer line ever made.

For starters, it features JBL Pro Premium speakers for the same awesome dynamics one enjoys from a home sound system. Rest assured, when combined with our Interwave 32-Voice Wavetable Synthesis for brilliant audio realism, it'll definitely rock your world. And quite possibly, your neighbors.'

Another cool feature is a Talk & Send 33.6Kbps modem. Not only does it give you the fastest Internet access; it lets you play games and talk with your opponent at the same time. But perhaps most impressive of all, the Presario has PowerVR 3D Graphics and 6MB of

graphics memory that bring true 3D arcade-quality images home for the first time ever. Translation: frightening realism and incredibly smooth animation.

The experience is further intensified by a range of cutting-edge power and performance features. There's even an innovative gamepad that puts everything in the palms of your hands. The same ones that are probably getting a little sweaty right now. For more information, visit us at www.compaq.com or call 1-800-345-1518.



The Compaq Presario 8000 Series. Not for the faint of heart.



Has It Changed Your Life Yet?

# Minimize Open Windows With a Single Keystroke

### WINDOWS 3.X AND 95

EVERY TOUCH TYPIST knows it slows you down to take your hands off the keyboard and reach for the mouse. That's why it's so much easier to minimize an open window (in any version of Windows) by pressing <Alt>-<Space> to display the control menu, followed by N (for Minimize). But this key combo can be a bit clumsy and doesn't work with all applications. Wouldn't it be better if you could dispatch a window with a single key?

To the rescue comes Windows Recorder, a macro utility that's free with Windows 3.x and that also works (for the most part) with Windows 95. If you upgraded to Windows 95 from Windows 3.x and don't see recorder.exe in your Windows folder, you can use the DOS expand utility to restore recorder.ex\_ and recorder.hl\_ from your original Windows 3.x disks. (If necessary, you can get expand.exe from those disks as well.) Just type expand.exe at the DOS prompt and follow the instructions from there.

To create your own window-minimizing macro, open a typical window in any application; you'll use it to record your macro. Make sure this is the only window open on the desktop, and size it to let you see minimized applications at the bottom of the screen (Windows 3.x) or on the Taskbar (Windows 95). Next, start Recorder. If you use Recorder regularly, open the file containing the macros you use every day to add this one.

Choose Macro. Record. In the dialog box, type a name for your macro. Under the Shortcut Key drop-down list, choose an easy-to-press key that you never use (such as <Scroll Lock>). Leave the Ctrl, Shift, and Alt boxes unchecked unless you have absolutely no choice. In the Playback section of the dialog box, select Any Application from the To drop-down list and Fast from the Speed list. Make sure Continuous

Loop is unchecked and Enable Shortcut Keys is checked. Set the Record Mouse option to Ignore Mouse. Then click Start to minimize Recorder and start recording your macro.

If all your apps respond to the <alt>-<Space>-N shortcut, press those keys now. If not, take advantage of Help, which is the last menu for almost all Windows applications. Press <Alt>-H, then <Right>, and finally N to minimize the window.

Next, click the Recorder icon (Windows 3.x) or button (Windows 95) just once. When prompted, make sure Save Macro is selected and click OK. Restore the Recorder window, and choose File. Save to store your macro in a file. Put this file in your StartUp group, with its properties set to Run Minimized, so your macro will be available every time you start Windows.

Now to minimize a window, just tap your shortcut key. If you have many Windows open, you'll love how easy it is to minimize one after another by pressing your shortcut key repeatedly. If you have one or two applications that don't use Help for their last menu (rendering the macro ineffective), just resort to the old <Alt>-<Space>-N shortcut.

# Create Custom File Lists, Make Folders Fast

WINDOWS WINDOWS 95 is supposed to be better than its predecessors, right? So how come I can't make Explorer or My Computer selectively display certain file types in a given folder. For example, I'd like a folder that shows only .doc files. This is one area where Windows 3.x's File Manager retains an edge over Explorer.

But all is not lost. In Windows 95 you can create custom file lists that filter files by one or more extensions, by date, or

Name & Location | Date Modified | Advanced Weekly Report 5KB Document for Word C:\Doc\Work Project planning notes
E-mail comments from ... **Text Document** 

FIGURE 1: BUILD CUSTOM FILE LISTS by using the Find menu to display certain file types.

even by content. And unlike File Manager, the custom list you build isn't limited to a single folder. Where has this feature been hiding? In the Find command.

Here's how to create a custom file list. Choose Start. Find. Files or Folders (in Explorer or My Computer, just press **<F3>**). Use wild cards (? for a single character, \* for multiple characters) to type in the criteria for the files you want, as in FIGURE 1. Separate multiple file types with a comma, a space, or both—for example,

> Oct\*.xls, Nov\*.doc, \*.txt. Underneath, type the path to search in—a single drive or folder. Be sure to uncheck Include subfolders if you don't want any folders within your target to be searched.

> If you're searching for a particular file type that Windows understands, you don't have to worry about typing extensions in the Named box; just click the Advanced tab and choose a type from the *Of type* drop-down list. While you're there you can narrow your search by specifying



Prepare to push your PC into the next dimension with the Stealth 3D family from Diamond. The first in a superior line of affordable Plug and Play 3D accelerators with outrageously fast 2D graphics, vivid 3D animation and striking MPEG video playback—from the market leader in high-performance graphics subsystems. The Stealth 3D 2000 and 3000 dramatically improve graphic-intensive business applications, action games and overall system performance through greater resolution, millions of colors and extreme speeds. With optimum 64-bit graphics acceleration, lightning-fast response rates, S3's ViRGE chip family, Diamond's optimized drivers and a version of InControl Tools 95—you'll gain a whole new perspective on speed. The Stealth 3D family accelerates Windows 95, Windows NT 3.51 and 4.0. Windows 3.1x and DOS

operating systems and is compatible with 3D applications for Windows 95 using Microsofts® DirectX APIs. The Stealth 3D 2000XL\* uses new Silicon Magic RAM technology and comes bundled with Interplay's Descent™ II\*\*, Compton's Interactive Encyclopedia™ 1996 and Sony's Destruction Derby™. The Stealth 3D 3000, with support of up to 8MB VRAM, delivers enhanced resolutions and colors, OpenGL and AutoCAD support and higher refresh rates. The Stealth 3D 3000XL\* comes bundled with Interplay's Descent™ II; Compton's Interactive Encyclopedia™ 1996; Asymetrix's 3D F/X™, Digital Video Producer™ and Microsoft's Internet Explorer. So, if you're ready to speed in three dimensions, contact Diamond at http://www.diamondmm.com and get everything you need to launch into the future of 3D graphics acceleration today.





Look for these logos on a new class of applications designed to take advantage of Stealth 3D graphics.

For more information, contact Diamond at http://www.diamondmm.com

| WinBench® 96 Comparison in 24-bit Color Mode  DIAMOND Stealth 3D 2000 ***Measured in WinMarks | 3D Hardware Fea  | tures Co<br>Stealth<br>3D Family | mparison<br>MATROX MGA<br>Millennium | Stea<br>Memory   | Ith 3D 2000/3000 C<br>Stealth 3D 2000XL<br>Silicon Magic DRAM                                      | omparison Stealth 3D 3000XL VRAM  |
|---|--|----------------------------------|--------------------------------------|--|--|---|
| 32.0 MATROX MGA Millennium™ 28.9  | Gouraud Shading Perspective Correction Alpha Blending Mip Mapping Bilinear Filtering Z-Buffering | •                                | •                                    | RAMDAC<br>Max Memory<br>Max Resolution<br>Bundled<br>Software* | 135 MHz 4MB 1280 x 1024 • Descent II • Compton's Interactive Encyclopedia 1996 • Destruction Derby | 220 MHz 8MB 1600 x 1200 • Descent II • Compton's Interactive Encyclopedia 1996 • 3D F/X • Digital Video Producer • MS Internet Explorer |



24-Hour Fax-On-Demand: 1-800-380-0030 ◆ 1-800-4-MULTIMEDIA

files that contain a certain text string, or files that are a certain size. To narrow the search to the dates on which the files were last changed, click the Date Modified tab and specify the dates. When you're done, click Find Now.

To keep this list handy for future use,

select Options from the menu, and make sure there's a check mark next to Save Results. Then

choose File. Save Search. Find the resulting file on your Windows desktop, and store it in a convenient place—you can even drop it on the Start button if you want to open the list from your Start menu.

When the list is open, you can use the results window (see bottom of Figure 1) to do any file management you need. You might even want to organize work for certain projects this way. You can perform almost all the same functions as you would in Explorer, except that you can't drag files into this window—only out, for copying or moving to other folders within Explorer. And unlike in Explorer, the list will not be updated automatically; you'll have to do that task yourself by clicking Find Now.

## **NEW FOLDERS MADE SIMPLE**

CONSIDERING HOW OFTEN some of us make new folders, it seems odd Microsoft hasn't made the chore simpler. First, you have to open the folder where the new folder will reside—you can't create one in Explorer's tree pane. Next, you wrangle with submenus: Either choose File. New-Folder or right-click in the file window and choose New-Folder.

Wouldn't it be easier if you could just right-click on a folder in the tree and choose New Folder from the menu? Fortunately, this is one feature that you can add yourself.

1. First, open Explorer to a folder where you normally store batch files. In this example, we'll use the Windows folder. Right-click in the file list and choose New-Text Document.



Pictures Worth a Thousand Webs

THE WEB'S exploding popularity calls for high-impact color images. Ulead PhotoImpact helps you manage image files, make screen captures, and retouch and correct digital images, Price: \$199, Available from distributors or from Ulead Systems at 800/858-5323.

READER SERVICE NO. 784

2. Double-click on the new document to open it in Notepad and create a batch file that contains these two lines:

# @echo md %1\%%1 > c:\ windows\makdir.bat start "c:\windows \makdir.pif"

This copies the DOS Make Directory (md) command and the currently selected directory (%1) plus a placeholder (%%1) into a new batch file (makdir.bat). Adjust

the paths if you prefer to store your batch files in a folder other than Windows. Save the file with a name like foldmakr.bat.

3. In Explorer, right-click the batch file you just created and choose Properties (or select it and press <Alt>-<Enter>). Click the Program tab, and select Minimized under Run. Check Close on Exit and click OK.

4. In the same folder, look for a newly created file with the same name as your batch file but with the extension .pif (if

your extensions are hidden, you'll recognize the file by its MS-DOS icon). Use the right mouse button to drag it to a blank area of the window, and choose Copy Here. Rename the copy makdir.pif (or makdir if extensions are hidden).

5. Right-click the copy and choose Properties (or select it and press <Alt>-<Enter>). Click the *Program* tab. In the box at the top, type a prompt such as Type a name for your folder. In the Cmd Line box, type c:\windows\makdir.bat ?. (Adjust the path and the file name to match the one you used earlier.) Leave the 'Run', 'Minimized', and 'Close on exit' options the way they are and click OK.

6. In Explorer, choose View•Options and click the File Types tab. For 'Registered file type', select Folder (not File Folder) and click Edit. Click New. For 'Action', type New folder, or any other words that you want to appear on your

pop-up menu. For 'Application used to perform action,' type c:\windows\foldmakr .bat. Then click OK and close the remaining dialog boxes.

7. To use your new menu command, just select a folder in Explorer's directory tree, then right-click and choose New folder (or whatever you called your new command). Type a folder name when prompted, and

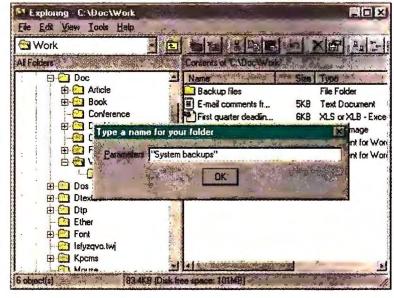
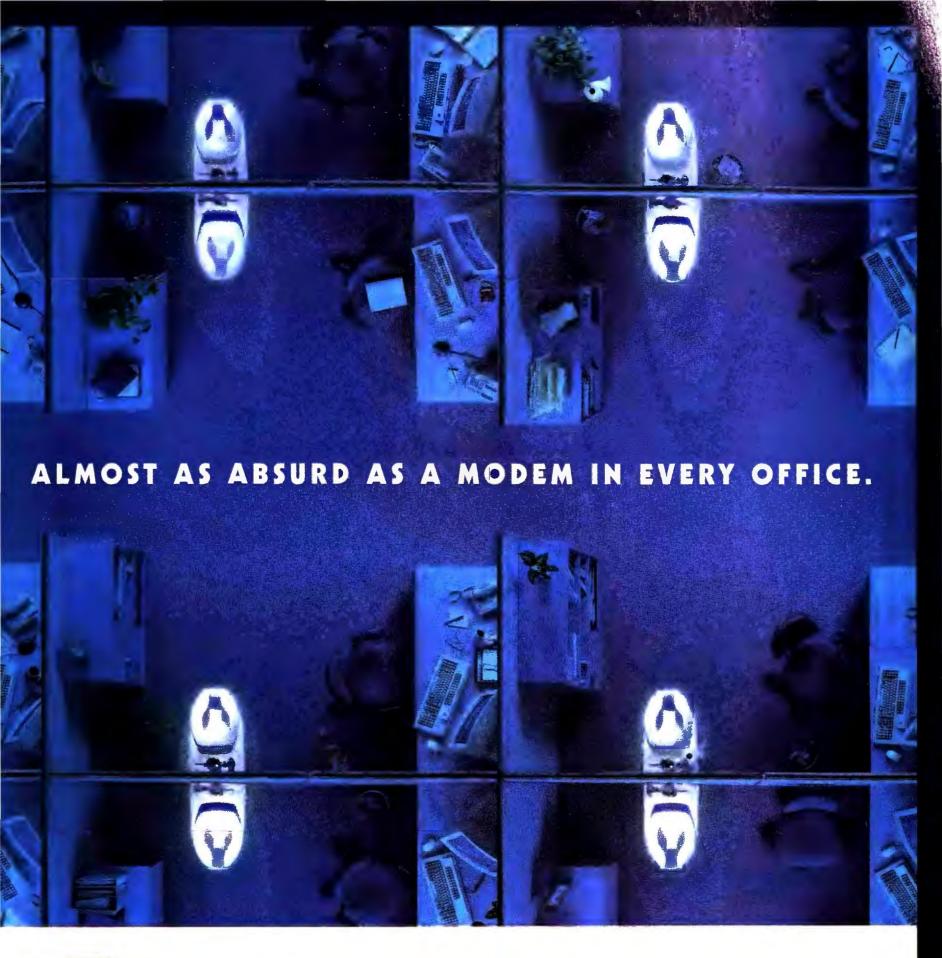


FIGURE 2: CREATE A COMMAND that lets you quickly make a new folder in Explorer's directory tree.

remember to enclose it in quotation marks if the name includes any spaces or is longer than the old 8-plus-3, as in the example in FIGURE 2.

If you right-click a folder before selecting it, the command will still create a folder in that location—but you may have to refresh the directory tree (press <F5>) to see your new folder.

One other note: This command lets you make a new folder within an existing folder only. You can't use it to make a folder in the root of a drive.





With everyone screaming Internet access or die, maybe you don't think a modem in every office is absurd. But when you find out INSYNC's ModemShare lets your entire network access the Net with just a single modem

and phone line, perhaps you'll reconsider. What's it all cost? Believe it or not you can start drastically slashing your phone bill for as little at \$129. And the best part about ModemShare—it's not your typical unsatisfying sharing experience. That's

because our unique technology allows for virtually transparent sharing of modems when browsing the Net, downloading files, desktop faxing, or remotely accessing office PC's. So instead of wasting your money on needless modems and costly additional phone lines, why not spend it on something useful? (And by that we don't mean additional restrooms.)

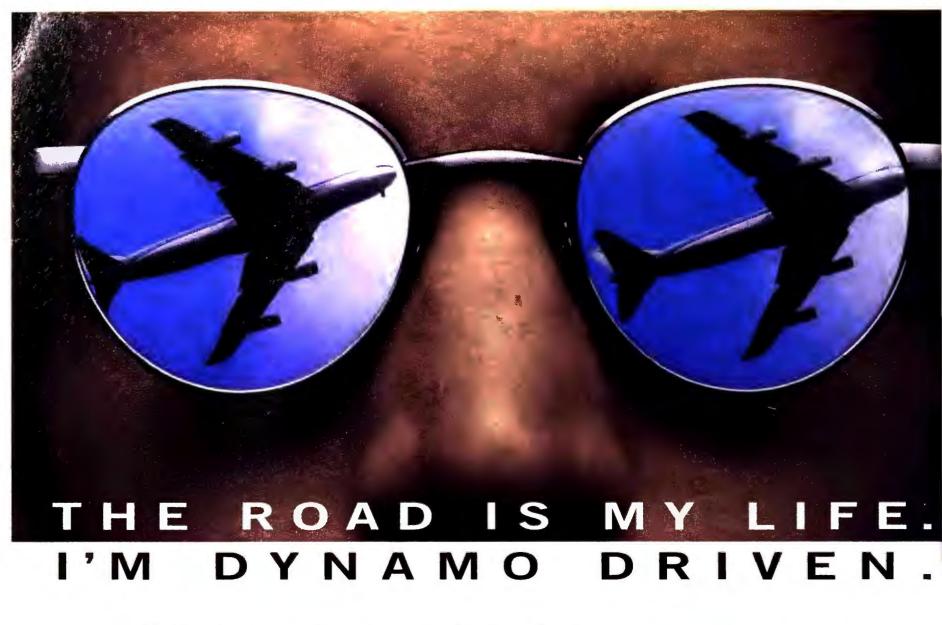
For a free 30-day trial of the full product, visit www.artisoft.com. Or call

1-800-809-1244 for the nearest authorized reseller.





Free for 30 days @ www.artisoft.com



My life is long flights. Short nights. Hotel food. And conference rooms.

My notebook PC is my office. And my DynaMO® is loaded with

everything I'll need for the next five days. Files. Applications.

Everything that matters. I'm DynaMO Driven.

DynaMO, if you don't already know, is Fujitsu's magneto-optical drive.

Its 230 meg 3.5-inch disks are rewriteable, removable and extremely



reliable. It plugs into the PCMCIA slot in my notebook.

everything that matters is dynamo driven. And it's battery-powered, so I can use it on the plane.



There isn't another drive that can do even half of what DynaMO can do.

Which is why I'm DynaMO Driven. And why you should be too.



If the road is your life, your next stop should be www.fcpa.com. Or 800-831-8094.



# NewCom brings you together.

You're in New York. Your design team is in Tokyo. With remarkable Digital Simultaneous Voice Data modems (DSVD) an ordinary analog phone line is all you need to collaborate. No expensive ISDN or T-1 lines needed, no quirky, hybrid modems; it's easily configured. Talk and send/receive data at the same time. Duplex technology makes voices from halfway around the world sound like they're next door. And NewCom quality modem design speeds your data at rates up to 28,800 Kbps.

The NewTalk 2000 family of DSVD modems for embedded applications responds instantly to the

demands of virtually all applications, from spreadsheets to word processing, from page design to multi-media. And at the end of the day, use NewTalk's remote gaming applications for remarkably lifelike game play with competitors on all parts of the globe.

NewCom also manufactures superior full duplex Speakerphone, Voicemail and Data/Fax modems for PC's in a configuration that's just right for your business or home.





Your.lift.2.the.info.superhwy.

NewCom, Inc., a subsidiary of Aura Systems, Inc. • 31166 Via Colinas, Westlake Village, CA 91362 Tel (818) 597-3200 • Fax (818) 597-3210 http://www.newcominc.com

# Fake Long File Names, Find Extra Memory

WINDOWS 3.X JEALOUS OF WINDOWS 95's long file names while you're stuck in Windows 3.x? Despair not: You can make Program Manager simulate long file names for frequently used documents.

Here's how: In Program Manager, create a group for your documents by choosing File. New, selecting Program Group, and clicking OK. Give the group a description and name and click OK again. Then, in File Manager, locate and select the files you work on most often.

Arrange File Manager and Program Manager so you can see both windows at

Program Manager
Options Window Help 4 4 4 9 2 4 4 X B 428 22. 225 944 4 4 4 4 4 4 4 4 4 4 4 4

FIGURE 3: SIMULATE LONG FILE names in Windows 3.1 by dragging files to Program Manager.

once (double-click on the desktop to open the Task Manager and click Tile). Drag the selected files to your new group in Program Manager (the group window needn't be open—you can drop the files on its icon if you like). This drag-and-drop trick works only for files whose extensions are associated with an application.

To give a file a long "name," select its icon in Program Manager and press <Alt>-<Enter> to open the Program Item Properties dialog box. In the description box, type a name up to 40 characters long and click OK. Repeat for each icon. You can double-click the icon or its label to open and edit the file. (See FIGURE 3.)

When you no longer need a file, remember to delete both its Program Manager icon and the file itself-Windows won't do this housekeeping for you. You can make multiple groups to organize many files, up to a maximum of 40 groups with 50 icons in each group.

### **GETTING THE LAST BYTE**

DOES YOUR WINDOWS 3.x system need every last byte of memory you can find? If you have VGA video but never need it in monochrome mode, you can free up a bit of memory by telling Windows to ignore the area of upper memory reserved for

> monochrome adapters-specifically address spaces Boooh through B7FF.

> First, make a backup of system.ini in the Windows directory in case of trouble. Then, in File Manager or Program Manager, choose File. Run, type system.ini and press (Enter) to open this configuration file in a text editor. Find the section under the [386Enh] heading, and look for a line that begins 'VGAMonoText='. Modify it to read VGAMonoText=off (or just add the line if it's not there). Then

save the file and restart Windows. As long as no other hardware uses this memory space (you'll know if you receive an error message or your hardware doesn't work properly) and no applications need your VGA monochrome mode, the extra memory will be available to Windows.

Find additional tips at http://www .pcworld.com/hereshow.html. Windows welcomes your tips and questions and pays \$50 for published items. Contributing Editor Scott Dunn is a principal author of The PC Bible, 2nd Edition (Peachpit Press, 1995, 800/283-9444). See page 12 for contact information.

# Control Panel at Your Fingertips



Do you hate the slowdown of digging through menus and program windows just to tweak a single Control Panel

item? Here are several ways to speed through Windows Control Panel at full throttle.

Quick access to favorites (Windows 3.x). You can save time by creating individual Control Panel icons in Program Manager.

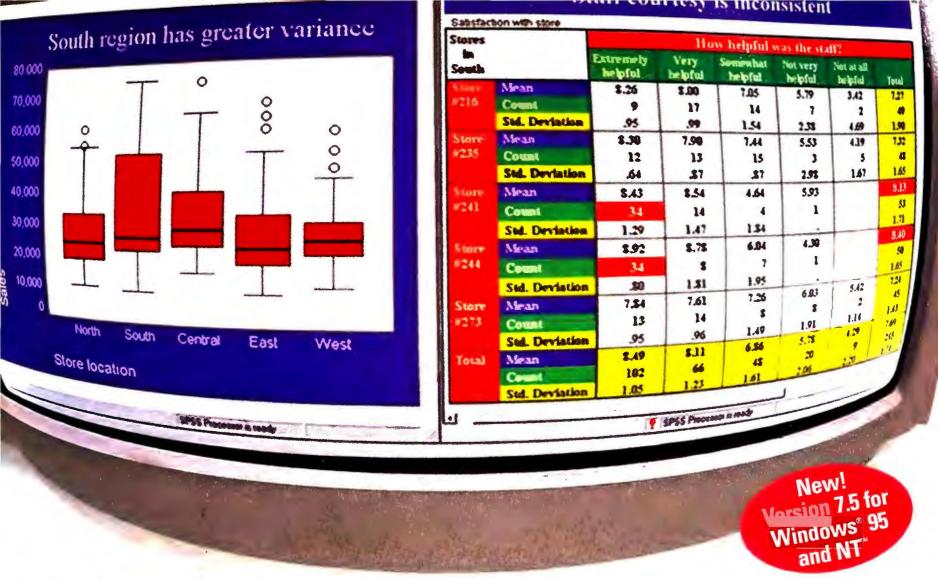
Choose File New, click Program Item, and click OK. Type a name for your icon, such as Desktop, and for the Command Line text box type c:\windows\control.exe main.cpl desktop for the Control Panel Desktop icon (your path may differ). For other icons, replace Desktop with Color, Date/Time, Fonts, International, Keyboard, Mouse, Network, Printers, or Ports.

For still other control panel icons, skip this parameter and replace main.cpl with the appropriate .cpl file in your Windows\System directory (for example, snd.cpl for Sound). You can find custom icons in the windows\system\ main.cpl file and other cpl files.

Quick access to favorites (Windows 95). To get your hands on your most frequently used control panel icons in Windows 95, create a menu: Right-click the Start button, choose Explore, and navigate to a good place for your Control Panel menu. Right-click in that folder, and choose New-Folder. Then choose Start-Settings • Control Panel and use the right mouse button to drag one or more icons to your new folder. When you release the mouse button, choose Create Shortcut(s) Here, and rename each Shortcut to suit your new menu.

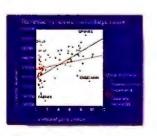
Quick access to a Desktop tab (Windows 95). If you routinely change your computer's display properties (wallpaper or screen saver, for example), save time by creating a Shortcut to the Display Properties dialog box that automatically opens to the sheet of your choice.

Right-click on the Windows 95 desktop and choose New-Shortcut. For Command Line, type c:\windows\control.exe desk.cpl, display, 2 (your path may differ). You can replace the tab number 2 (for the Appearance sheet) with 0 (Background), 1 (Screen Saver), or 3 (Settings). Click Next and type a name for your Shortcut. Then click Finish. To give this Shortcut an appropriate icon, right-click its current icon, select Properties, click the Shortcut tab, click Change Icon, type c:\windows\system\desk.cpl (your path may differ), and click OK twice.



# Unleash the power in your data

SPSS mines your data in ways no spreadsheet or reporting tool can



Go beyond spreadsheets with analytical techniques such as crosstabs, regression, factor and over 100 others.



Use SPSS' multidimensional pivot tables to discover critical information that might be buried in traditional reports.

The critical information you need, like the variance and distribution of your data, isn't in simple summary reports. To compete and win, you need to take the next step – advanced analysis that leads to better decisions. Use powerful statistical methods and revealing charts to spot patterns and trends. Discover what's significant. Make better forecasts. You don't have to be a statistician to use SPSS. SPSS assists you with a tutorial, step-by-step instructions and "What's this?" help. We help you find a solution with a range of training and analytical consulting services. See our Web site for a white paper on how statistics help you achieve a competitive advantage.













## For more information

# Call 1 (800) 543-5837

or fax 1 (800) 841-0064

Visit our site on the World Wide Web: http://www.spss.com or e-mail: sales@spss.com

We speak your language with 26 offices and 60 distributors worldwide.

## SPSS is used today to:

- Analyze your database
- Accurately forecast sales
- Increase customer satisfaction
- Find the most profitable seaments
- Improve mailing responses
- "Users will want this program for when their spreadsheets run out of steam." — PC Magazine
- "...fast, powerful, robust, and a joy to use." Windows Sources
- "...easy enough for statistics newcomers, but includes features that power users require." — PC World
- "...an essential tool" PC Week

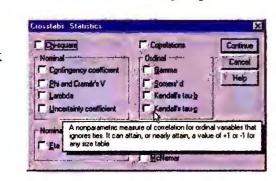
Circle 202 on reader service card

# Unleash the power of SPSS

# Easy to learn, easy to use

With the extensive "helps" built into SPSS, you will learn fast and work fast. The online tutorial will help you get up and running quickly. Task-oriented help gives you step-by-step instructions when you need it. If you're unsure how to perform an action, click the "show me" button to jump

immediately to the appropriate section in the tutorial. Click on "What's this?" to get pop-up definitions of statistical terms and rules of thumb to refresh your statistical



knowledge or to learn new terms. Decide which statistical procedure or graph to use and how to interpret the results with online statistical advice, complete with examples.

# Prepare your data for analysis



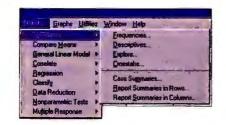
It's easy to bring together multiple sources of data and prepare your data for analysis with SPSS' extensive data and file management capabilities. Whether your data reside in a data warehouse, your own files, spreadsheets or a cor-

porate database, you can access them with SPSS to save time and eliminate typing — no matter how large the number of cases and variables. You can also combine answers into categories and add, aggregate, merge, split and transpose files.

# In-depth analytical capabilities

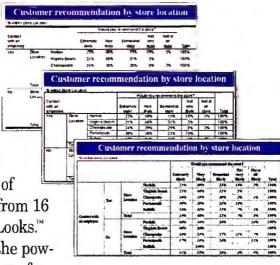
Go beyond summary statistics and row-and-column math with SPSS' broad range of statistical procedures. SPSS contains the most popular statistical procedures that most people — especially survey and market researchers — need for basic analysis. Procedures include counts, crosstabs, factor

analysis, regression and cluster analysis. Uncover and visualize important information with over 50 types of statistical, business and quality control charts.



# Present your results clearly

Format your tables to highlight important findings and get your results noticed.
Customize your presentation by easily changing the colors, fonts, size and other attributes of your table, or select from 16 pre-formatted Table Looks.
Build macros using the powerful scripting language for

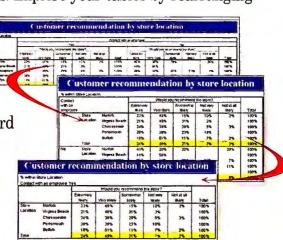


maximum control. No other statistical software package has this degree of flexible formatting!

# **Explore your results in a flexible new way**

Your results come alive with SPSS' revolutionary, multidimensional pivot tables. Explore your tables by rearranging

rows, columns and layers.
Uncover important findings which can get lost in standard reports. Compare groups easily by splitting your table so only one group is displayed at a time.



# Personalize your work environment

Tailor SPSS with powerful scripts. Build macros for even more formatting control over your tables, or automate repetitive tasks to save time. Add or remove items from the customizable toolbar so you can quickly access the procedures most important to you.



For more information

Call 1 (800) 543-5837

or fax 1 (800) 841-0064

Visit our site on the World Wide Web: http://www.spss.com or e-mail: sales@spss.com

# Spruce Up Envelopes, Add Future Dates to Invoices

## WORD PROCESSING

## BY GEORGE CAMPBELL

HAVE YOU EVER wanted to add a graphic image or your company logo to the return address area of envelopes you create in Microsoft Word? AutoText—a little-known feature in versions 6 and 7—lets you do this quickly and easily. Just follow the

steps detailed below and illustrated in **FIGURE 1**.

- 1. In a blank Word document, select *Insert•Picture*, locate and highlight the graphic file you want to add to your envelopes, and click *OK*.
- 2. Click on the graphic to select it, then change its size, if necessary, by dragging the sizing handles. You'll be inserting this on an envelope, so you don't want the image to be too large. To get an idea of the image size, select *View•Ruler* to display the ruler.
- 3. With the graphic still selected, choose *Edit*•AutoText. In the Name field of the AutoText dialog box, type EnvelopeExtral (with the capitals), then click Add.
- 4. Select Tools. Envelopes and Labels. Click the Envelopes tab, if necessary, then click at the beginning of the first line of the return address and press (Enter) to add a blank line before the address. Click Print. If you're prompted to save your changes, answer Yes. Your logo will print above the return address on all envelopes, but it won't appear in the Envelopes and Labels dialog box.

If you want to change the graphic or resize it, select *Edit*• *AutoText*, choose *EnvelopeExtra1*, then click *Delete*. Repeat the steps above to make your changes.

## **INSERT A FUTURE DATE IN WORD**

THERE ARE TIMES—for example, when you're creating an invoice—when it would be handy to insert a date that is a given number of days in the future. Word's Insert•Date and Time command is no help, since it inserts the current date. Here's a macro that asks you how many days in the future to set the date, then

inserts that date at the cursor location. To create the macro, follow the steps below.

- 1. Select *Tools•Macro*, type **DatePlus** in the *Macro Name* field, and click *Create*. This calls up the macro editing screen.
- **2.** Between the lines Sub MAIN and End Sub, type the following commands:

DaysToAdd\$ = InputBox\$("Add how many days?")

NumDays = Val(DaysToAdd\$)

TargetDate = Now() + NumDays

a\$ = Date\$(TargetDate)

Insert a\$

3. Select File•Save All and enter a name for the macro sheet. Answer Yes when prompted to save the changes.

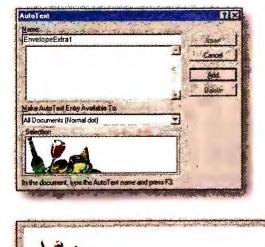
When you need to insert a future date, move the cursor to the right location,

## STEP BY STEP

# Add Graphical Logos to Your Envelopes in Word



**③** Select *Edit◆AutoText*, type **EnvelopeE**xtra1 in the Name field, and click *Add*.



Mr Andrew Ochrymowych

Long Beach, CA 95566

◆ Select Tools • Envelopes and Labels, click the Envelopes tab, click at the beginning of the first line of the return address, and press < Enter > to add a blank line. Your logo will print above the return address.

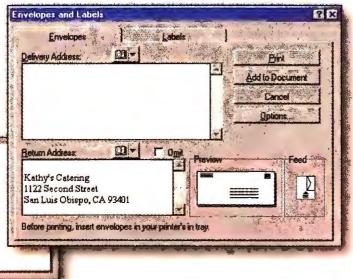


FIGURE 1: USE WORD'S AUTOTEXT FEATURE to add your logo above the return address.

# Indenting Paragraphs in Word



I PREFER WordPerfect 6.1, but my office has standardized on Word 6.0. I miss WordPerfect's <F7> key,

which indents an entire paragraph. Is there any equivalent keystroke in Word?

Michael Finley, Pinellas Park, Florida IT'S JUST AS EASY TO indent a paragraph or a set of paragraphs in Word. With your cursor in the paragraph you want to indent, or with multiple paragraphs selected, press <Ctrl>-M to indent the paragraph to the next tab stop or <Ctrl>-<Shift>-M to move to the left one tab stop. To create or remove hanging indents, press <Ctrl>-T or <Ctrl>-<Shift>-T.

# **Editing Word's Dictionaries**



I MADE SOME mistakes when adding words to my custom dictionary in Word 6.0. As a result, when

I mistype these words, Word's spelling checker doesn't flag them as errors. How do I fix my dictionary?

Li Yu, People's Republic of China WORD STORES its custom dictionary as an easy-to-edit ASCII file. Select Tools Options, then click the Spelling tab in the Options dialog box. Choose the dictionary you want to edit from the Custom Dictionaries list and click Edit. Click Yes in the resulting dialog box, and click OK if asked to confirm the file format type. Click OK in the Options dialog box to close it, then make your changes in custom.dic. Select File • Save, then File • Close.

In Word 7, click the Custom Dictionaries button in the Options dialog box before choosing the dictionary you want to edit.

# Lowering the Bar in WordPerfect



WHEN I CREATE envelopes in WordPerfect 6.1, the postal bar codes print above the address. My

postmaster says that's fine, but I don't like the way it looks. How do I print the bar code below the address?

Erik Leach, Internet SELECT Format • Envelope, then click Options in the dialog box. In the USPS Bar Code Options area in the next dialog box, select Include and Position Below Address, then click OK. Click Close in the Envelope dialog box to store your changes as the new default.

select Tools. Macro, choose DatePlus from the Macro Name list, and click Run. When prompted, type the number of days you want to add to today's date, and click OK.

If you plan to use this macro often, add it to a toolbar or assign it a shortcut key.

## IMPROVING PERFORMANCE IN **WORDPERFECT 7**

COREL WORDPERFECT 7 offers some great new features, but some of these slow the application down, especially on PCs with only 8MB of memory. Here are a few ways you can eke out some extra performance from WordPerfect.

- Turn off WordPerfect's Spell-As-You-Go feature. Select Tools. Spell-As-You-Go to remove the check mark from the menu. When you want to use the spelling checker, just select this command again to turn the feature back on.
- WordPerfect's QuickSpots, which call up formatting commands, take a bite out

of processor speed, since they appear each time you move the mouse over a new object. To turn these off, select Edit-Preferences, double-click the Display icon, deselect QuickSpots, then click OK and Close.

- · You can turn off the display of Word-Perfect's new guidelines for margins, columns, headers, footers, and tables. Select View. Guidelines, deselect the items you don't want to display, and click OK.
- WordPerfect 7 saves files in 6.1 format by default. To save files in the faster version 7 format, select Edit-Preferences and double-click the Files icon. In the Files Preferences dialog box, choose WordPerfect 7 in the 'Default save file format' list, click OK, then click Close. One caution: WordPerfect 6.1 users won't be able to read files saved in this format.

Contributing Editor George Campbell is a contributor to The PC Bible (Peachpit Press, 1995, 800/283-9444).

# Clock Time Intervals, Test **Drive Excel Macros**

SPREADSHEETS BY RICHARD SCOVILLE

How Do You calculate the difference between two times—for example, when someone arrives and leaves work? Readers, as well as students in my training classes, ask me this question about once a week, so let's answer it again here.

Let's say Chris arrives at 10 p.m. and leaves at 6 a.m. the next morning. You enter the arrival time in cell A1, the departure time in cell B1, the that shows hours and minutes.

If the duration is under 24 hours, 1-2-3 and Quattro Pro will display the proper answer, in this case o8:00. Excel, however, returns an error value.

In Excel, and in any case in which the

interval is more than 24 hours, your formula must include not only the time value, but the date as well. The worksheet shown in FIGURE 2 shows such a solution.

To create this worksheet in Excel, enter the data shown, including the formula in cell E3. Then format cell E3 to show cumulative time: Choose Format. Cells, click the Number tab, and select Custom in

|   | E3       | 7        | =(C3+D3)-(A | 3+B3)    |          |
|---|----------|----------|-------------|----------|----------|
|   | A        | B        | C           | TO T     | E        |
| 1 | Arr      | rival    | Dep         | arture   |          |
| 2 | Date     | Time     | Date        | Time     | Duration |
| 3 | 10/15/96 | 10:00 PM | 10/16/96    | 06:00 AM | 8:00     |

formula =B1-A1 in cell C1, and FIGURE 2: CALCULATE THE DIFFERENCE between two times then assign a numeric format in Excel. The trick is in the numeric cell format.

the Category list. Highlight [h]:mm:ss in the list of formats in the Type section, and remove the :ss from the end of the format in the 'Type' edit box. Click *OK* when you're finished.



# Supra modems deliver 33.6 speed and VIDEO-PHONE features that out-pace the competition.

Jump-start your communications with Diamond's unrivaled family of high-performance Supra modems. Start with lightning-fast speed to 33.6 Kbps and add to that a powerful dose of advanced voice and video technology—and you get everything you need to make your system a communications powerhouse.

|                   | SupraExpress 336 Sp | SupraSonic 336V+ | SupraExpress 336 |
|-------------------|---------------------|------------------|------------------|
| Video-Phone Ready | ♦ New!              | ♦ New!           | ♦ New!           |
| 33.6 Kbps Data    | •                   | •                | •                |
| Voicemail & Fax   | •                   | •                | Fax Only         |
| ASVD              | • ·                 |                  |                  |
| Hands-Free Phone  | Speakerphone        | Headset          |                  |
| LCD Display       |                     |                  |                  |

All Supra modems come standard with revolutionary features like V.80 video-phone capabilities. The new **SupraExpress 336 Sp** offers full-duplex speaker-phone along with Rockwell ASVD (analog simultaneous voice and data)—meaning you can talk to other PC users while sharing files and playing games. Diamond

also offers a complete ISDN solution—delivering all the hardware and software you need for 128,000 bps access to the Internet. So, if you're ready for modems that surpass all your expectations—take the lead with Diamond.



SupraSonic

SupraExpress

SupraExpress 336



Supra NetCommander



DIAMOND M U L T I M I D I A COMMUNICATIONS DIVISION

PRODUCTS INCORPORATE TECHNOLOGY PROVIDED BY ROCKWELL INTERNATIONAL CORPORATION

For more information, visit our website at **http://www.diamondmm.com/mpw**24-Hour Fax-Back: 541-967-0072 ◆ Phone: 1-800-727-8667

Circle 79 on reader service card

SupraExpress", Supra NetCommander" and SupraSonic" are trademarks of Diamond Multimedia Systems, Inc./Communications Division, 312 SE Stonemill Drive, Suite 150, Vancouver, WA 98684 Windows" is a registered trademark of Microsoft Corporation. Rockwell and Associated Logo are trademarks of Rockwell International Corporation. All other trademarks are the property of their respective owners.

In 1-2-3 and Quattro Pro, you must use a slightly longer formula to convert the time interval to a label that shows both the hours and minutes. Enter the following formula in cell E3:

@string(@round((((C3+D3)-(A3+B3)) \*24),0),0)&":"&@right("0"&@string ((@mod(@round(((C3+D3)-(A3+B3))\*24, 12),1))\*60,0),2)

## **USING EXCEL'S DEBUG WINDOW** TO LEARN VBA

BEFUDDLED BY Excel's Visual Basic macro language, or tired of rewriting code when your macro crashes? This tip's for you! Excel's Debug window lets you experiment with VBA (Visual Basic for Applications) objects, their properties, and methods. When you're sure they'll work, you can use them in your own code.

To try it, launch Excel and open a new workbook. Enter data similar to that in FIGURE 5. Next, select Insert-Macro-Module to create a macro sheet. Select View. Debug Window, and make sure the Immediate tab is active. In the top pane of the Debug window, type your macro statements and press **<Enter>** to execute them.

Let's use the Debug window to select the first sheet in the current workbook. In the top pane, type Sheets ("Sheet1").Activate and press **<Enter>**. Excel activates Sheet1. To select a specific cell in the worksheet type Range("B6").Select and press <Enter>. The active cell moves to B6 (you may have to drag the Debug window out of the way to view the active worksheet). You can also use the Debug window to examine and change properties of worksheet objects. For example, to determine the numeric format of a range, type ?Range("B1:B10"). NumberFormat and press <Enter>. In this case, the macro returns the statement. 'General', just below the statement you entered, to indicate that range B1:B10 is assigned the General format. To change the properties of an object—for instance, to change the background color of a range of cells—type Range ("B1:B10").Interior .ColorIndex=6, and press <Enter>. The background color of B1..B10 will be yellow.

If you're satisfied with the results of your macro, cut and paste it from the Debug window to the macro sheet in your workbook. If you're not satisfied, erase the statements or close the Debug window.

Contributing Editor Richard Scoville is a software training consultant based in Chapel Hill, North Carolina.

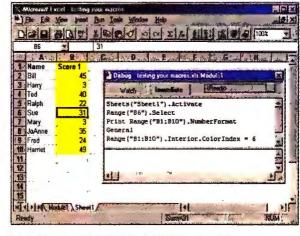


FIGURE 5: EXPERIMENT WITH EXCEL macro statements before adding them to your macros.

## Timeline Charts in 1-2-3 and Excel



ules of my staff in a timeline chart so that I can see at a glance how

many people are available at any given time. How do I do this in 1-2-3?

Ashley Harvey, Palmdale, California LIKE THIS: Create a horizontal bar chart, set the first data series to be the start time and the second to be the shift duration, then format the first series to be invisible. The end result is a chart like the one shown in FIGURE 3.

To build the model, create a new worksheet

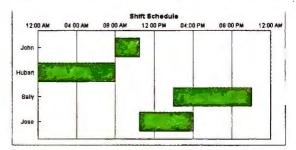


FIGURE 3: TRACK STAFF SCHEDULES in 1-2-3 and Excel in a standard chart. Here, we used a stacked bar chart and hid the first data series.

and enter the labels and time values shown in range A1..C5 of FIGURE 4. In 1-2-3, select range B2..C5, then select Style•Number Format. In the Number Format dialog box, select Times from the Format list and 11:59 AM from the Times list. In Excel, select range B2:C5, select Format • Cells, click the Number tab if necessary, then choose *Time* from the Category list and 1:30 PM from the Type list and click OK.

Next, enter the formula to calculate the duration. In 1-2-3, enter +C2-B2 in cell D2 and copy it to range D3..D5. Then select range D2..D5, choose Style•Number Format, and in

| 1 100 | A A    | В        | to C     | D        |
|-------|--------|----------|----------|----------|
| . 1   | Name   | Start    | Stop     | Duration |
| 2     | John   | 08:00 AM | 10:30 AM | 02:30    |
| 3     | Hubert | 12:00 AM | 08:00 AM | 08:00    |
| 4     | Sally  | 02:00 PM | 10:00 PM | 08:00    |
| 5     | Jose   | 10:30 AM | 04:00 PM | 05:30    |

FIGURE 4: ENTER THIS SAMPLE DATA to learn how to create a timeline schedule.

I'D LIKE TO SHOW the shift sched- the resulting dialog box, select Times and 23:59. In Excel, enter =C2-B2 in cell D2 and copy it to range D3:D5. Next, select range D2:D5, select Format•Cells, click the Number tab, then choose Time from the Category list and 13:30 from the Type list and click OK.

> Now construct the chart: In 1-2-3, select range A1..B5, then press and hold <Ctrl> while you select D1..D5. Choose Tools • Chart, and drag a box on the worksheet. Click the chart to select it and select Chart Type, click Horizontal in the Orientation box, select the stacked bar chart type, and click OK.

> Now, click the first data series (one of the red bars). Select Style.Lines and Colors. In the Interior Pattern drop-down list, select T (for transparent); under Edge Style, select None; and click OK. Select Chart Axis Y Axis. In the Axis Title box, enter Shift Schedule. Set the Upper Limit to 1 and the Lower Limit to 0. In the Major Interval box, type 1/6 (to indicate one-sixth of a day, or 4 hours). Click OK. Now, click the Y axis. Select Style Number Format, select Times, choose the format 23:59, and then click OK. At this point, you have the basic timeline chart. Continue as you wish to remove or modify the legend, change the font sizes, and so forth.

> To create a similar chart in Excel, select the ranges as described above, and click the Chart Wizard to create a horizontal bar chart. In Step 3 of the wizard, select option 3 for the stacked bar chart. In Step 4, under Data Series In, select Columns; enter 1 in both Use First boxes. In Step 5, select No for Legend, and enter appropriate titles. Click Finish. Double-click the chart to edit it, select the first data series, and select Format Selected Data Series. Click None under Border and Area and click OK. Click the Y axis, select Format. Selected Axis, click the Scale tab, set the Minimum to 0, the Maximum to 1, and enter 0.166667 as the Major Unit. Click OK.

This is for everyone who's been burned by technology that didn't work as promised. It's a palmtop computer that actually does what it's

supposed to do. No exceptions. No excuses. No kidding. Introducing the new Series 3c from Psion — the maker of the world's best-selling palmtop," and with ten years of experience, it's no wonder.

# Works just like a computer. Funny, it is a computer.

The Series 3c is a fully functional computer, complete with a

# Will it get along with your PC? Glue should bond this well.

The Series 3c connects and integrates easily with your PC. With just one click, you can synchronize your calendar and contacts with popular personal information managers, including Microsoft® Schedule+ 7.0 and Lotus Organizer® 2.1. And the PsiWin package lets you drag and drop files from your PC to your 3c, so you can work on them wherever you go.

# Here's to skeptics, cynics, and anyone who can see through hype.

preemptive, multi-tasking operating system that's fast, expandable, Hook up a modem or PC card and windowsdriven, just like the PC on your desk. To that we add a backlit

screen and robust, built-in applications. Like a full-featured word processor that's compatible

with Microsoft® Word. Complete Excel® and Lotus® compatible spreadsheets. And the

most advanced database and agenda software in the business.

> Want to expand by adding more software? You can choose from hundreds of titles, including Symantec® Act!, Microsoft® Automap® Road Atlas, and ExpenseTracker.

Want to communicate? We hear you.

> adapter and you can send faxes. Browse the Internet. Send, receive, and reply to e-mail,

even e-mail with attachments.

And there's

infrared data

transfer that allows wireless

communication with IrDA-compliant

printers and other Psions. All this from a 2mb RAM palmtop that weighs under 10 ounces, runs up to 80

hours on two AA batteries, and costs just \$599.

So pick up the new Series 3c from Psion. It's a palmtop computer even you can believe in. For the Psion dealer

nearest you, call 1-800-99-PSION (in Canada, 1-514-98-PSION). Or visit us at www.psion.com.



Available at: CompUSA, Office Depot, Nobody Beats the Wiz, J&R MusicWorld, Sharper Image, Radio Shack, Circuit City Express, MICRO CENTER, ELEK-TEK, The Good Guys, Fry's Electronics, Lechmere

# Track Your Actions With Access Flag Fields

CELESTE ROBINSON

REMEMBERING what's happened in a database can be a challenge. Flag fields help you keep track of what you've done by leaving "footprints" that show, for example, whether an invoice has been printed. It takes some work to keep flag fields updated, but they make it easier to select records for viewing, printing, or reporting. A flag is often a one-character field that is marked with a "Y" or "N" (yes or no) or some other code. Sometimes a longer text or date field works better.

There are also different ways you can show a flag field on a form. Radio buttons or a pick list work well when you need to select from a group of more than two values. A check box is ideal for variables that have only two possible values. Here are a few examples of flag fields.

Radio buttons: To set these up, use the Option Group Wizard. You need to add the flag field to your database table first. Choose Number for the field type and Long Integer or Integer for the field size. (FIGURE

6 shows a flag field called Status in a Customers table.) Once you've added the field to the table, open the form you want to add the flag field to and click Control Wizards in the Toolbox if it's not depressed.

click the Option Group

button in the Toolbox and drag an area on the form where you'd like the radio buttons. Follow the instructions to enter option labels (such as Active, Inactive, and On hold), and choose a default value. Access will assign the default value to the flag field in new records. In the step that lets you assign values to the label names, leave the default values of 1, 2, and so on, and click Next. In the step that asks 'What

O Click the

2 Click the

Field List icon

in the toolbar.

3 Drag the

Yes/No field, (called Invoice Printed in this

example) from

the Field List

to the form.

Check Box icon

in the Toolbox.

do you want to do with the value of a selected option?' click Store the value in this field, and select Status (or the name of the field you added) from the drop-down list. Click Next and change the style for the buttons, if you like. In the last step, enter a caption for the flag field and click Finish. The result will be similar to Figure 6.

To see the option buttons at work, update the status field in a few records. When you switch to a datasheet view of

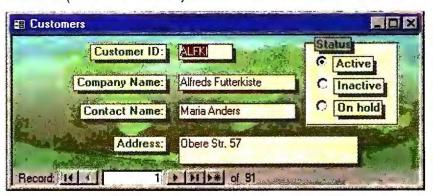


FIGURE 6: RADIO BUTTONS (shown under the Status field on the right) To start the wizard, work well when the flag field has more than two possible values.

your table, you'll see the values (1, 2, or 3) of your selections.

Check boxes: To note a record's status when it can be in one of only two states (active or inactive, printed or not), use a Yes/No field. You can then click a check box on a form to toggle the field's value.

To place a check box on a form, first add a Yes/No field to the database table. Then open the form in design view, and follow the steps below (illustrated in **FIGURE 7**).

- 1. Click the *Check Box* icon in the Toolbox.
- 2. Click the Field List icon on the toolbar.
- 3. Drag-don't click!-your Yes/No field from the Field List to the form. When you release the mouse, a check box will be bound to your Yes/No field.

Marking time: Date fields also serve well as flag fields. Instead of marking a record with a "Y" to show it's been printed, mark it with the date the printing occurred.

Find files from this article and additional tips at http://www.pcworld .com/hereshow.html. Application Tips welcomes your questions and tips and pays \$50 for published items. See page 12 for contact information. Contributing Editor Celeste Robinson is coauthor of Mastering Paradox 7 for Windows 95 (Sybex, 1996, 800/227-2346).

# STEP BY STEP

# Add a Check Box to an Access Form

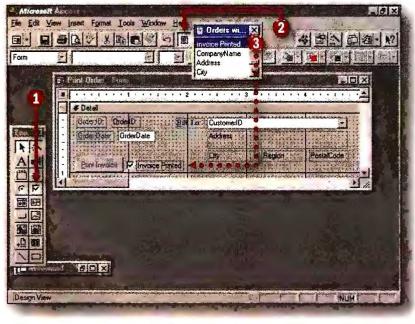


FIGURE 7: A FLAG FIELD, such as the Invoice Printed check box on this form, helps you to keep track of what you've done to a record.



# Your applications on Windows software.



# Your applications with a little fine-tuning from IBM Software.

Want to make Windows\* apps really sing?

Now you can exploit the graphical world of VisualAge™ products to bring new power and functionality to Windows applications. The VisualAge ensemble gives you slick tools to develop better applications faster and deliver

interoperability from Windows systems to OS/2, Sun Solaris, AIX and MVS systems. Now, as you build client/server solutions, never again will you have to be limited by Windows software. For all the harmonious details, just visit us at www.software.ibm.com/info/growdev.



# Plug Acrobat Into Browsers, Observe E-Mail Etiquette

HTML ISN'T THE ONLY way to distribute documents on the Web. Many universities, corporations, and government agencies are posting literature on their Web sites in Adobe Acrobat's Portable Document format. Any PC or Mac can display a PDF file exactly as it was intended to be viewed—with graphics, fonts, and layout unchanged (as in **FIGURE 1**). That's not yet true of HTML files, which each browser interprets slightly differently. Furthermore, the Acrobat reader lets you page through a document, zoom in to read portions of a story, and even print a publication in its magazine format.

To display PDF files with your Web browser, you need to download a copy of the free Acrobat reader, available at Adobe's Web site (http://www.adobe .com). Different flavors of the reader are available for Netscape Navigator and Microsoft's Internet Explorer. The newest version, Acrobat 3.0, works as a plug-in to your browser. You no longer need to set it up as a helper application. When you encounter a PDF file on the Web, Acrobat displays it automatically within the browser. It can even display HTML code and PDF files simultaneously.



FIGURE 1: ACROBAT'S PORTABLE DOCUMENT FORMAT is still better than HTML for distributing highly formatted documents, llke this one. Download the free Acrobat reader from Adobe's Web site. The newest version works as a browser plug-in.

## **BE KIND TO YOUR E-MAIL** RECIPIENTS

EVERYONE HATES wading through a rehash of a previous message to get to the gist of the current communiqué. When replying to a message, quote only the line or two you're responding to rather than the entire message. This courtesy is especially important if you're a member of an Internet mailing list.

Your recipients will also appreciate more-descriptive subject lines, which make their mail easier to sort-and ensure that your messages aren't mistaken for cyberschlock and jettisoned before they're read.

# DOES YOUR COMPANY NEED AN INTRANET?



LATELY I'VE BEEN seeing the word intranet a lot. What is it, a new kind of Internet?

> Vincent Caintic, Williamson, West Virginia

THE NEWEST TECHNOLOGY buzzword has several meanings. According to some people, an intranet is merely Web server software that has been installed on a single PC in one department or another and

> is used to broadcast information to employees. But in its broader meaning, an intranet is an internal Internet, or any deployment of Internet protocols and software on an organization's private network. A connection to the Internet is not necessary.

> > Employees might use Netscape Navigator to access the company's server, where they could fill in customer order forms or read and edit spreadsheets and databases that were created with Java. Alternatively, they might use Qual-

# Fit All Your Bookmarks in One Window



HERE'S HOW TO CREATE an easierto-read bookmark directory for Netscape Navigator. In Navigator, select

File Open File, and look in the directory c:\program files\netscape\navigator for the file named bookmark.htm. Double-click the file name to open it, then from the menu select Bookmarks • Add Bookmark.

Now select Bookmarks Go to Bookmarks and scroll to the bottom of the list, where you'll find a bookmark for your bookmark.htm file. Highlight it, and then drag and drop it at the top of the list. Close the Bookmarks window.

To see your new bookmark directory, select Bookmarks from the menu, and then select the first bookmark.

Adiel Yoaz, Internet

comm's Eudora e-mail program to exchange messages within the company.

The advantage of using Internet stuff on a private network is that it's easy to get up and running. You don't have to invest thousands of programming hours to create custom software applications. And you can script nifty user interfaces quickly and easily and add sound effects and animation to your applications.

## SHARING NETSCAPE BOOKMARK LISTS



IS THERE ANY WAY I can easily copy my Netscape bookmark list and send it to my brother?

> Dave Kutz, Boiling Springs, Pennsylvania

LOOK FOR a file named bookmark.htm in c:\program files\netscape\navigator. It contains the URLs for all your bookmarks. Since it's a text file, you can send it to your brother as an attachment to an e-mail message. Your brother can then save the attachment as a text file with an .htm extension, but tell him to name it something other than bookmark.htm so he doesn't overwrite his own bookmarks.

He can add your bookmark list to his own bookmark list by selecting File Open File from the menu, and then selecting Bookmarks. Add Bookmark.

# There Is Only One Choice For Data Compression.

PKZIP for Windows



# **New Features in PKZIP for Windows Version 2.50**

- ► Ability to create .ZIP files that span multiple diskettes
- Create Windows self-extractor
- Self-extractor can span multiple diskettes
- ▶ Long file name support for Windows 95 (16 and 32-bit) and Windows NT (32-bit)
- ▶ Integration with Windows 95 & NT Explorer
- Plus additional features

The growth of the Internet and the increased use of World Wide Web browsers are creating a greater need to compress and uncompress data files. Saving disk space and saving on-line phone charges are big benefits of compressing data files with PKZIP® for Windows. PKZIP for Windows compresses files an average of 50-70% with many large text and database files compressing well over 90%. PKZIP's simple point-and-click interface lets you easily compress one file or all files on an entire hard drive, and store them in the .ZIP file. PKWARE provides the best and fastest data compression technology on the market, try it and see!

PKZIP for Windows allows you to easily open files created with PKZIP for DOS Version 2.04g. PKZIP is also compatible with Windows 3.1 or higher, Windows 95 and Windows NT.

PKZIP for Windows \$49, PKZIP for DOS \$47 plus shipping and handling.

To order call (414) 354-8699 or visit our Web Site http://www.pkware.com

# Other PKWARE Products

# Put Your Executables on a Diet

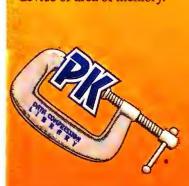


PKLITE<sup>TM</sup> increases your valuable disk space by compressing DOS and Windows 16-bit executable (.COM, .EXE and .DLL) files by an average of 45%. The operation of PKLITE is transparent, all you will notice is more available disk space! Price \$46

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 an extra option to compress files so that they cannot be expanded by PKLITE. This discourages reverse engineering of your programs. Price \$146

# **Put Compression Into 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 to or extracted from any device or area of memory.



The all-purpose Data Compression Algorithm compresses ASCII or binary data quickly. The routines can be used with most compatible language compilers. Separate DOS, DOS32 Windows, OS/2, Win32. UNIX and Macintosh versions are available! Call for pricing



9025 N. Deerwood Drive / Brown Deer, WI 53223 USA FAX. 414-354-8559 BBS: 414-354-8670 Email: Info@pkware.com





1992-1996 PC World World Class Award

1996 Government Computer News Best New Product Award at FOSE Finalist 1995 Computer Currents Readers Choice Award

1993 Shareware Industry Award 1992 Premiere Computing Magazine Award 1992 Dvorak/Zoom Award















PCW-1196

## **ELECTION CENTRAL: THE BEST** PARTIES ARE ONLINE

THE NIGHT OF THE LAST presidential election, I spent most of the time waiting to connect to Prodigy to learn the latest vote tallies. This year, all the major news networks and political magazines are on the Web. So are the candidates. Here are a few of the best spots to hang out on November 5. If you're looking for other sites with campaign news, go to the Vote Smart list (http://www.vote-smart.org/ campaign\_96/presidential).

George (http://www.georgemag.com/ hfm/index.html): "Not just politics as usual." John F. Kennedy Jr. and his glam friends bring political discussion to nonpolitical readers. Find out what Madonna would do if she were in the White House. CBS News Campaign '96 (http://www .cbsnews.com/campaign96/home/): Keep an eye on the election returns with the Tiffany network. Participate in online debates on hot topics like the tobacco industry and abortion rights.

MSNBC Decision '96 (http://www .msnbc.com/news/dec\_front.asp): Join online chats with NBC news correspondents, Democratic and Republican leaders, and other politicos.

All Politics (http://allpolitics.com/): Cast your vote for or against progressive family values, school choice, and the minimum wage hike.

Republican Main Street (http://www .rnc.org/).

The Democratic Party Online (http:// www.democrats.org/).

Politics Now Campaign '96 (http://www .politicsnow.com/campaign/).

National Public Radio (http://www.npr .org/hotnews/election96.html).

The Atlantic Monthly Election Connection '96 (http://www.theatlantic.com/atlantic/ election/connection/).

U.S. News/Election '96 (http://www .usnews.com/usnews/wash/election .htm).

USA Today Election '96 (http://www .usatoday.com/elect/elect96.htm).

Ladies Home Journal/League of Women Voters Power the Vote (http://www.lhjlwv.com/).

# **GETTING TRUMPET WINSOCK OFF** THE PHONE



I USE TRUMPET 2.0 to access my Internet PPP account. Every time I select Dialer/Bye to disconnect

from the Internet, my modem stays initial-









FIGURE 2: SPEND A FESTIVE PRESIDENTIAL ELECTION EVE 1996 online with John F. Kennedy Jr. and friends, and correspondents from CBS, MSNBC, and CNN.

# Don't Trust Navigator With Your Cache

IN FOLLOWING your tips on managing a Web browser's disk cache (Online, June), I discovered an inter-

esting phenomenon. Even though my browser's disk cache was set to the recommended 5MB, when I selected Options Network Preferences and clicked the Clear Disk Cache Now button, I got back a whopping 23MB of disk space back! Most of those 23MB were file allocation units for the cache.

The lesson: No matter what your cache size is set to, you should delete the contents of your browser's cache directory at least once a month.

A. L. O'Hearn, Johnson City, Tennessee

ized. Then, when someone calls me, my modem screeches in the person's ear. How do I get that Bye command to shut down my modem fully so that I don't have to keep turning off my PC?

Alan Schneider, Colorado Springs TRUMPET WINSOCK (or any communications program) tells the modem to do something, like dial or hang up, by issuing an AT command (a command that begins with the letters *AT*).

To cure Winsock of its rude phone behavior, select Dialer. Edit Scripts, and select the *bye.cmd* script. Find the line that reads 'Output ATHo/n' and change it to read Output ATHO&D2SO=0. Then enter the command set DTR off. Select File Save, and exit back to Trumpet.

When you tell the modem to hang up, its DTR signal will drop, disconnecting the modem. In the modem's memory, its S register o is set with a decimal value indicating the number of rings the modem will wait before answering a call. Setting this register to o disables the modem's auto-answer feature.

Internet Tips welcomes your questions and tips and pays \$50 for published items. Contributing Editor Judy Heim is author of Internet for Cats and I Lost My Baby, My Pickup and My Guitar on the Information Highway (No Starch Press, 1995, 800/420-7240). See page 12 for contact information.

INTERNET SERVICE

# All you want









\$5 First Month







Personalized
Investment
Resources











Circle 126 on reader service card

All you need

The Largest Independent Internet
Service Provider with the Most Subscribers

1 - 8 0 0 - N E T C O M 1

# Take Practical Steps Toward Tomorrow's PC Standards

TO PARAPHRASE AN old homily, God must love standards—why else would there be so many of them? This year we've got new standards for disks, buses, and confusion. Let's take a look at what's coming—and at practical short-term solutions to the problems these standards address.

## **ULTRASCSI IS ULTRASENSIBLE**

TALK TO DISK DRIVE makers, and you'll think the solution to all our problems is a new standard called Fibre Channel. But it's probably not a solution for you—yet.

Despite its name, Fibre Channel uses ordinary copper connections to transfer data at 100 megabits per second and faster. It's one of four connection schemes allowed under the SCSI-3 standard, another being the SCSI Parallel Interface—the SCSI we know today. FIGURE 1 shows where Fibre Channel fits among disk interfaces.

You can buy Fibre Channel drives today. Don't. You'll need a new drive plus a new host adapter—and probably a new credit card—to take advantage of its virtues.

Fortunately, there's a good interim alternative: UltraSCSI. UltraSCSI is familiar Fast SCSI-2 taken one step further. Where Fast SCSI-2 doubles the original SCSI-1 data rate, pushing the bus speed from 5 to 10 MHz, UltraSCSI doubles it once again, to 20 MHz.

UltraSCSI speed is independent of bus width, so it delivers three performance levels. With 8-bit connections, it delivers a peak transfer rate of 20MB per second. With 16-bit Wide UltraSCSI (probably the most common form), you get 40MB/sec. And with a 32-bit Wide connection, you can expect 8oMB/sec—a rate that will give PCI adapters a run for their money.

UltraSCSI is backward compatible with Fast SCSI-2 and costs drive makers little more to make. And the bus clock of Ultra-SCSI is independent of file structures, partitioning, and even low-level disk for-

| Interface        | Peak transfer rate<br>(MB per second) |     |
|------------------|---------------------------------------|-----|
| Floppy disk      | 0.125                                 | 2   |
| IDE              | 4                                     | 2   |
| SCSI             | 5                                     | 7   |
| Fast SCSI-2      | 10                                    | 7   |
| EIDE             | 16                                    | 4   |
| 16-bit UltraSCSI | 40                                    | 15  |
| 32-bit UltraSCSI | 80                                    | 15  |
| Fibre Channel    | 100                                   | 126 |

FIGURE 1: ULTRASCSI DRIVES and adapters offer greater performance than existing SCSI and EIDE, at affordable prices.

mat. You can plug an UltraSCSI drive into your current SCSI host adapter (with the right cable) and get all the speed your host adapter can deliver. If you later buy an UltraSCSI host adapter or move your hard disk to another PC, you gain more speed without monkeying with software, files, or other such nonsense. Put UltraSCSI on your shopping list for your next hard disk.

## **OPEN YOUR SERIAL BOX**

THE UNIVERSAL SERIAL BUS is not Kellogg's idea of public transportation. It's a radical rethink of peripherals connections that will replace serial and parallel ports. One USB port can link your PC to 127 devices at up to 12 megabits per second.

USB will connect just about every kind of peripheral except those demanding very high speed connections, such as hard drives. It gives every connector its own jack and links all devices with one type of cable, without the usual hardware hassles. You knot together as many USB devices as your PC can handle by connecting them to hubs—peripherals with extra USB jacks. USB also offers Plug and Play

for peripherals, can distribute power to low-power devices, and accommodates smaller PCs (especially notebooks).

This is a grand idea and the future of most external computer peripherals.

But keep in mind that these peripherals have not yet arrived. And when they do appear in force, you can add a USB expansion board to your existing PC.

In the meantime, if you already have a PC and serial devices and too few ports to link them, use the following tried-andtrue serial expansion options:

- ◆ A port adapter expansion board can add two or more serial ports if your system can handle them. Check your available resources with Microsoft Diagnostics (the msd.exe program that accompanies DOS) or Windows 95's Device Manager. Windows 95 can handle eight serial ports, but you'll probably want to stick with four. If you want to connect a modem, be sure you get a 16550A or later UART chip on the board or, better still, a high-speed enhanced serial port.
- ◆ A switch box lets you divide up the ports you have if you cannot add more. Although inconvenient—you must physically move the switch to choose between devices, and you've still got the hassle of changing driver software—a switch box eliminates the nuisance of plugging and unplugging cables. Avoid expensive adapters, and match the connectors on the switch box to your peripherals. A 9-wire switch works in most situations.
- ◆ Intelligent Y connectors make the switching automatic. PI Corporation offers a \$49.95 WhyMouse that lets you connect two mice to a single port and use either indiscriminately. The company's \$49.95 DigiDapter connects a mouse and digitizing tablet to a single port.
- PI Corp., 800/628-3185

READER SERVICE NO. 672

Find additional tips at http://www .pcworld.com/hereshow.html. Hardware welcomes your questions and tips and pays \$50 for published items. Winn L. Rosch is author of the Winn L. Rosch Hardware Bible (Sams Publishing, 1994, 800/545-5914). See page 12 for contact information.

# The New Digital Camera With All The Right Connections.



There's no end to the graphic wonders you can perform with the Casio QV-100 Digital Camera. Capture and store up to 192 images at Standard resolution or 64 fine VGA images ■ 1.8" LCD color viewfinder for point and shoot ease and instant review ■ Choose the images you want. Keep the best and delete the rest ■ Create impressive presentations by mixing and matching graphics downloaded from your computer ■ Connect to your TV and VCR for big picture show & tell impact ■ Create special effects using the included Adobe PhotoDeluxe™ software

- Save images to hard disk or floppies as TIFF, BMP, PICT or JPEG files
- Communicate worldwide using e-mail or included Microsoft® Internet Explorer software Print full color images directly from your QV-100 with the Casio QG-100 portable printer that produces 18mm, 36mm and 46mm images with "click and print" simplicity. The Casio QV-100 puts the best of digital photography speed and versatility right in your hands. Whether it's family fun or serious business, it's the digital camera with all the right connections.

Available At

Office Depot Book
Office Max St
CompUSA

Best Buy Ritz Camera Staples Computer City





Adobe PhotoDeluxe

# Play MPEG Video Files, Create ActiveMovie Clips

HAVE YOU EVER DOUBLE-CLICKED an MPEG video file in Windows 95's Explorer, only to receive an error message from Media Player or have Explorer's Open With dialog box ask you to pick an application for playing the clip? Maybe you've never had an MPEG player, or you had one and uninstalled it, or you installed another tool (such as QuickTime for Windows) that wrecked your .mpg file association.

In any case, there's a quick fix. Although Media Player can't play MPEGs by itself, it can with Microsoft's Active-Movie Media Player for Windows 95 (see FIGURE 1). You can retrieve a beta version of the 1MB installation file from the company's ActiveMovie download Web page (http://www.microsoft.com/advtech/ ActiveMovie/download.htm).

In addition to playing MPEG flicks, ActiveMovie supports QuickTime (.mov or .qt) and Video for Windows (.avi) clips, along with a variety of sound file types. And there's an important benefit on the side: ActiveMovie is a streaming player, which means that you can see and hear a file retrieved from a Web page while the



FIGURE 1: PLAY MPEG VIDEO UNDER WINDOWS 95 with Microsoft's free ActiveMovie Media Player add-on.

file is still downloading. If you want to take a look at how this works, install ActiveMovie, then check out the Active-Movie Streaming Format samples page (http://www.microsoft.com/advtech/ activemovie/samples/samples.htm).

## MAKE YOUR OWN ACTIVEMOVIES

IF YOU'RE INTERESTED in creating ActiveMovie Streaming Format movies

with your own audio and bitmapped image files, check out the ActiveMovie Stream Editor (see FIGURE 2), available from the same Web site as the ActiveMovie player.

Microsoft undoubtedly will make ActiveMovie part of Windows 95 in an upcoming Service Pack. As ActiveMovie becomes more popular, visitors to your .asf-laced Web pages will get an audiovisual treat. The program lets you use .wav audio files and .bmp, .gif, and .jpg images, and also converts Power-Point presentations using that

program's Internet Assistant add-on. When you're satisfied with your combination of sound track and still images, the utility combines them into an audiovisual clip compressed and streamlined for modem transmission.

## OPEN NOTEBOOK, AND FIRE WHEN READY

WITH THEIR high-resolution screens, built-in CD-ROM drives and audio, and fast processors, today's best-selling portable computers can do just about anything your desktop multimedia system can—except support a joystick for hardcore gamers.

Often an optional desktop docking unit or port replicator holds a game port. But docking units cost \$300 and up, and they don't let you blast robot spaceships when you're cruising with your laptop over Des Moines.

If you don't need all the conveniences (and high cost) of a docking station, consider a PC Card game port like New Media's Gamejammer (list price \$249) or U.K. manufacturer JC Designs' bargain GameCard II (about \$80 direct). Both are Plug and Play Type II cards that come with drivers for DOS, Windows 3.1, and Windows 95, and should work with any joystick. Gamejammer also incorporates an 8-bit mono sound card with an integrated speaker.

If you're interested in upgrading your laptop's sound capabilities along with adding a joystick port, consider IBM's \$105 PCMCIA 3D Sound Card, which offers more realistic wavetable synthe-

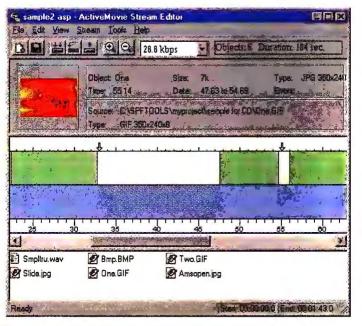


FIGURE 2: CREATE WEB-FRIENDLY MULTIMEDIA SLIDE SHOWS with the free ActiveMovie Stream Editor.

sis and 3-D audio. Unfortunately, an optional dual port joystick cable costs an additional \$95.

• GameCard II about \$80; JC Designs; 44/1371-874478; 44/1371-874300 fax

READER SERVICE NO. 673

· Gamejammer \$249; New Media Corp.; 800/453-

READER SERVICE NO. 674

• IBM PCMCIA 3D Sound Card \$105, optional joystick cable \$95; IBM Corp.; 800/426-2968

Multimedia Tips welcomes your questions and tips and pays \$50 for published items. Scott Spanbauer is a contributing editor for PC World. See page 12 for contact information.



# ThinkPad 365ED!

- 100 MHz Cyrix 5x86 processor
- 8MB RAM; 540MB HDD
- 10.4" DSTN VGA display
- Win95 pre-installed
- 4X CD-ROM drive
- 16-bit audio & speakers



IBM 28.8 Faxmodem!

29363



- 100 or 133 MHz Pentium processor
- 16MB EDO DRAM
- 810MB hard drive
- HITACHI

.2799

- 11.3" full color display
- 28.8 Kbps U.S. Robotics faxmodem

COMPUTERS

29151 AcerNote Light 356 P100, 810M8, DSTN .\$1799.

29147 AcerPower Multimedia P100 Desktop . . . . . 1159

29797 I8M PC330 100MHz Desktop ......1999.

28729 I8M ThinkPad 760E SLIM 120MHz 12.1"TFT 4299.

30476 Inteva Cyrix 150+ 16/2.0G8 HD ......1299.

30514 Compaq Armada 1120 Laptop . . . . . . .

31557 Compaq DeskPro 5100/630 . . . . . . . . .

29805 I8M PC330 166MHz Desktop .....

30440 Toshiba Tecra 500CS 120MHz Pentium . . .

**EDUTAINMENT** 

27837 Diamar Golf Tips: 8reaking 100 ...........34.95

30625 How to Draw Comic Book Heroes & Villians 29.95

32602 Microsoft Close Combat ................................39.95

30075 Smart Games Challenge 1 ...........24.95

25399 Softkey Infopedia 2.0 .....

I8M ThinkPad 560/120-810

25090 MDS Notebook P75-800M8 CD.

28790 TI Extensa 570CD . . . . 30120 TI TravelMate 6020 SVGA

PRESARIOS

**16MB** 

as low as

\$**79**<sup>95</sup> \$**149**<sup>95</sup> \$**27**9 Purchase a computer & memory upgrade logether and we'll install your new memory upgrade at no extra charge!

CALL 800-800-2787 to order!

132MB

as low as

**Home & Family** Software Suite Included!

18MB

as low as

- Intel Pentium 120 MHz processor
- 16MB EDO RAM • 1.6GB hard drive
- 6X CD-ROM drive
- 33.6 faxmodem & telephone center
- JBL speakers with surround sound

LEASE FOR SE 2037

32716

• 100 MHz Pentium processor

772MB hard disk drive8MB RAM,

exp. to 40MB

• 11.3" 800 x 600 color display

 AccuPoint pointing device

1-yr warranty

NOW ONLY

30435

# **APC Back-UPS Office**

COMPAQ

Multi-outlet AC surge protection against surges. pikes, blackout and

COMMUNICATIONS

31478 Cardinal MVP V34i 33.6 Kbps Faxmodem \$129.95

32469 Megahertz XJ1288 PC Card Faxmodem . .239.95

31449 Practical Periphs PM288H/C II Internet Kit 129.95

7779 Server Tech Remote Power Qn/Qff . . . . . . . 119.95 

27821 US Robotics Sportster 28.8 WinModem . .119.95

UTILITIES

26128 Dr. Solomon's AVTK Win 95 Quarterly Update 79.95

32864 Helix Hurricane V.2.0 Comp. Upgrade . . . . 24.95

31824 Symantec AntiVirus V2 Win95 Tradeup . . . 29.95

28662 Microsoft Internet Info Server .......

22141 Norton Utilities Win95 Tradeup ......

18190 Hayes ACCURA 28.8 Internal ......

32718 Newer LinkCQM 33.6 Faxmodem ....

19989 Connectix RAM Doubler

25638 Quarterdeck QEMM 8

27244 Cybermedia First Aid 95 Deluxe CD

159.95

....\$54.95

59 95

.99.95

59.95

.64.95

Faxmodem

Fast transfer rates of 33.6 with 250,000 max throughput! Send and receive faxes

at 14.4 speed. Includes America Online Netscape Navigator V.3.0 and special offer to NetGuide Magazine. 31721

CADETEADURES 3000 1:34 DATVEAL MODEM PC CARD

# **Fastest PC Card Available!**

|       | AEC Fasttrack Schedule                      |
|-------|---|
|       | Corel WordPerfect Suite Win95               |
| 25306 | Lotus Word Pro 96 (after \$20 rebate)       |
| 8162  | Micrografx A8C Flow Charter 6, 299.95       |
| 22315 | Microsoft Excel 95 Upgrade89.95             |
| 28662 |   |
| 22294 | Microsoft Plus! for Windows CD              |
| 22289 | Microsoft Project Windows 95                |
| 23871 | Microsoft Publisher for Windows 95 74.95    |
| 22293 | Microsoft Word for Win95 Upgrade 49.95      |
| 26388 | Microsoft Visual C++ 4.0 Upg w/Subscr349.95 |
| 22974 | Visio for Windows V4                        |
|       |   |

## **ACCESSORIES**

| 23673 | APC Back-UPS Pro 280 Plug & Play         | \$149.95     |
|-------|--|--------------|
| 10410 | Kensington Deluxe Carry Case .           | 54.95        |
| 25034 | QPTI-UPS/Viewsonic UPS-420E (Intelligent | UPS) .179.95 |
| 20025 | Tripp Lite Super 7 Surge w/Tel           | 24.95        |
|       |  |              |

## INTERNATIONAL CUSTOMERS

Please call 603-446-0003 or fax 603-446-7791 Additional charges & restrictions may apply

# 1.08GB 7000 Series Hard Drive

FREE TECH SUPPORT • NE

**Built on proven** technology platforms and backed by industry-leading **Maxtor** service and support.

# Version 5.0 Quicken Deluxe CD

The fastest, easiest way to organize your finances-now with convenient on-line banking, Helps you make better financial decisions with expert advice, mutual fund finder and on-line stock news.





# LOWEST PRICE EVER!

# **IDC100i ISDN** Terminal Adapter

Provides high speed digital occess to the Internet of o price comporable to on onolog modem-up to 4 times os fost os V 34 modems1

OUR POLICY • VISA, MASTERCARD, AMERICAN EXPRESS, and DISCOVER cards. No surcharge • Most product are curered by manufacturer's viamant, agence for an RMA • We are not responsible for typographical errors. • Pricing and promotions are subject to change without notice. Continental U.S.: Shipping Charges: \$5 per order up to 10 pounds. On orders weighing 10 pounds or more, shipping is \$1 per pound. Please call for weight/shipping charge information. Items of excessive size and/or weight may require additional days to deliver via a freight carrier. Please check with your

sales rep for more details. Barring events beyond our control, all credit card orders phoned in weekdays 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. All other areas: Call 603-446-0003 or FAX 603-446-7791 M-F 9 a.m. 5:30 p.m. ET.

# R onnection

DELIVERY - AWESOME SERVICE - BEST PRICING & SELECTION - CUSTOM SYSTEMS OVERNIGHT!





**16MB EDO RAM** • 11.3" DSTN display

Removable 6X CD-ROM drive

28.8 Kbps faxmodem

16-bit audio w/speakers & microphone Acer

idekick 95. Windows 95, Quicken SE 96 included!

Sens 800 Notebook

ONLY

SAMSUNG 100 MHz Pentium processor

• 8MB EDO RAM, exp. to 40MB

• 810MB hard drive

• 10.4" SVGA active matrix display

• 16-bit sound with microphone & speakers

Bundled with Windows 95





Adobe PageMill

having to know about HTML or URLs. Create or import text and images, add audio, video and animation easily



# owest Priced 33.6 ONLY! ZIX M/L/LMODEMI 30840 V.341 Plus 28.8/33.6 **Faxmodem** Turbo-charged, true V.34 connections at 33.6 Kbps enhanced output. Fax at up to 14.4 Kbps. Features auto-dial/ auto-answer and automatic



# **Enhance Your Graphics With Matrox!**

30490 Matrox Mystique 4MB Graphics Brd. \$219.95 21402 MGA Millennium 4MB Graphics Board 299

# STORAGE 28096 HP SureStore CD Writer Int james \$200 repails \$599

| 21051 | Seagate 8arracuda 4 3GB SCSI                      | 1199   |
|-------|---|--------|
| 31128 | Seagate 1 2GB EIDE Internal Hard Drive            | .219.9 |
| 30183 | SyDuest EZ Flyer 230 Ext SCSI                     | 299    |
| 27883 | Western Dig. Caviar 2.1G8 IDE (after \$30 rebate) | 269.9  |
|       | INTERNET  | 7      |
| 28910 | Aimtech Icon Author SE                            | 1099 9 |

### 29743 Aimtech Jamba (limited time only) .329.95 29424 Corel WE8. Designer Windows . 99 95 28305 Corel Web Gallery Windows 69 95 29425 Macromedia Back Stage Designer . 99.95 29426 Macromedia Back Stage Studio . . 499.95 32569 Ventana Netscape Navigator 3 0 24009 VDCALTEC Internet Phone for Windows 95 44 95



**Business for Windows** Seamlessly integrates four critical business functions: sales, marketing, inventory,





Boston Computer Society "Best All Around Company" 2 years in a row!

PC World World Class Award Winner.



### INPUT/OUTPUT 20217 Adassa All Form Kouhoard

| 3021/ | Adesso Nurorm Keyboard              | \$33.50 |
|-------|-------------------------------------|---------|
| 2B931 | Brother HL720 Laser Printer         | 369     |
|       | Caere OmniPage Pro Win95 Upg. 7.0 , |         |
| 2B641 | Casio QV-10A Digital Camera         | 399     |
| 264B1 | Cirque GlidePoint Wave Keyboard     | 99.95   |
| 25695 | Kensington Expert Mouse 5.0         | 99.98   |
| 32426 | Logitech MouseMan Pro Cordless      | 69.95   |
| 26233 | Microtek ScanMaker E3               | 329     |
| 28081 | Wacom ArtPad 2 & Painter 4.0        | 349     |
| 27905 | Xerox TextBridge Pro 96 Upgrade     | 129 95  |
|       | NETWORKING                          |         |

| 29 95 |
|-------|
|       |
| 39.95 |
| 49.95 |
| 79.95 |
| 24 95 |
| 39.95 |
| 79.95 |
| 29.95 |
| 27,95 |
| 29.95 |
| .799. |
| 29.95 |
|       |

## **MULTIMEDIA/VIDEO**

speed sensing.

ZOOM

| 29348 | Altec Lansing ACS45 Speaker System . \$79.95 |
|-------|--|
| 16747 | ATI Graphics Xpression 1MB89.                |
| 28633 | Axonix Pro Media 6XR                         |
| 27723 | Creative Labs Blaster CD 8X                  |
| 23553 | C. Labs Sound Blaster AWE32 PnP 249.95       |
| 25788 | Kodak DC40 Digital Science Camera 599.       |
| 25711 | MagInnovision DX15T Monitor                  |
| 21402 | Matrox Millennium 4M8 PCI299.                |
| 31451 | Samsung Syncmaster 3NE                       |
| 30734 | Video Labs Flexcam VC for Windows 369.       |
| 21795 | Viewsonic 17GA Multimedia Monitor 699.       |
|       | DADILLOO O DECLOSI                           |

| <b>GRAPHICS &amp; DESIGN</b>         |        |
|--------------------------------------|--------|
| 3109 Adobe Illustrator & Photoshop   | 599.95 |
| 2197 Adobe PageMaker 6.0             | 549.95 |
| 6661 Adobe Photoshop 3.0             | 559.95 |
| 9701 Autodesk AutoCAD LT Win95       | 149.95 |
| 2165 CorelDRAW! 6.0 CD               | 149 95 |
| 7558 Corel Graphics Pak              | .99 95 |
| 4536 Fractal Painter 4 Windows       | 359.95 |
| 4511 MetaTools Kai's Power Tools 3 0 | 124.95 |
| 8077 Macromedia Director 5.0         | 369.95 |
| 2081 Macromedia FreeHand 5.0 CD      | 99.95  |
|                                      |        |

OR FAX YOUR ORDER 603-446-7791

† Leasing option available to businesses. CALL 800-800-0014 to see if you qualify. Circle 165 on reader service card

# Setting Up Your New PC

THERE YOU STAND, SURROUNDED by large boxes. Your brandnew PC has arrived! Whether it's for your home or office, a gift for your children, or the latest addition to your computer lab, unpack it and set it up as quickly as possible to make sure you've received exactly what you ordered and that everything works.

That's especially important if it's a holiday gift, since 2 a.m. on Christmas morning is not the time to find that your gift won't run. Once you know it's working, repack it and enjoy the holiday instead of waiting on the telephone for technical support.

No matter how experienced you are, stick to the essentials and read the manual! See PC World Online (http://www.pcworld .com/hereshow/) for additional tips and hints.

Stan Miastkowski is a PC World contributing editor.



Open all the boxes. Give yourself plenty of space to work in and plenty of time. Remove everything in every box, and make sure you received exactly what you ordered. If the vendor included a packing list, check each item off as you unpack it. Save everythingeven the plastic bags. Don't fill out the warranty cards yet.



Set it up. Place the main system unit, monitor, keyboard, mouse, speakers, and whatever else you purchased, on a table; lay them out in approximately the way you'll use them. Make sure you can get behind the hardware so you can easily hook up all the cables. Look for a Getting Started manual. Then read it.



Get connected. First plug in all the cables and then the AC power connections. This can get confusing, since some manufacturers place incomprehensible icons on various ports, so read the manual if necessary. Don't force any connections. If your PC has an internal modem, remember to connect the telephone line.



Power up. Turn on the monitor, the speakers. and the system unit. If Windows 95 launches without any trouble, follow the on-screen directions and then skip to step 6. If nothing happens when you turn everything on, check your AC power connections. If you see odd error messages or have other problems, see step 5.



Problems? First check that the monitor cable is attached securely to its port. Then remove the main system unit's cover. Make sure all internal cables are attached correctly and that all plug-in cards are seated securely in their slots. Power up the system again. If it still doesn't work, call your dealer or vendor's technical support line.



Try it out. Run a few applications, including one on CD-ROM. Play a music CD, record someone singing, dial out through the modem, and print a few documents. If everything seems to be working correctly, store all the boxes and packing materials In the attic, and fill out and mail all the warranty cards.



Making your 486 run like a Pentium® doesn't take magic. It just takes a TurboChip™ and a little pocket change. Instantly, you will have 5 x 86 clock-quadrupled technology that will help your system run three times faster. And the TurboChip has all the power you need to run today's demanding software, whether you have a 486-based DX2, DX, SX2, or SX system. So how does the TurboChip compare to Intel's OverDrive®? Not only does the TurboChip

beat the OverDrive in price, compatibility, and warranty, but in a recent study\* it also outperformed it. The TurboChip is designed with AMD's Am 5 x 86–P75 CPU and upgrades with most IBM-compatible desktop systems. And since the TurboChip is a chip-for-chip replacement upgrade, it's easy to install. Plus it preserves your system configuration. To find your nearest Kingston® distributor call our toll-free number; (800) 588-5517.

For more information call us at (800) 588-5517



Visit our Web site: http://www.kingston.com/pcw.htm





"Cull for dotail

# **We Carry Over 30,000** Products! Call Today!

# OSHIBA

# Satellite 110

- Pentium 100MHz processors
- 11.3" Dual Scan and Active Matrix displays
- Built-in AC adapter
- Fast system performance with EDO RAM memory

# Model Processor Screen RAM/HD Price

110CS Pentium 100 11.3" Dual Scan 8/772MB \$1999 110CT Pentium 100 11.3" Active

8/772MB 2499

The display [of the Jerra 720] is sorting short of stunding

# Tecra 720

- Pentium 133MHz processor
- Built-in 28.8 fax/modem Built-in 6X CD-ROM drive
- Optional DeskStation capabilities

Processor Screen RAM/HD

Pentium 133 12.1" Active 16MB/1.1GB \$5399



Tecra 720

Tecra 730

Refurbished

Toshiba

Pentium 150MHz processor! 6X CD-ROM drive and audio

UNBELIEVABLE PRICES ON

Notebooks call for details

28.8 fax/modem with speakerphone 1280 x 1024 external resolution

Model Processor Screen Pentium 150 12.1" Active 16MB/2GB \$6099

Tecra 730

Satellite Pro 420

# **Satellite** Pro 420

- Pentium 100MHz processor
- Built-in 6X CD-ROM drive
- 11.3" Dual Scan & Active Matrix displays

■ Built-in SoundBlaster Pro compatible audio Model Processor Screen RAM/HD Price

6/772MB 420CDS Pentium 100 11.3" your Scan \$2499 420CDT Pentium 100 11.3" Active 3299 8MB/1.2GB

# Portégé 650

- 133MHz processor
- Built-in 28.8 fax/modem Built-in SoundBlaster
- compatible audio
- Up to 11.3" Active Matrix display

Model Processor Screen RAM/HD Price Pentium 133 11.3" Active 16MB/1.2GB \$4499



Portégé 650

## Tecra 500 ■ Pentium 120MHz processor

- Built-in 6X CD-ROM drive on 500CDT, optional accessory on Tecra 500CS
- 16MB EDO RAM memory
- 12.1" Super VGA displays



EDITORS' CHOICE

500CS Pentium 120 12.1" Dual Scan 16MB/1.3GB 500CDT Pentium 120 12.1" Active 16M6/1.3G6



# ThinkPad® 365X/XD

- Pentium 100 & 120MHz processors
- Built-in 4X CD-ROM drive on 365XD
- 10.4" & 11.3" SVGA displays
- 32-bit PCI Local bus graphics
- 16-bit sound, speakers and microphone on 365XD
- Infrared port for wireless communications
- External floppy drive on 365XD

## ThinkPad® 365X/XD

| Mode  | Processor   | Screen          | RAM/HD    | Price  |
|-------|-------------|-----------------|-----------|--------|
| 365X  | Pentium 100 | 10.4" Dual Scan | 8/810MB   | \$1999 |
| 365XD | Pentium 100 | 11.3" Dual Scan | 8/810MB   | 2299   |
| 365X  | Pentium 100 | 11.3" Active    | 8/810MB   | 2399   |
| 365XD | Pentium 120 | 11.3" Dual Scan | BMB/1.1GB | 2549   |
| 365XD | Pentium 120 | 11.3" Active    | BMB/1.1GB | 2949   |
|       |             |                 |           |        |

Call about ThinkPad® 760 Models!

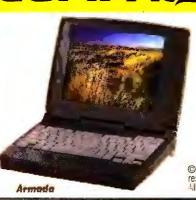
# ThinkPad® 560

- Only 4.1lbs. and 1.2" thick!
- Up to 133MHz Pentium processors
- 11.3" & 12.1" SVGA displays
- Built-in 16-bit SoundBlaster compatible audio
- External floppy drive reduces weight
- EDO RAM memory enhances performance

| Infrared transceiver for wireless communication |             |                 |           |        |  |  |
|---|-------------|-----------------|-----------|--------|--|--|
| Mode  | Processor   | Screen          | RAM/HD    | Price  |  |  |
| 560   | Pentium 100 | 11.3" Dual Scan | 8/810MB   | \$2699 |  |  |
| 560   |             | 12.1" Active    | 8/810MB   | 3747   |  |  |
| 560   | Pentium 133 | 12.1" Active    | 8MB/1.1GB | 4199   |  |  |

ThinkPad® 560

# COMPAQ



# Compag Armada

† Includes 4X CD-ROM drive

|  |   |  | 0-0-   |   |
|--|---|--|--|---|
| Model                                  | Processor   | Screen   | RAM/HD   | Price   |
| 1120<br>1120T<br>4110<br>4110D<br>4120 | Pentium 100<br>Pentium 100<br>Pentium 100<br>Pentium 100<br>Pentium 120 | 10.4" Dual Scan<br>10.4" Active<br>11.3" Dual Scan<br>11.3" Dual Scan<br>11.3" Dual Scan | 8/810MB<br>8/810MB<br>8/810MB<br>8/810MB<br>16MB/1,1GB | \$1879<br>2199<br>2479 *<br>2899 *†<br>2999 * |
| 4120T<br>4130T                         | Pentium 120<br>Pentium 133<br>Shuilt-in gudia                           | 11.8" Active   | 16/810MB<br>16MB/1.1GB                                 | 3699 *<br>4399 *                              |

# LTE 5000 Series

| - | Mod  | el Processo | r Screen        | RAM/HD      | Price  |
|---|------|-------------|-----------------|-------------|--------|
|   | 5150 | Pentium 100 | 11.3" Dual Scan | B/810MB     | \$2849 |
|   | 5250 | Pentium 120 | 10.4" Active    | 16/B10MB    | 3599   |
| ı | 5280 | Pentium 120 | 11.3" Active    | 16MB/1.35GB | 4349   |
| t | 5200 | Pentium 120 | 10.4" Active    | 8MB/1.35GB  | 4720   |
|   | 5300 | Pentium 133 | 12.1" Active    | 16MB/1.35GB | 4749   |
|   | 53B0 | Pentium 133 | 12.1" Active    | 16MB/2.2GB  | 6299   |
|   |      |             |                 |             |        |

LTE 5000 Series

© 1996 PCs Compleat. All prices and specifications subject to change and do not include shipping. All products or brand names are trademarks of their respective companies. PCs Compleat, 34 St. Martin Drive, Marlborough, MA 01752-3021. Phone (508) 624-6400. Not responsible for typographical errors. All trademarks and together paint, and the sok property of their respective owners. Lowest price guarantee applies to system paint, assessingly.



Lowest Guarantee





We carry a complete lineup of notebook & desktop upgrades and accessories





# Nonte Carlo lotebook

Up to 133MHz Pentium processors Built-in 6X CD-ROM drive 2MB video memory 16MB RAM memory (selected models)





## Monte Carlo Notebook

| Model      | Processor        | Streen       | RAM/HD   | Price  |
|------------|------------------|--------------|----------|--------|
| MCARLO     | Pentium 100      | 11.3" Active | 8/810MB  | \$2999 |
| MCARLO     | Pentium 100      | 11.3" Active | 8/810MB  | 3149 * |
| MCARLO     | Pentium 120      | 11.3" Active | 16MB/1GB | 3699   |
| MCARLO     | Pentium 120      | 11.3" Active | 16MB/1GB | 3849 * |
| MCARLO     | Pentium 133      | 12.1" Active | 16MB/1GB | 4499   |
| MCARLO     | Pentium 133      | 12.1" Active | 16MB/1GB | 4649 * |
| * Features | 28.8 PCMCIA fax, | /modem       | ,        |        |

Models available with Windows for Workgroups OR Windows 95

# Montego Notebook

100MHz Pentium processor

Call for a FREE

PRODUCT GUIDE

- EDO RAM memory
- Built-in 16-bit SoundBlaster compatible audio
- 4.9 lb weight
- PCMCIA 28.8 fax/modem

Model Processor Screen MONTEGO Pentium 100 10.4" Active 8MB/1GB \$2999

50% brighter display with 38% less powe ge than conventional Active Matrix screens with Sharp "SHA" screen technology. Available on select Sharp models

# harp 3000/9000

- Up to 133MHz Pentium processor
- Built-in 4X or 6X CD-ROM drives on selected models
- 32-bit PCI Local bus graphics
- SoundBlaster compatible audio on all models exce, t 3030

| Mod  | el Processo | r Streen        | KAM/ NU  | Price  |
|------|-------------|-----------------|----------|--------|
| 3030 | Pentium 100 | 11.3" Dual Scan | 8/515MB  | \$1749 |
| 3070 | Pentium 100 | 11.3" Dual Scan | 16MB/1GB | 2249   |
| 9000 | Pentium 100 | 11.3" Dual Scan | 8MB/1GB  | 2449t  |

### Price Processor Screen 12.1" Dual Scan BMB/1.1GB 11.3" Active (SHA) 8MB/1.1GB Pentium 100 \$2199 3040 9030 Pentium 120 9020 Pentium 120 12.1" Dual Scan 16MB/1.1GB 29991 16MB/1.1GB 9050 3699 Pentium 133 11.3" Active (SHA) 9070 12.1" Active (SHA) 16MB/IGB 4199 Pentium 133 Pentium 133 12.1" Active (SHA) 16MB/1.3GB 90B0 \* Includes built-in 4X CD ROM drive † Includes built-in 6X CD-ROM drive



port replicator with purchase n Versa 6000H tter valid through Up to Pentium 133MHz processors Built-in 6X CD-ROM drive 2MB video memory

NEC Versa 6000

■ Built-in 28.8 cellular fax/modem

# Model Processor Screen

6000H Pentium 100 12.1" Active 16MB/1.1GB \$3999 6030H Pentium 133 12.1" Active 16MB/1.3GB 4999 6030X Pentium 133 12.1" Active 16MB/1.4GB 5399

**NEC Versa 4200** 

# Sharp PC Series NEC Versa 4200

- Pentium 100 and 133MHz processors
- SoundBlaster Pro compatible audio with 2 speakers
- With VersaBay II for optional 2nd battery or CD-ROM
- Full-screen MPEG video, 4 audio orts and mic.

odel Processor Screon Pentium 100 10.4" Active 8/810MB 4200 4230 Pentium 133 10.4" Active 8MB/1.0GB 3899





- Pentium 120 and 133MHz processors
- 6X CD-ROM drive and 16-bit audio chipset
- Up to 12.1" 800 x 600 displays
- Up to 24MB of RAM memory: standard
- Built-in 28.8 data/fax/modem

# lodel Processor Screen RAM/HD Price

| P40 | Pentium 120 |              | I OWR/ I TOPR |      |
|-----|-------------|--------------|---------------|------|
| P40 | Pentium 120 | 11.3" Active | 16MB/2.1GB    | 3999 |
| P50 | Pentium 133 | 12.1" Active | 24MB/1.0GB    | 4499 |
| P50 | Pentium 133 | 12.1" Active | 24MB/2.1GB    | 4999 |
|     |             |              |               |      |

TravelMate 6000

Ascentia P

# AST Ascentia J

- Integrated 14.4/14.4 data/fax modern and audio on selected models
- PCI bus architecture with 256KB Level 2 cache (16KB on P100, 11.3")
- 10.4" & 11.3" SVGA (800x600) resolution Dual Scan and Active Matrix dis. la.s.

| aı  | IU ACHYC MAHD |                     |         |        |
|-----|---------------|---------------------|---------|--------|
| Mod | el Processor  | Screen              | RAM/ HD | Price  |
| J10 | Pentium 75    | 10.4" Dual Scan     | 8/500MB | \$1849 |
| J20 | Pentium 100   | 11.3" Dual Scan     | 8/810MB | 1899   |
| J10 | Pentium 75    | 10.4" Dual Scan     | 8/800MB | 2049   |
| J30 | Pentium 100   | 10.4" Dual Scan     | 8/800MB | 2199   |
| 130 | Pentium 100   | 10.4" Active Matrix |         | 2499   |
| J50 | Pentium 133   | 10.4" Active Matrix | 8/800MB | 2899   |



AST, AST logo are trademarks of AST Research, Inc. All rights reserved

20

| MAGIM                                     | ule  |  |                        |
|---|--|--|------------------------|
| el Processor                              | Screen                                       | RAM/HD                                   | Price                  |
| Pentium 120<br>Pentium 133<br>Pentium 150 | 11.3" Active<br>12.1" Active<br>12.1" Active | 8MB/1.08GB<br>16MB/1.35GB<br>16MB/1.35GB | \$4099<br>4889<br>5379 |
|   |  |  |                        |

Pentium 120MHz Dual Scan starting at



Peripherals and Software

International: 508-624-6400 Email: sales@pcscompleat.com sit us at www.pcscompleat.com

00-



(23

(33

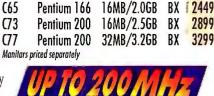
# Call for

Guaranteed 2nd Day Delivery 🗸 30-Day Money Back Guarantee



# IBM Aptiva

- Up to 200MHz Pentium processors
- 8X CD-ROM drive
- 28.8 data/fax/voice modem with telephony
- MPEG support with full motion video
- 16-bit WaveTable 3-D Surround Sound
- Comes with over 40 software titles













### Multimedia Presario

RAM/HD CD Price

16MB/1.6GB

16MB/1.6GB

8X \$1969

BX 1999

6X CD-ROM drive

Model Processor

Pentium 120

Pentium 133

- 3D surround sound with JBL Pro speakers
- Tons of FREE educational and business software
- 33.6 data/fax/modem
- Up to 2.5GB hard drives

## Model Processor RAM/HD CD Price

Pentium 133 16MB/1.6GB 6X \$1699 Pentium 166 24MB/2.5GB 6X 2199



Compaq Presario Multimedia



# TOSHIBA



- Up to 200MHz Pentium processors
- 8X CD-ROM drive
- 33.6 full duplex data/fax modem
- 2MB EDO video RAM
- Tons of FREE software

### **Model Processor** RAM/HD CD 7130 Pentium 133 16MB/1.6GB 8X \$1799 7160 Pentium 166 16MB/2.1GB BX 2099 Pentium 200 16MB/3.0GB BX Monitors priced separately





Toshiba Multimedia Monitors priced separately





AST, AST logo are trademarks of AST Research, Inc. All rights reserved



Advantage Multimedia

Monitors priced seporotely Product differs slightly from photo

# Advantage Adventure Multimedia

- Up to 200MHz Pentium processors
- 8X CD-ROM drive
- MPEG Level 1 playback support
- 33.6 data/fax/voice modem on selected models
- Integrated 3-D surround sound ■ Video conferencing & tuner card on 9312 model

| Mode    | Processor         | RAM/HD         | CD        | Price   |
|---------|-------------------|----------------|-----------|---------|
| 9304    | Pentium 133       | 24MB/1.6GB     | 8X        | \$1699* |
| 9308    | Pentium 166       | 24MB/2.5GB     | <b>8X</b> | 2199*   |
| 9310    | Pentium 166       | 24MB/2.5GB     | BX        | 2499*   |
| 9312    | Pentium 166       | 24MB/2.5GB     | BX        | 2599    |
| 9315    | Pentium 166       | 32MB/2.5GB     | BX        | 2699 *  |
| 9314    | Pentium 200       | 24MB/4.0GB     | BX        | 2799    |
| 9316    | Pentium 200       | 32MB/3.0GB     | BX        | 2999    |
| * Featu | res a 33.6 data/f | ax/voice moder | n         |         |







# Ready Multimedia

- Up to 200MHz Pentium processors
- 8X CD-ROM drive and audio wavetable
- 33.6 data/fax/modem
- 256KB cache memory
- Up to 4MB standard video memory
- Tons of FREE software
- Up to 3.2GB hard drives

Model Processor RAM/HD Price 7622 Pentium 120 16MB/1.6GB 8X \$1599 9624 Pentium 133 16MB/2.0GB 8X 1999 9622 Pentium 166 32MB/2.5GB BX 2199 Pentium 166 32MB/3.2GB 962B BX 2699 Pentium 200 32MB/3.2GB

**HEC Ready Multimedia** Product differs slightly from photo

Additional models available. Call for details. PCW 11/9

at PCs COMPLEAT

Guarantee

Lowest Price <30-Day Money <a>Free Jech</a> Back Güa

Support

Monitors priced separately

Configuratio



AVAILABLE ON ALL COMPUTER SYSTEMS

SASAL NO CASACISTACIONALIA SERVICE PLAN

AVAILABLE ON MOST PERIPHERALS CALL TODAY FOR DETAILS & PRICING!

Free Software Installation Free Tech Support Free Configuration



# Sizzling Saving

Save BIG with Some of the Lowest Prices You'll Find!

We Carry Over 100 0 0 Q L Call Today!

**Digital Venturis** 

#### ACTORY REFURBISHED ike New!

hese items have been oroughly examined and ualified by the manufacturer s being in perfect working rder. Each product comes in ew, clean packaging with all ccessories. The only differnce is YOU PAY LESS!

anufacturer warranties vary on Factory furbished products, ask for details oducts may differ slightly from otograph shown.

#### **NEC Ready Multimedia**



| PRODUCT                                  | PART#           | PRICE |
|--|-----------------|-------|
| Pentium 75, 8MB, 1GB, 4X, Ready 7022     | MT170024812C-FR | \$899 |
| Pentium 120, 16MB, 1.6GB, 6X, Ready 9616 | MT187024833DL-R | 1099  |
| Pentium 166, 16MB, 2.0GB, 6X, Ready 9619 | MT190024853D-R  | 1499  |

# Toshiba Satellite







Pentium 100, 8MB, 1.2GB, Pavillion 7050
Products may differ slightly from photos

PRICE PART#

6DX4/100, 8MB, 845MB, Venturis FR-855AA-WE

This product is

BRAND NEW!

4MB SIMM

as low as \$39,00

# Hard Drive

#K0872000A Limit two per customer





#### Maxtor 1GB **Hard Drive** #71000A





## **Iomega Zip Drive**





FREE

100 Diskettes

#PFD100F • 1.44MB

High Density

PEs Compleut **Exclusive** Limit 3 per

customer Product may differ slightly from photo

PCs Compleat 4MB PCs Compleat 8MB Memory Upgrade Memory Upgrade 2X32, 72pin non-parity

2X32, 72pin non-parity

#322-0060 VisionTek 8MB

**Memory Upgrade** 2X36, 72pin non-parity

#15150.0

900

#322-0001 PCs Compleat 16MB Memory Upgrade

4x32, 72pin parity

#322-0002



dok Digital Camero DC40 #1911825



**Netscope Novigotor 3.0** Personal Edition Win 95 & Win-CD #102-03746-00



reditCard Modem 28.8

BUNDLE DESCRIPTIONS creditCard Ethernet+Modem 28.8 (108T) CreditCard Ethernet+Modem 28.8 (108T/1082) \$ 448 00

Bundle Price With International Modern Travel Kit - Priced separately at 119.00

358.00

HAINH. Microsoft Publisher Win95-CD

#164-056V300



Diomond 4X CD-ROM Kit with IDE Cord #KITMM-K500



STB Graphics Board #LTS32

9900

279.00

ore Brand Names, Peripherals and Software available. If you don't see it, CALL!

**800-587-7495** 



# Now More Then Ever...

40,000 Shipped same day at lowest prices.

Knowledgeable Sales Staff V Fast Delivery V Quality Top Name Brands V Technical Support

products!!

## PINE SCSCE Combo Etrerina 8 SCSCE Combo Etrerina 8 SCSEC PO Etrerina 6 SCSEC Fast Etrerina 6 SCSEC Fast Etrerina 9 ARTIS inte SLINE OTCC PCWCIA ETER Compo Etremet Abact Compo Etrem 18 LAN 0 1087 15-Port Aus 1006-TX 12-Port Aus MICRO NEZOCO 108T COAX NE42CO POMOTA 108T N E T G EN104 5-ont 108T Hut EN115 5-ont 108T Hut SWSOT Enet 10100 S Directives (UET Pint Server to Directives EX external const SMC Arther POTRL POZITE Arther POSOU Monstation Arther Hubs Broad active : Site 160 Ultra Etherner COM Sie 160 Ultra Etherne COME Etherower 10100 PC 10ET Tigernus TPS 10ET Hus 6-oc THOMAS · CONR. CAPON SO-ON ESA 100ME CAS-CX 100mess SA coa TRENDY 5-1507 CT 16-all Yaress 5-167-7 Pugn-Pey Car Xirco NOVELL Wavjammer 16-bit PCMCIA Multimedia Combo SCS1

| RKING                               | MULTIMEDIA  |   |
|-------------------------------------|---|---|
| uter 939                            | MULTIMEDIA KITS   |   |
| ter _1379                           | Turte Beach 6X Kt - sound, -50 titles219 Turte Beach 6X Kt - sound, -50 titles245 |   |
| cax†CS                              | CREATIVE  |   |
| SA cos & VET _ 118                  | Blaster CD 6X   |   |
| 208x or 18" 225                     | Discovery CD 16 4X Int. PnP 272<br>Discovery 8X                                   |   |
| -O 131306 . 'SE                     | PLA MONE  |   |
| OFT<br>Win as co                    | Diamond 800 8X  |   |
| Win 35 CC                           | VIDEO CAPTURE   |   |
| -user79319<br>. Starter KtZ13       | AfTech Pro PC TV Plus139 A:Tech Wavewatcher TV2280                                |   |
|                                     | ATI Video Basic   |   |
| CALL TODAY!                         | Intel Smart Video Pro   |   |
|                                     | TrueVision Targa- 18 1069<br>Sigma Reel Magic Ultra MPEG359                       |   |
| mcc 113                             | CREATIVE  |   |
| PG 200<br>(SA 30000 139             | Phone-Blaster 29.8 st. SR FAX E-mail 232  |   |
| (EYE                                | Sharevision PC3000 w/ video   |   |
| Tet Cart 129                        | DIGITAL CAMERAS   |   |
| t 6-cacx 225<br>Carc39              | Kodak DC20  |   |
| 269 (                               | Kodak DC50 Lowest Price Around!   |   |
| DYNE                                | PC SPEAKERS Creative Latis CS200 Soundbiaster .59                                 |   |
| 75.T5                               | Creative Labs SBW500 40-war ws.rw.99<br>LabTec 3210 20-wstr 79                    |   |
| EAR                                 | NEC Audio Tower   | 5 |
| 367 mit 245                         |   |   |
| . 595                               | ALTEC   |   |
| C DATA                              | 1CS53 System w subwooter 125<br>ACS300 * System                                   |   |
| server, N.C                         |   |   |
| 72.56                               | SONY  |   |
|                                     | SAS-PC50 5-watt \$6   |   |
| EC may 4 * 10E*                     | SRS-RC91 10-wat   | l |
| 0", "52                             | SAS-DIXPC 30-wan w subwoofer 209 SOUND BOARDS                                     |   |
| AD DI COMPAC                        | CREATIVE  |   |
| E = _ = _ = _ = _ = _ = _ = _ = _ = | Sound Blaster 16 Value IDF 89   |   |
| VARE                                | Sound Blaster 32 IDE PnP149 Sound Blaster 32 AWE PnP219                           |   |
|                                     | Wave Blaster II Daugner Bro wGarre Pt99   |   |
| Corne SA 25<br>or SA 35<br>or SA    | mediaTrix AudioTrix-Pro   |   |
| -T(-LC649                           | Twrtle Beach  |   |
| 782                                 | Audio Advantage PCMCIA 129 Wavetable 32 135 Turte Seech Trocz - 220               |   |
| MEC .GE. 7 WENT                     | Turte Seach Trooz   |   |

| <b>DESKTOPS</b>   |
|---|
| Business Class PC   |
| AST   |
| Bravo MS P-100 1.2Ga 16M<br>Bravo MS P-120 1.6G 16M<br>Bravo MS P-166 1.2G 16M  |
| Canon   |
| 9210 P-120 1 6G 16M 8X CD 33.6 FAX.<br>9350 P-133 1 6G 16M 8X CD 33.6 FAX.<br>9610 P-166 2.1G 16M 8X CD 33.6 FAX  |
| COMPAQ  |
| Deskpro 2000 P-100 1.2G 8M Deskpro 2000 P-120. 1.2G 6M Deskpro 4000 P-133. 1.6G 16M Deskpro 5150 P-150 2G 16M Deskpro 6000 P-180 2.1G 32M Deskpro XL 6.200 2.1G 32M BCULNT 550. 4S0 Seres BEST PSCSIGNIA Seres In 5000 BEST |
|   |
| PC350 P-100 1 2GB 16M<br>PC330 P-133 1 2GB 16M<br>PC350 P-166 1 2G 16M  |
| Multimedia PC's   |
| (Models listed below come complete with an a<br>8X CO-ROM crive. 28.8 or higher modern &  |
| AST Advantage 829 P-200. 2.5G16M — Canon Innova 8210 P-120. 1.6G 16M — Compaq Presario 4716 P-200. 2.5G 32M HP Pavilion 7285 P-200. 3.1G 32M — IBM Aptiva 878 P-200. 3.2G 32M —   |
| CICETO  |
| MOTEBOOK  |
|   |
| SEE THE FOLLOWING PAGE P  |
| TOSHIBA &   |
| BEST SELLING MOTEBOOK   |
|   |
| AST.  |
| Ascenta J 10 P. 75 8/500M 10 4* Dual .<br>Ascenta J 30 P-100 8/300M 10 4* Dual<br>Ascenta J 50 P-133 8/300M 10 4* TFT<br>Ascenta P P-133 1/20 8M 4xCD 11.3 Act  |

. 1749

more.)

|   | SEE THE FOLLOWING PAGE FO               | R     |
|---|---|-------|
|   | TOSHIBA &IE                             | L,    |
|   | DEST SELLING NOTEBOOKS                  |       |
|   |   |       |
| 1 | AST                                     |       |
|   | Ascentia J 10 P- 73 8/500M 10 4" Duai . | 1972  |
|   | Ascenta 30 P-100 6/300M 10 4" Duai      | 2370  |
|   | Ascentia J 50 P-133 8 900M 10 4° TFT    | .3335 |
|   | Ascentia P P-133 1.2G 8M 4xCD 11.3 Act. | 4299  |
|   | Canon                                   |       |
|   | N                                       | -     |

| 1 | Noteset III P-75 54CM SM 10.4° TFT3759     |
|---|--|
| ١ | COMPAQ                                     |
| 1 | Armada 4110 5100 8/81CM 10 4° Dual 2433    |
| ١ | Lte 5200 P-120 1 35G 13.4° Act Cir         |
| 1 | Lte 5300 P-133 16M 1.35G 11.3" Act Ctr5620 |
|   | MAGTRONIC                                  |

#### 600S2S4 P-90 540M 8M 4xCD 11.3" Dual . 2569 NEC

Versa 4050C P-90 \$10M w/CD 10 4" Actv .....3179 Versa 5030H P-133 16 1 35G6 w/CD 121" FFT 4929 TEXAS INSTRUMENTS



| F2-15 15* 28mm 1280x1024 TCO58    |
|-----------------------------------|
| F2-17 17" 29mm 1290x1024 83       |
| F2-17EX 17" 26mm1600x1200 TCD94   |
| T2-17TS 17" 25mm 1600x1200 TCD 92 |
| T2-17 17" 25mm 1280x1024 TCD97    |
| T2-20 20° .30mm 1280x1024 TCD184  |
|                                   |

|        |     | 01131                  | 7     |      |
|--------|-----|------------------------|-------|------|
| DX1595 | 15" | 1280X1024              | 28mm  | 36   |
| DX1795 | 17  | 128CX1024              | 26mm  | .529 |
| DX15T  | 15" | 1280x1024              | .25mm | 37   |
| DXITT  | 17  | 1280x1024<br>1280x1024 | .25mm | 69   |
|        |     | AGN                    |       |      |

| n      | 4   | 40   | N      | AV      | (0)        | (    |
|--------|-----|------|--------|---------|------------|------|
| 75M749 |     |      |        |         |            |      |
| CM2099 | 14" | VGA  | 1024   | 768.28  | mm         | 239  |
| CM2015 | 15  | 1024 | x768 2 | 28mm    | ********** | 309  |
| CM1215 | 15° | EVG. | A 102  | tx768 . | 28mm.      | 329  |
| CM4019 | 17  | 1280 | x1024  | 28mm    |            | 595  |
| 20CM64 | 20  | 1280 | 1024   | 31mm    |            | 899  |
| CM5600 | 20° | 1600 | x1280  | .28mm   |            | 1129 |
|        |     |      |        |         |            |      |



|   | NEC   |
|---|---|
|   | XV15+ 15" 1024x768 28mm 469<br>XE2: 21" 1280x1024 28mm 1699 |
|   | XE2: 21" 1280x1024 28mm                                     |
|   | XP17 XP21 1049/19899  |
|   | C500 15° 28 PnP 1280x1024 375                               |
|   | M500 15° 25 1280×1024 479                                   |
| ١ | 759 17 25 1280×1024   |
| N | 2101414   |
|   | NOKIA   |

| 447L 17 1280x1024 28mm MPRII     |
|----------------------------------|
| 445X 21" 1600x1200 .25mm MPRII18 |
|                                  |
| SONV                             |
| O TA T                           |

449E 15" 1290x768 .28mm .....

| ViewSoni   | 0   |
|--|-----|
| CPD-17SF2 17" 1280x1024 .25mm<br>GDM-17SE2T 17" 1600x1200 .25mm<br>CPD-20SF2 20" 1280x1024 .25mm | 159 |
| GDM-17SE2T 17 1600x1200 25mm   | .96 |
|  |     |
| CPD-15SF2 15" 1280x1024 25mm   | .44 |
| CPD-15SX1 15" 1286x1024 .25mm .  | .37 |
|  |     |

| ATCMPOIL                 |    |
|--------------------------|----|
| V15ES 15* 1024XT68 28mm  | 34 |
| V17EA 17" 1024x768 27:mm | 62 |
| P810 20" 1600X1280 .25mm |    |
|                          |    |
|                          |    |

| VISION               | M   | ASTER     | y Tiz  |      |
|----------------------|-----|-----------|--------|------|
| MF-8617E<br>MF-8221E | 17" | 1280x:024 | .26mm. | 699  |
| MF-8221E             | 21" | 1600x1200 | .28mm  | 1539 |
| MT-9021E             | 21" | 1600x1200 | .30mm. | 1639 |

| BJ-30                       |
|-----------------------------|
| BJC-70349                   |
| BJC-210360dpi149            |
| BJC-4100720x360dpi Color229 |
| BJC-610720dpi Color429      |
| EDCON                       |

## **ELOON**

| LQ1070+ / LQ2170384/526  |
|--|
| Stylus 1000474   |
| Stylus IIs/Stylus Color II165/239<br>Stylus Pro XL (12.5*x18*)1699 |
| Stylus Pro XL (12.5°x18°)1699                                      |
| FARGO'   |

| Fotofun 3x5<br>Primera Pro<br>Primera Pro | color printer                           | 42     |
|---|---|--------|
| Primera Pro                               | *************************************** | 133    |
| Primera Pro                               | PS w/ Photost                           | nop184 |
|   |   |        |
|   | HEW                                     | LETT   |

|   | PACKAF                            | TT<br>RD |
|---|-----------------------------------|----------|
|   | DeskJet 680C, 5ppm 600dpi         |          |
| ı | DeskJet 820CXI, 8ppm 600dpi       | 38       |
| 1 | DeskJet 870CXI, 8ppm, 600dpi      | 48       |
|   | DeskJet 1600C/DeskJet 1600CM12    |          |
| ١ | LaserJet 4V 16ppm 600dpi, 11x17   | 1899     |
| ١ | LaserJet 4MV 16ppm 600dpi. 11x17  | 277      |
| ı | LaserJet 5LFS 4ppm 600dpi         |          |
| ١ | LaserJet SP 6ppm 600dpi           |          |
| ١ | LaserJet 5MP 6ppm 600dpi Pstscrpt |          |
|   | LaserJet 5, 12ppm 4MB             |          |
| ı | LaserJet 5M, 12ppm 6MB 600dpi     | 172      |
| ١ | LaserJet 5N, 12ppm 600dpi, e-net  | 152      |
| 1 | LaserJet 5SI 24ppm                | 2779     |
| ı | LaserJet 5SIMX 17ppm 600dpi       | 389      |
| 3 | Color LaserJet 5, 12ppm 4M8 600cp |          |
| 1 | Copyret Color Inkjet              | 233      |
| Ì | SEE PACIFIC DATA FO               | OR       |

#### JETDIRECT SAVINGS! LEXMARK

| ,  |
|--|
| Dotra E 6ppm 1MB 600dpi54 Dotra R+ 12ppm 2MB 1200dpi127 Optra LX+ 16ppm 4MB 1200dpi194   |
| Optra R+ 12ppm 2MB 1200dpi127  |
| Optra LX+ 16ppm 4MB 1200dpi194   |
| The state of the s |

| bus ry+ 1 | obbut awa    | 1200api1   |
|-----------|--------------|------------|
| -         | WIL          | <b>ATA</b> |
|           |              |            |
| 84 Turbo  | ************ |            |

| 184 Turbo22                     |
|---------------------------------|
| 320 / 321315/44                 |
| 520 / 521379/48                 |
| 590+ / 591+439/59               |
| 395 / 395c999/109               |
| 600e/610e/610ePS399/489/69      |
| Laser 810 LED 8ppm/1200 .759/98 |
| OkiJet 2010COLOR!!!26           |
|                                 |

## **Panasonic**

| KXP- | 3626 / KX | (P-3696 | 409/44  |
|------|-----------|---------|---------|
|      | 6100 / K  | XP-650  | 0409/43 |
|      | Q         | MS      | 3       |

| MagiColor Laser | 32    |
|-----------------|-------|
| SEIKO           | SII O |

| SEIKO           | 511 |
|-----------------|-----|
| mart Label EZ30 | 139 |

| CD-ROM DRIVES                      |
|------------------------------------|
| CSD-880E 4x ATAPI Kit              |
| Disctec CD6X Parallel Port         |
| Disctec 4x 650M RCD                |
| Microsolutions 4X Par Port         |
| NEC 6XI / 6XE249                   |
| Panasonic KXLD-740 2 PCMCIA        |
| Plextor 4Plex 4x 170ms SCSI-2 int. |
| Plextor 6Plex 6x 145ms SCSI-2 int  |
|                                    |

|     |     |    |    |   | CSI-2 Int |
|-----|-----|----|----|---|-----------|
| Pin | 17. | 40 | ĻĒ | Δ | Vić.      |

## SONY

CSD-880E 4x ATAPI Kit.... PRD-250 Discman Kit.....

## TOSHIBA

XM5602BS 8X int. ATAPI ... XM5401BS 4X int SCSi .....

## REMOVABLE STORA

IOMega Ditto 800 800MB parallel IOMega Ditto 3.2G int. Travan .... IOMega Zip Drive - IN STOCK -.. IOMega Jaz 1.GB int. .

Panasonic LF 7304 1.5GB int ..... Pinnacle Micro Vertex 2.6GB Kit. Syquest EZ135 int... Syquest EZ-Flyer 230 Par......

HARD/FLOPPY DRIV Fireball 1280 1.28G FATA...... Maxtor 71626AP 1.6G EIDE .... Microsolutions Par. Port Floppy .. Sony 1.44MB 3.5° Floppy....... Feac FD505 Dual Floppy .......

## CONNER

CFS850A 850M IDE...

MICROPOLIS

4221 2.1GB SCSI... 1991W 9.09 Wide....

## QUANTUM

Quantum Bigfoot 1.28G FATA.... Quantum QM34300 4.2GB SCSI.



Seagate ST5108A 1GB ATA..... Seagate ST3630A 630M ATA....

WESTERN DIGITA

## AC22850 850M EIDE 2100RTL 2.1GB EIDE

## PERIP

## **3** adapted 4-7-15221 Single SCS-2 SA 4-7-1542 SCS-2 SA = Fox Ki 4-4-254-2004 utra 90 0. 254 4-4-254-00 4.07 4-4-254-2004 utra 90 0. 254 4-4-254-00 505 Vaster 245 4-4-254-00 505 Vaster CPU UPGRADES

CONTROLLERS

## intel

Nertiwe for 486 05Minute 0.1475 Oversive for 486 is Person 53MHz. \_\*30 Overanve for 436 to Fentium SSMF-z. Overanve Pentium 100 Pentium 133 Overanve Fentium 150 Pentium 186

TAPE BACKUPS

HEWLETT PACKARD Scarcer 47 Scarcer 40

#### MICROTEK

### TAPE BACKUPS

Corner Tacestor 1 6G8 act. SCSI #199

Conner Tacestor 1 7 avan SCC interna: ### 1350

Cod Scan LS-10 PC ext. ### 1 Powertock II witners. Adapter & Prishb LE .....1850 Mirage D-16L 5-size witners Adapter. ... 6895

**PLOTTERS** 

#### **DIGITIZERS**

Ai

PARADISE.

VIDEO BOARDS

Hercules Stingray Pro 1M8 PCI or VLB

Hercules Terminator 64 2M8 PCI

Hercules Dynamite Power 2M VLB

Number 9 9FX Motion 77" PCI 2M VRAM

| Graphics XPression     | .PCI      | .1 VIS   | 89     |
|------------------------|-----------|----------|--------|
| Graphics XPression     | ISA       | 1MB      | 89     |
| Graphics Pro Turbo 2MB | PCI       | ******** | 225    |
| MinTurbo 2M VLB:PCI/IS | A         |          | 209    |
| 3-D Xpression 2M8 PCV: | 3-0 Pro N | ew! 14!  | 9/CALL |
| -                      |           |          |        |

Paradise Pipeline PC 2M MPEG ....

## DIAMOND

....209 DIA .....239 ....149 Steatth 64 Video 3240XL ....409 Edge 3D 2120XL PCI ....

## matrox

### MODEMS

.....145/205 Multitech MT2834ZPX 28.8 int... Practical PM144MT 14.4 Mini-Tower ext.....72 Sportster 28.8 Winmodern Internal 

## Hayes

# **Megahertz**

XJ4288 xJack 28.8 PCMCIA V.34..... EM1144T 14.4 PCMCIA 108T Combo. XJ3288M 28.8 Cellular w/XJack.......

# **I**Robotics

Sportster Voice 28.8 Faxmodem int. Sportster PCMCIA 2.1 28.8 w/fax V.34 ... Sportster ISDN 128K



500 Bunkar Court, Harror - 8 L 50061

MIDWEST ORDER DEPARTMENT 800-659-6757

24-HOUR FAX 847-367-8540 Islamer Service 847-367-7583 International Line 847-367-6519 Technical Support 847-367-7584



FAST SHIPPING, NO PROBLEMA WE DELIVER WHEN YOU NEED IT.

Ebsy Poyment Methods!

• Leasing Available • Purchase orders accepted from educational institutions, federal & state agencies and approved corporations. • C.O.D's welcome.

#### **Policy Information**



PC WORLD NOVEMBER '96

☐ YES. Send me PC WORLD and my FREE mouse pad!

I'll pay just \$24.95 for 12 monthly issues—65% off the annual newsstand rate—plus I'll receive Free, PC WORLD's exclusive Windows 95 mouse pad.

1 202-2



| .*             |     |             |                                       |
|----------------|-----|-------------|---------------------------------------|
| NAME           |     |             |                                       |
| COMPANY        |     | <del></del> |                                       |
| ADDRESS        |     |             |                                       |
| CITY/STATE/ZIP |     |             | · · · · · · · · · · · · · · · · · · · |
| DA             | MIG | D           | n                                     |

Please allow 6-8 weeks for delivery of your first issue. Canadian orders please add \$20 USD per subscription for postage plus 7% GST (#R124669680). All other countries send \$70.95 USD to PC World, P.O. Box 55029, Boulder CO 80322-5029. Printed in the USA. Savings based on newsstand rate of \$71.40.

4MLC9



## **BUSINESS REPLY MAIL**

Hobblerollightellerilleringheilidet

FIRST-CLASS MAIL PERMIT NO. 1262 BOULDER CO

**POSTAGE WILL BE PAID BY ADDRESSEE** 

# PC WORLD

SUBSCRIPTION DEPARTMENT P.O. BOX 51833 BOULDER COLORADO 80323-1833 NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



# YOUR COMPLETE COMPUTER SOL

FOR LESS!



## Innova 9210

- Pentium Speed 120MHz 16MB RAM
- Hard Drive 1.6GB
- 33.6 Fax/Voice Modem
- 8X EIDE CD-ROM
- Speakers
- Loaded with software

O

from Bay Networks **EN308 8-Port Ethernet Hub** 

- At-A Glance LED Indicators
   MDI port for network expansion
   Switchable BNC/AUI Port
   8 10Base-T Ports

#### EASY INSTALLATION!!

From the Ethernet **Hub Market Leader** 

## Sportster Winmodem'





5-Year Warrantyl

## Internal 28.8

- Max. throughput 115,200 bps
  High speed data: 28.8 Kbps (Upgradable to 33.6)
- High speed fax: V.17 Group III 14.4000 and 9600 bos Class 1 & Class 2.0 send and receive fax

So easy to use

## Vista S12 Scanner

Single-Pass 36-Bit Color Scanning

600x1200dpi Optical, 9600dpi max. Resolution Adobe Photoshop LE Version, Presto, PageManager OCR, ASAP WordPower presentation software & SCSII

Graphics for professionals







ThinkPad 760EL P-133 1.08GB 16M 12.1" Active Color...



Equipment Protection on All UPS!

SMART-UPS VS SERIES
Includes PowerChute Power
Management & Diagnostic Softwa
for networks!

for networks! Smart-UPS 420 VS/650 VS ......259/295 Smart-UPS 1000 VS/1400 VS .....425/559

PowerChute+ for Novell/Unix... PowerChute+ for Win/Win NT.

NEW!!

UPS's Starting at

YOUR APC HEADQUARTERS!

## Lifetime Warrantul



100'S of upgrades available. If you don't see your system listed, call today

AST. Ascentia 900N 4MB/8MB....79/123 ..8MB/16MB...131/267 ...8MB/16MB....88/210 Ascentia J...

COMPAQ 4MR/8MR Contura 400CX 

...4MB/8MB ..... 75/147 PACKARD

LaserJet 4, DJ1200 .......1MB ... LaserJet 4P, 4+, 4V .........4MB ... LaserJet 4Si, 4SiMX ..4MB/8MB.....56/107  ThinkPad 701C......4MB/8MB ThinkPad 755. NEC Versa S......4MB/8MB....45/119 Versa 600H, 6030H..8MB/16MB....CALL

.174 T2100 .16MB. T400/410 .8MB .8MB/16MB..129/240 .....8MB.......214 ....4MB/16MB..214/418

SIMM Modules

- IN STOCK - Calt for 1MB or 4MB x9 70 • 2MBx32 or 36 70 Intest pricing! • 4MBx32 or 36 70

LOWEST INDUSTRY PRICING AVAILABLE!



Tecra 720CDT

P-133MHz, 12.1" Active Color & a Built-in 28.8Kbps Data/Fax Modem!

16MB EDO RAM, 1.2GB HDD 6X CD-RGM Drive INCLUDEDI 16-bit Sound Blaster Pro Compatible Sound System w/, WAV & MiDI PC Card Slots, 2 Type II or 1 Type III

intel inside

Lease a Toshiba for as low as

a month

SATELLITE & SATELLITE PRO SERIES

.3249 PORTEGE SERIES
T610CT Pentium-90 720M 8M 9.5\* Active Color .....
T650CT Pentium-133 1.2G 16M 11.3\* Active Color ... 4395 TECRA SERIES
TECRA 500CS Pentium-120 1 2G 16M 11.3° Dual Scan 6xCD.
TECRA 500CDT Pentium-120 1.2G 16M 12.1° TFT 6xCD ...... 4620 



High Standard, Low Price-Affordable 28.8kbps Modems!

Megahertz 28.8kbps PC Card Fax Modems deliver the performance and compatibility of V.34 with the convenience of the built-in



Please refer to this code when ordering KEY CODE CW11/6





**NATIONAL DIRECT** ORDER LINE

**Where Corporate America Shops!** 



**|1-800-659-675** 

Circle 169 on reader service card

WE ACCEPT PO'S FROM QUALIFIED FIRMS

## 30 DAY\* MONEY BACK

SECURITY WILL CALL WINDOW NOW OPENI NO SURCHARGE FOR MC, VISA AE & DISCOVER

#### GUARANTEE HOT BOX SPECIALS

| Compaq contura 400, 4Meg              | \$49                  |
|---------------------------------------|-----------------------|
| 4 x 8-80                              |                       |
| 4 x 8-70                              |                       |
| Compag 1Meg V-Ram Pt. No. 171017-001  |                       |
| Thinkpad 750, 720, 700, 360, 355 4Meg | 4900                  |
| 1 x 1-80, 18 pin chip                 | 200                   |
| 1 x 9-80                              |                       |
| 256 x 1-10, 16 pin chip               |                       |
| Cyrix DRX2, 16-32                     |                       |
| NEC Versa 4Meg                        |                       |
| Panasonic 6500, 1Meg Module           |                       |
| HP 4P, 5P, 4V, 1Meg                   |                       |
| HP 4, 1Meg                            |                       |
|                                       | - Marine and a second |

#### CACHE MEMORY CACHE MODULES

| _            |              |                      |                      |                        |  |
|--------------|--------------|----------------------|----------------------|------------------------|--|
| Cx8<br>PKx8  | 12NS<br>9 00 | 15NS<br>6.50<br>4.50 | 20NS<br>6.00<br>4.25 | 25 N S<br>5.50<br>4 00 | 256K (160 pin) Pipeline Burst C<br>\$22.00 |
| Kx8 (3 3V)   | 9 00         | 14.00                | 9.50                 | -                      | 512K (160 pin) Pipeline Burst C            |
| Kx1          | -            | 11.00                | 9.00                 | 8.00                   | \$39.00                                    |
| tKx4<br>tKx8 | _            | 11.00<br>15.00 (5V)  | 19.00 (3.3V)         | 8.00                   | 255K (160 pin) Async Cache                 |
| SKx4         |              | 8.00                 | 7.00                 | 6.00                   | compatible with IBM A                      |
| 28Kx8        |              | 29.50                | 26.00                | 24.00                  | \$59.00                                    |

#### Individual D-RAM Chips

| MEMORY FOR IBM & APPLE |      |       |       |       |       |  |  |
|------------------------|------|-------|-------|-------|-------|--|--|
|                        | 50NS | 60NS  | 70NS  | 80NS  | 100NS |  |  |
| 1Megx1                 | -    | 6.85  | 6.45  | 5.95  | 4.95  |  |  |
| 1Megx4                 | -    | 49.00 | 39.00 | 38.00 | -     |  |  |
| 1Megx4 (Zip Pk)        | -    | 24.00 | 22.00 | 21.00 | -     |  |  |
| 256x4(Page Qip)        | -    | 7 25  | 6.75  | 6.50  | 5.95  |  |  |
| 256 4(Stalic Oip)      | ***  | -     | 9.95  |       | -     |  |  |
| 256x4(Page Zip)        | -    | 9.25  | 9.00  | 8 95  | -     |  |  |
| 256x4(Video Zip)       |      | _     | 10.95 | 9.95  | 7.95  |  |  |
| 256x8(SOJ)             |      | 19.00 | 18 00 | -     | -     |  |  |
| 256 x1                 |      | 3.25  | 2 95  | 2.75  | 2.25  |  |  |
| 54x4                   |      | _     | _     | 3.75  | _     |  |  |
| 64x1                   |      | _     | -     | -     | 2.00  |  |  |
| 256x16 SQJ             |      | 39.00 | 29.00 | _     | -     |  |  |
| 256x16 SOJ Edo         | -    | 39.00 | -     | -     | -     |  |  |
| 256x16 Video Zip       | -    | 49.00 | 39.00 | -     | -     |  |  |

#### **INTEL Math Chips**

| 80287-XL                                   | 49.00    |
|--|----------|
| 80387-16 DX                                | 39.00    |
| 80387-20 DX                                | 44.00    |
| 80387-DX (Does All)                        | 49.00    |
| 80487-SX (Does All)<br>Intel SX (Does All) | 183.00   |
| Intel SX (Does All)                        | 49.00    |
| Intel SL Mobil                             | 39.00    |
| Intel 16SX                                 | 29.00    |
| Intel 20SX                                 | 29.00    |
| Lowest price on Intel overdre              | ve chips |
|  |          |

**CYRIX Fasmath** 

Cyrix 40DX \$79

#### Make Your 486 Run like a Pentium®

Cyrix 33DX \$39

| 3x Faster, for 486 Based Dx2, Dx, Sx2, Sx. | DNLY \$135 00 |
|--|---------------|
| M MODILIES /Add &                          | OO for CIDE   |

| SIMM W          | ODULES | ) (AC |       | ו טע  |       | rr)   |  |
|-----------------|--------|-------|-------|-------|-------|-------|--|
|                 | 48NS   | 50NS  | 60NS  | 70NS  | BONS  | 100NS |  |
| x 9             | -      |       | -     | 6.00  | 5.00  | 5.00  |  |
| 19 x 9 (3 chip) |        | -     | 16.00 | 13.00 | 13.00 | _     |  |
| a x 9 (9 chio)  |        | -     | 22.00 | 19.00 | 14 00 | 14 00 |  |

| 4Meg x 9<br>16Meg x 9 (9 chip) |                        |                        | _                              | 41.00<br>179.00                     | 39.00<br>169.00   | 39.00<br>169.00       | =                        |
|--------------------------------|------------------------|------------------------|--------------------------------|-------------------------------------|-------------------|-----------------------|--------------------------|
| 72 PIN S                       | IMMS                   | (FPM, I                | EDO)                           | 50                                  | DIM               | AS (79)               | 44 pin)                  |
| 256 x 36 1 mg<br>512 x 36 2 mg | 60NS<br>19.00<br>36.00 | 70NS<br>19.00<br>34.00 | 80 <b>NS</b><br>19.00<br>34.00 | 72 Pin, 3<br>72 Pin, 3<br>72 Pin, 3 | .3V<br>.3V<br>.3V | 4Meg<br>8Meg<br>16Meg | 49.00<br>89.00<br>189.00 |
| 1 meg x 36 4 mg<br>2 x 36 8 mg | 44.00<br>74.00         | 39 00<br>69.00         | 39.00<br>69.00                 | 72 Pin, 5<br>72 Pin, 5              | V                 | 4Meg<br>8Meg          | 49.00<br>89.00           |

| 4 x 32 16 mg E00<br>8 x 32 32 mg E00 | 109.00<br>199.00 | 104.00<br>189.00 | 104.00<br>189.00 | 144 Pin, 5V E00<br>144 Pin, 5V E00                    | 32Meğ<br>64Meğ | 339.00<br>1937.00 |
|--------------------------------------|------------------|------------------|------------------|---|----------------|-------------------|
| 1 x 32 4 mg ED0<br>2 x 32 8 mg EO0   | 54.00            | 49 00            | 49.00            | 144 Pin, 5V E00<br>144 Pin, SV E00<br>144 Pin, 5V E00 | 8Meg<br>16Meg  | 89.00<br>166.00   |
| 16 x 32 64 ma                        | 509.00<br>36.00  | 499.00<br>29.00  | 499 00<br>29 00  | 144 Pin, 3.3V E00                                     | 64Meg          | 1553.00           |
| 4 x 32 16 mg<br>8 x 32 32 mg         | 109.00           | 104.00<br>189.00 | 104 00<br>189.00 | 144 Pin, 3.3V E00<br>144 Pin, 3.3V E00                | 16Meg<br>32Meg | 166.00<br>676.00  |
| 2 x 32 8 mg                          | 54.00            | 49.00            | 49.00            | 144 Pin. 3.3V FOO                                     | 8Meg           | 89.00             |
| 1 x 32 4 ma                          | 34.00            | 29.00            | 29.00            | 144 Pin. 3.3V   | 32Meg          | 339.00            |
| 16 x 36 64 mg                        | 699.00           | 689.00           | 689.00           | 144 Pin. 3.3V<br>144 Pin. 3.3V                        | 8Meg<br>15Meg  | 89.00<br>166.00   |
| 4 x 36 16 mg<br>8 x 36 32 mg         | 124.00<br>249.00 | 119.00<br>244.00 | 119.00<br>244.00 | 72 Pin, 5V  | 16Meg          | 189.00            |
| 2 x 36 8 mg                          | 74.00            | 69.00            | 69.00            | 72 Pin. 5V  | 8Meă           | 89.00             |
| 1 meg x 36 4 mg                      | 44.00            | 39 00            | 39.00            | 72 Pin, 5V  | 4Meg           | 49.00             |
| 512 x 36 2 mg                        | 36 00            | 34.00            | 34 00            | 72 Pin, 3.3V  | 16Meg          | 189.00            |
| 256 x 36 1 mg                        | 19.00            | 19.00            | 19.00            | 72 Pin, 3.3V  | 8Meg           | 89.00             |

| ECC Simms/Dimms Mo   | ·U(25)                                  |   | (16) CHUN                                 | s pin)   |
|--|---|---|---|--|
| Pentium Pro 72 Pin (install in pairs) / SIMMS<br>16Meg<br>32Meg<br>64Meg<br>128Meg | 159 00<br>.319.00<br>2349 00<br>4628 00 | 1 x 64<br>2 x 64<br>4 x 64<br>8 x 64<br>16x64 | 8Meg<br>16Meg<br>32Meg<br>64Meg<br>128Meg | 59.00<br>111.00<br>225.00<br>449.00<br>1995.00 |
| 3.3V ECC<br>8Meg   | 106.00<br>209.00<br>329.00<br>709.00    | 3.3V SDRAM<br>3.3V SDRAM                      | 8Meg<br>16Meg                             | 109.00   |

| AS                                    | I WE | MOR                               | Y   |  |
|---------------------------------------|------|-----------------------------------|---|--|
| Bravo MT, Bravo MS,<br>Pro 0X33, SX25 | AMT  | JPGRAGEO<br>4Meg<br>8Meg<br>16Meg | AST PART # 500987-002 500987-003 500987-004 |  |

| MOOEL  | AMT JPGRAGEO      | AST PART #            | PRICE   |
|--|-------------------|-----------------------|---------|
| Bravo LC Series, Bravo MT, Bravo MS,           | 4Mea              | 500987-002            | 34.00   |
| MS-L, Advantage Pro 0X33, SX25                 | 8Meg              | 500987-003            | 68.00   |
| ,  | 16Mea             | 500987-004            | 119.00  |
|  | 32Meg             | 500987-005            | 278.00  |
| Premmia LX P/60, MX4/66d, 4/100T, P/60         | 8 Meg             | 500987-003            | 78.00   |
| Transitia est 1700, test nesse, in 1801, 1700  | 16 Meg            | 501340-002            | 180.00  |
|  | 32 Meg            | 500987-005            | 278.00  |
|  | 64 Mea            | 501569-001            | 649.00  |
| Premmia 4133, 4133S, 4/50d, 4/60d              | 8 Meg             | 501159-002            | 89.00   |
| Premmia SE 4/33, 4/66d, P/60                   | 16 Meg            | 501159-003            | 149.00  |
| Premmia MTE 4/33, 4/66d, P/60                  | 32 Meg            | 501159-004            | 329.00  |
| Manhattan G. V Series Server                   | 64 Meg            |                       | 859.00  |
| Power Premium 3/33, 4/33, 4/33S, 4/50d, 4/66d  | BMea              | 500780-001            | 168.00  |
|  | Diviey            | 300780-001            | 100.00  |
| Premium 486/25, 486/25E, 486/33, 486/33E       |                   |                       |         |
| Premium 386/33TE, 486/25TE, 486/33TE           |                   |                       |         |
| Prem. II 386/25, 386/33, 486/33, 486 SX/20     |                   |                       |         |
| 8ravo 486/25, 486/33                           | 2 Meg Kit         | 500780-005            | 48.00   |
| Advantage 486/25, 486/33, 486/33P, 486 SX/20   |                   |                       |         |
| Premium SE4/22                                 | 8Meg Kit          | 500780-001            | 118.00  |
| Premium SE 4/50. d, 68d, P/60                  | 1 Meg             | 500780-003            | 19 00   |
| Prem 386/33T, 386 SX16, Prem II 386SX 20, 386/ |                   |                       | 59.00   |
| Premmia GX P/90, P/100                         | 8Meg Kit/16MegKit | 501565-001/501566-001 | 98/178  |
| 3  | 2Meg KiV64Meg Kit | 501567-001/501568-001 | 278/518 |
| AST Cupid 8oard                                | 0-32 Mag          | 500818-001            | 159.00  |

#### AMBRA

| Ambra NC 425SL    | 2/4/8 Meg            | 69/109/189            |
|-------------------|----------------------|-----------------------|
| Ambra N Series    | <b>4/8/12/16 Meg</b> | <b>99/169/269/339</b> |
| Ambra SN Series   | 4/16 Meg             | 79/219                |
| Ambra N-75, N-100 | 4/8/16               | 99/129/219            |
|                   |                      |                       |

## We also sell Memory for: Dell, Gateway, HP, DEC, Sun, Zenith, Acer, NEC and Epson

THE PURCHASE ORDERS ACCEPTED

The stocking be (Memory chips not installed in boards). We accept limentarily restocking be (Memory chips not installed in boards). We accept limentarily accept selections by the accept other charges it shipped in the readulation was 50 MeV. No REPUBLIS AT IF IS DO DON'S — EXCEMINES ONLY 1) or the shipped in the readulation of the charges of the shipped in the shipped of the shi

| IBM PART NO                 | WORKS WITH MODEL NO                                     | PRICE         |
|-----------------------------|---|---------------|
| 30F5360 (2Meq)              | 30-286, 25-286, 50 MTHR 80.                             | 79.00         |
| 6450604/92G7196 (2Meg)      | 70-061, E61, 121, 50Z, 55SX, 65SX P-70                  | 39 00         |
| 77 (2                       | 55LS, 65LS, X-Slation 120 & 130, 35SX, 35LS, 40SX       |               |
| 5450608 (2Mea)              | 70-A21, A-61, B-21, B-61, 35SX, 35LS, 40SX, Val Pt 325T | 29.00         |
| 34F2933 (4Meg)              | 35SX, 40SX, 55SX, 65SX, 55LS, 65LS                      | 59.00         |
| 37F9977/92G7199 (4Meg)      | 55SX, 55LS, 65SX, 40SX, 35SX, 35LS                      | 59.00         |
| 92F9935 (2Meg)              | P/S1 & P/S1/386SX-2121                                  | 49.00         |
| 92F9694 (4Meg)              | P/S1 & P/S1/386SX, Model-2121                           | 49.00         |
| 92G7200 (4Meg)              | PSI Expert, Consultant, Willow                          | 49.00         |
| 4Meg/8Meg/16Meg/32Meg       | PC 300 Series   | 39/69/119/219 |
| 4Meg/8Meg/16Meg/32Meg       | PC 780 Series   | 39/69/119/219 |
| 4Meg/8Meg/16Meg/32Meg       | PC Power Series   | 39/69/119/219 |
| 4Meg/8Meg/16Meg/32Meg       | PC Server 300, 325, 520                                 | 39/59/119/219 |
| 8Meg/16Meg/32Meg (Ecc)      | PC Server 500   | 119/219/399   |
| 92G7334 (16Meg 168 pln Edo) | I8M 730/750   | 199.00        |
| 92G7335 (32Meg 168 pin Edo) | IBM 730/750   | 339.00        |
| 92G7539 (4Meg)              | Aptiva 310, 330, 350, 510, 530, 710, 730, Pentium       | 39.00         |
| 92G7541 (8Meg)              | Aptiva 310, 330, 350, 510, 530, 710, 730, Pentium       | 69,00         |
| 92G7543 (16Meg)             | Apliva 310, 330, 350, 510, 530, 710, 730, Pentlum       | 1194.00       |
| 92G7545 (32Meg)             | Aptiva 310, 330, 350, 510, 530, 710, 730, Pentium       | 219.00        |
| 73G3131/92G7201 (4Meg)      | Value Point Performance, PC Server 4/66                 | 49.00         |
| 73G3132/92G7203 (8Meg)      | Value Point Performance, PC Server 4/66                 | 89 00         |
| 60G1622/92G7204 (16Meg)     | Value Point Performance, PC Server 4/66                 | 139.00        |
| 92G7205 (32Meg)             | Value Point Performance, PC Server 4/66                 | 239 00        |
| 6450902 (2Meg)              | 56, 57, 57SX,90, 95, P-75, 57SLC                        | 49.00         |
| 4,                          | Value Point 77 486DX2, 486SX, SVR 85                    |               |
| 6450128/92G7200 (4Meg)      | 57SX, 90, 95, P-75, 57SLC, 56, 56SLC, P/S1, 386SX,      | 49.00         |
|                             | Mod-2123, 2133, 2155, Val Pt 77, 486CS2, 486SX, SVR85   |               |
|                             | Value Point 77 486DX2, 486SX, SVR 85                    |               |
| 6450129/92G7428 (8Meg)      | 35SX, 40SX  | 89.00         |
| 6450130/92G7202 (8Meg)      | 56, 57, 57SX, 90, 95, P-75, 57SLC                       | 89.00         |
|                             | Value Point 77 486DX2, 486SX, SVR 85                    |               |
| 6451158/92G7208 (4Meg ecc)  | 486, 95XP; 95A (install in pairs)                       | 29.00         |
| 6451159 (8Meg ecc)          | 486, 95XP; 95A (install in pairs)                       | 69 00         |
| 92G7209/32G3720 (16Meg acc) | 9595 OPT  | Call          |

#### IBM NOTEBOOK & LAPTOP MEMORY

| E MOUNT OF             |   |               |
|------------------------|---|---------------|
| 07G1415/0/G1420 (4Meg) | Thinkpad 750, C. 700, C. 720, C. CL57SX           | 49.0          |
| 07G1416/07G1421 (8Meg) | Thinkpad 750, C. 700, C. 720, C. CL57SX           | 149.0         |
| 66G0095 (16Meg. 32Meg) | Thinkpad 750, C                                   | 219/35        |
| 66G0094 (4Meg)         | Thinkoad 755, 365, 360, 355, 340, 450             | 49.0          |
| 66G0094 (8Meg)         | Thinkpad 755, 365, 360, 355, 340, 450             | 139.0         |
| 66G0094 (16Meg, 32Meg) | Thinkpad 755, 360, 355, 340, 450                  | 199/47        |
| 8Mea/16Mea/32Mea       | Thinkped 760EX, Ed. EL. 365X, XO                  | 109/199/74    |
| 8189098 (4Meg)         | Thinkpad 500, 510CS (3.3 voll)                    | 79.0          |
| 8189099 (8Meg, 16Meg)  | Thinkpad 500, 510CS (3.3 volt)                    | 119/33        |
| 79F0999 (2Meg)         | LX40, N33SX, PS Noie                              | 69.0          |
| 79F1000 (4Meg)         | LX40, N33SX, PS Note, Tkpd 350, 350c, PS Note 425 | 89.0          |
| 79F1001 (8Meg)         | LX40, N33SX, PS Note                              | 119.0         |
| (4Meg/16Meg)           | Thinkpad 755 Oimm Modules                         | 89/19         |
| (4Meg/16 Meg w/Adap    | Thinkpad 755                                      | 174/38        |
| 60G0378 (8Meg)         | Thinkpad 350, 350c, PS Note 425                   | 119.0         |
| 60G0379 (16Meg)        | Thinkpad 350, 350c, PS Note 425                   | 199.0         |
| 4Meg/8Meg/16Meg        | Thinkped 365                                      | 119/219/42    |
| 92G7259 (4Meg)         | Thinkpad 701C, CS, Butterfly                      | 69.0          |
| 92G7261 (8Meg)         | Thinkpad 701C, CS, Butterfly                      | 1190          |
| 92G7263 (16Meg. 32Meg) | Thinkpad 701C, CS, Butterfly                      | 169/53        |
| 8Meg/16Meg             | Thinkpad 820                                      | 219/39        |
| 4Meg/8Meg/16Meg/32Meg  | Thinkpad 850                                      | 99/169/299/49 |
| 8Meg/16Meg/32Meg       | Thinkpad 760                                      | 129/199/Ca    |
| COM                    | MA MEMORY MORE                                    | FC            |

#### COMPAQ MEMORY MODULES

| Oeskpro 386S  | 1 Meg Module/4Meg Module<br>1Meg Board/4Meg 8oard                | 39/89<br>99/201                |
|---|--|--------------------------------|
| Oeskpra 386 25E/20E   | 1 Meg Module/4Meg Module<br>1 Meg 8oard/ 4 Meg Board             | 39/89<br>99/201                |
| Oeskpro 386/25, 20  | 1Meg Module/4Meg Module  | 79/129                         |
| Deskpro System Pro 386/33, 486/25, 486/50L<br>Deskpro 4/66I, 4/331, 4/25IS, 3733I, 3/25I            | 2/8/32Meg<br>2/4/8Meg  | 29/89/299<br>59/89/169         |
| Deskpro "M" Series<br>Deskpro 450, 466, 4100, 575, 590, 5120, 5133                                  | Expansion 8oard 0K<br>4/8/16/32Meg                               | 119<br>49/89/149/299           |
| Oeskpro XE 433S, 450, 466<br>Oeskpro XE 560 (pairs)   | 2/4/8Meg<br>4/8/16/32/64Meg                                      | 49/69/99<br>39/69/139/299/799  |
| Oeskpro XI.450, 466, XL560, xl566, XL575, 5100 xl<br>Presario 433, COS520, COJV520, COL524, COS526  | 590 4/8/16/32/64Meg  |                                |
| 660, COS660, COS720, COS724, COS744,<br>COS920, COTV920, 924, COS924, COS954                        | COS860   | 00001100200                    |
| Presario 400 Series, 600 Series, 800 Series<br>Presario COS774, COS972, COS982, COTV978, CO         | 4/8/16/32Meg   | 49/89/139/269<br>49/89/139/269 |
| COS992, 7152, 7170, 7180, 9546, 9548, 9   | 564  | ****                           |
| Prolinea 4/25S, 4/33, 4/33S, 4/50, 4/66, COS<br>Prolinea MT 4/33S, 4/50, 4/66, Enhanced 4/33S, 4/50 |  | 19/29/49/99<br>29/49/104/189   |
| Prolinea 450, 466, 4100, 575, 590, 5120, 575, 590, 575 mini, 5100 mini, 5133 mini                   | •  | 29/49/104/189                  |
| Proliant 1500 5/75, 5/100, 1500R 5/75, 5100<br>Prostonia 300, 575, 590, 500 5/90, 500 5/120         | Install in pairs) 4/8/16/32Meg<br>Install in pairs) 4/8/16/32Meg | 29/49/104/189<br>29/49/104/189 |
| Proliant 2000 486/50, 5/66, 5/90, 2000R 5/66, 5/90 (ii  | tall in pairs) 4/8/16/32<br>nstall in pairs) 4/8/16/32           | 29/49/104/189<br>29/49/104/189 |
| 4000 486/50, 5/66, 5/90, 5/100, 4000R 5/6<br>4500 5/100, 4500R 5/100                                | 6, 3/30, 3/100   |                                |

#### COMPAQ LAPTOPS & NOTEBOOKS

| Armaga 1100/4180            | SMeg/lameg             |            | 149/239        |
|-----------------------------|------------------------|------------|----------------|
| Elite 5000, 5200            | 8Meg/16Meg/32Meg/64Meg |            | 99/149/266/513 |
| LTE/386S/20                 | 4Meg Module            | 121125-002 | 79.00          |
| LTE LITE/20, 25, 25C        | 4Meg Module            | 129769-002 | 79.00          |
| LTE LITE/20, 25, 25C        | 8Meg Module            | 129769-003 | 119.00         |
| LTE LITE/20, 25, 25C        | 16Meg Module           | 129769-004 | 219.00         |
| LTE LITE 425C/33C/25E/25L   | 4Meg Module            | 142337-002 | 49.00          |
| LTE LITE 425C/33C/25E/25L   | 8Meg Module            | 142337-003 | 89.00          |
| LTE LITE 425C/33C/25E/25L   | 16Meg Module           | 142337-004 | 219.00         |
| SLT/386                     | 4Meg Module            | 118305-001 | 99.00          |
| Concerto, LTE Elite         | 4Meg                   | 144790-001 | 59.00          |
|                             | 8Meg                   | 144790-002 | 99.00          |
|                             | 16Meg                  | 144790-003 | 189.00         |
| Contura 320, 325            | 4Meg                   | 139498-001 | 99.00          |
|                             | 8Meg                   | 139499-001 | 109.00         |
| Contura 400, 410, 420, 430  | 4Meg/8Meg/16Meg        |            | 49/99/189      |
| Contura 4/25, 4/25C, 4/25CX | 4Meg                   | 146520-001 | 79.00          |
|                             | 8Meg                   | 146521-001 | 99.00          |
|                             | 16Meg                  | 146531-001 | 199.00         |
| Aero 4/25, 4/33             | 4Meg                   | 190532-001 | 69.00          |
|                             | 984aa/1584aa           | 100507-001 | 00/190         |

#### HARD DISK DRIVES

| SEAGA   | TE    |         | MAXTOR   |       | ¥       | WESTERN OIGITAL |       |
|---------|-------|---------|----------|-------|---------|-----------------|-------|
| 1.2 GIG | \$207 | 1.0 GIG | 7850 AV  | \$179 | 850M8   | AC2850          | \$180 |
| 2.1 GIG | 299   | 1.2 GIG | 71260 AV | 199   | 1 2 GIG | AC31200         | 229   |
|         |       | 1.6 GIG |          | 239   | 1.6 GIG | AC31600         | 259   |
|         |       | 2.0 GIG |          | 276   | 2.1 GIG | \$339 2.5 GIG   | \$389 |
| 114 000 |       | -       |          | 0 D 0 | NIO     | -               | 177   |

#### HARD DRIVES FOR LAPTOP & NOTEBOOK

| MBI                     |       | NEC UNIVERSAL FOR         |                                 |         |            |
|-------------------------|-------|---------------------------|---------------------------------|---------|------------|
| THINKPAO 355, 360, 370, |       | versa E V, M, P - 1.3 G/G | Versa E V. M. P - 1.3 G/G \$769 |         | NO LAPTOPS |
| 750, 755 - 810mg        | \$499 | 2.1 GIG                   | 889                             | 8 i 0mg | \$419      |
| 1.3 GIG                 | 786   | Versa 2000,4000 - 810mg   | \$499                           | 1.3 GIG | 769        |
| 2.1 GIG                 | 889   | 1.3 GIG                   | 768                             | 2.1 GIG | 849        |
| THINKPAD 760 - 1.3 GIG  | \$768 | TOSHIBA                   |                                 |         |            |
| COMPAD                  |       | 4700/4800 ~ 810mg         | \$499                           |         |            |
| LTE 5000,5100-810m      | Call  | 1.3 GIĞ                   | 786                             |         |            |
| 1.3 GIG                 | Call  | Tecra T700 - 810mg        | \$749                           |         |            |
|                         |       | 1.3 GIG                   | 829                             |         |            |

CUSTOMER SERVICE & TECHNICAL: OPEN M-F, 9-4 PST All products brand new & guaranteed • We buy excess inventory tered with their respective companies.



22825 Lockness Avenue • Torrance, CA 90501

SECURITY WILL 310-539-0019 FAX: 310-539-5844 CALL **CALL WINDOW** NOW OPEN

TOLL FREE

-800-43 (US and Canada)

ESTAB. 1985

Prices & Availability Subject to Change Without Notice

Mon-Fri, 8:00 a.m. to 5:00 p.m. PST Sat. 10:00 a.m. to 12:00 noon

★ CALL FOR NOTEBOOK AND LAPTOP BATTERIES ★ ★ Compaq, IBM, Toshiba, Epson, AST, TI and More!!

BATTERIES

LIFETIME

WARRANTY -

#### TOSHIBA LAPTOP MEMORY

| MO DEL.                                  | AMT. UPGRAGEO          | MANU PART# | PRICE          |
|--|------------------------|------------|----------------|
| Tecra 500/P650                           | 8Meg/16Meg/32Meg       |            | 119/239/459    |
| Tecra 700, 710, 720 (SDRAM)              | 8Meg/16Meg/32Meg       |            | 149/289/599    |
| Tecra 700, 710, 720                      | 818Meg/1.3Gig          |            | 729/819        |
| 72000SXE/220DSX/T1800, 1850, C           | 2Meg/4Meg/8Meg         | PC-PA2000U | 59/89/119      |
| 72100, 2105, 2150, 2155, 2110, 2115      | 4Meg/8Meg/16Meg/24 Meg |            | 69/109/189/249 |
| 74500, C, 74600, 74700, 71900, C, 71910, | 71950 (3.3 v) 8Meg     | PC-PA2012U | 69.00          |
| 74500, C, 74600, 74700, 71900, C, 71910, |                        | PC-PA2013U | 109.00         |
| (4500, C, T4600, T4700, T1900, C, T1910, | 4Meg/8Meg/16Meg        | PC-PA2014U | 199/349        |
| (73400CT, T2400, T3600                   |                        | PC-PA2019U | 89/119/179     |
| T600, 610, CT Edo                        | 8Meg/16Meg/32Meg       |            | 119/189/319    |
| T400CS, 400CDT, T108, 105 Edo            | 8Meg/16Meg/32Meg       |            | 119/189/319    |
|  | 000                    |            | 100            |

#### NOTEBOOK, LAPTOP MEMORY

| MOOEL   | AMT UPGRADED             | MANU. PART #   | 49/69/99   |
|---|--------------------------|--|--|
| ACER 763 765 793 794 786 787  | AMen/RMen/16Men          |  | 49/69/99<br>69/109/199<br>69/109/199<br>59/99/179<br>69/109/219<br>Call  |
| ACER 750  | 4Men/8Men/16Men          |  | 69/109/199   |
| ACER Note Pro. ACER Note Lite. 350. 35  | 5 4Meg/8Meg/16Meg        |  | 59/99/179  |
| ARM T\$38   | 4Meg/8Meg/16Meg          |  | 69/109/219   |
| AST Ascentia P30, P50   | 8Meg/16Meg/32Meg         |  | Call   |
| AST Ascentia 310, 330 350 8Meg  | /16Meg/32Meg/40Meg Kil   |  |  |
| AST Ascentia 900N, 800N, 810, 910   | 4Meg/8Meg/15Meg          |  | 79/129/219<br>99/189<br>79/219   |
| AST Reave & Evalures  | AMen/ISMen               | 501255.001 -002  | 79/719   |
| AST Notehook Prem Even 386SX/20/25/2  | 51 4Meg                  | 500814-003   | 69 00  |
| AST Power Exec 3/25C, 425EL, 425SL  | 4Meg/16Meg               | 501255-001, -002<br>500814-003<br>501166-001, -003<br>501318-001,002 | 69.00<br>79/189  |
| AST Power Exec 4/33SL   | 4Meg/16Meg               | 501318-001,002   | 79/189   |
| AT&T Globalyst 130, 200, 250  | 4Meg/8Meg/16Meg          |  | 79/119/219   |
| Austin UA4, UA2, SA2, SX Senes  | 4Man /PMan /76Man /76Man |  | 19/219   |
| Canno Innova Rook 150 175   | 4Meg/16Meg               |  | 69/179   |
| Canon Innova Book 200LS   | 4Meg/8Meg/16Meg/24Meg    |  | 69/99/219/349  |
| Canon Innova Book 350CD, 360, 475   | 8Meg/16Meg               |  | 109/189  |
| Canon Innova 486-10   | 4Meg/16Meg               |  | 79/219   |
| Compuadd 450ns, 4/5ns   | 4Meg/16Meg               |  | 79/189<br>79/189<br>79/199<br>79/219<br><b>Call</b><br>69/179<br>69/99/219/349<br>109/189<br>79/219<br>79/219<br><i>Call</i> |
| DEC Histore Litra Historia  | 4Meg/ameg/16Meg          |  | 60/100/180   |
| DEC HINGE VP 8  | Men/16Men/32Men/54Men    |  | 69/109/189<br>119/219/395/795<br>69/99/189   |
| Dell Lattitude LM (pairs)   | 4Meg/8Meg/16Meg          |  | 69/99/189  |
| Dell Lattitude LX 4100C, MX, MC, M  | 4Meg/8Meg/16Meg          |  | 69/99/189<br>69/99/189   |
| Dell Lattitude XPI  | 4Meg/8Meg/16Meg          |  | 69/99/189  |
| Only attende 496 425 4220 4220 450 4  | AMEG/AMEG/16 Meg         |  | 69/119/199   |
| Encor ActionNote 650, 4330, 4330A, 430, 43  | AMen/8Men/16Men          |  | 69/199<br>69/109/189<br>79/189   |
| Enson ActionNote 700, 700c, 700cx   | 4Meg/16Meg               |  | 79/189   |
| Epson ActionNote 880, 866c, 890   | 4Meg/8Meg/16Meg/20Meg    |  | 69/100/169/299   |
| Epson ActionNote 4LC/25, 4LC/33, 4SLC/  | 2-50, 4000 6Meg          |  | 119.00<br>89.00  |
| Everex Tempo LX, LX20, Carrier  | 2 Meg                    | PCA 00053-0001   | 89 00  |
| Fujttsu N85100  | 8Meg/16Meg/32Meg         |  | 219/399/599  |
| Fujitsu Mante Carles  | meg/ameg/10meg/32meg     |  | 219/399/339<br>29/189/399<br>69/199<br>159/759<br>69/199<br>79/109/199<br>149/249/399<br>13/279/516                          |
| Gateway 2000 Colorhook 4/33   | 4Men/16Men               |  | 69/199   |
| Gateway 2000 Nomad 425 OXL/SXL  | 4Meg/16Meg               |  | 159/759  |
| Gateway 2000 486 Handbook or Liberty  | 4Meg/16Meg               |  | 69/199   |
| Galeway 2000 Solo Series  | 4Meg/8Meg/16Meg          |  | 79/109/199   |
| Hilachi C-Series  | 8Meg/16Meg/32Mag         |  | 149/249/399  |
| HP Omolhook 300 480 425   | 2Mag/4Men                |  | 139/279/516<br>83/129<br>89/119/219<br>99/149/299  |
| HP Omnibook 530, 400, 425   | 4Men/RMen/12Men          |  | 89/119/219   |
| HP Omnibook 4000  | 4Meg/8Meg/16Meg          |  | 99/149/299   |
| HP Omnibaak 5000  | 8Meg/16Meg/32Meg         |  | 99/199/399   |
| Leading Edge Aviva 2000   | 4Meg/16Meg               |  | 99/199/399<br>79/219<br>79/119   |
| Lexmark SE10  | 4Meg/8Meg                | 286, 386SX   | 79/119<br>119.00   |
| Magnavox Melalis  | SS 4Mon/SMon/16Mon       | 200, 3003X   | 79/109/189<br>79/109/189<br>79/109/189<br>79/109/189<br>79/109/189<br>79/179/199<br>69/95/769<br>79/119<br>64/99/199/299     |
| Maducot Morm Fitte South SYN: DY2-50 DY4.75 DY4.16  | Med/RMed/16Med           |  | 79/109/189   |
| Midwest Micro Eitle Snithk Plus 05-75, 05-90  | 4Meg/8Meg/16Meg          |  | 79/109/189   |
| Mitsuba Ninja 11  | 4Meg/8Meg/16Meg          |  | 79/109/189   |
| Mitsubishi Apricol  | 4Meg/8Meg/16Meg          |  | 69/95/169  |
| NCR Safari 3180, 3181   | 4Meg/8Meg                | 0P4104   | 79/119   |
| NEC Varea S. Varea 2000C & 2000D  | 4 Meg/ameg/Tomeg/20Weg   | UF41U4   | 60/100/170   |
| NEC Versa 4000 4050/4080  | 4/8/16/32 Med            |  | 69/109/179<br>79/119/219/395<br>169/299/529/1050   |
| NEC Versa 6000  | 8/16/32/64Mea            |  | 169/299/529/1050   |
| Packard Bell 386SX, 286   | 4Meg                     | 286, 386SX   | 119.00<br>49/99<br>65/99/135<br>79/219   |
| Packard Bell Stalesman  | 2Meg/8Meg                |  | 49/99  |
| Panasonic CF380, CF480  | 2Meg/4Meg/6Meg           |  | 65/99/135  |
| Panasonic CF-V21P, CF-580   | 4Meg/16Meg               |  | 79/219   |
| Sanet Midern all modets   | Meg/RMeg/16Meg/32Meg     |  | 79/119/219/369<br>Call<br>89.00  |
| Sanvo 17/18 NB  | 2Mag                     | M8C-NBMEM2   | 89.00  |
| Sceptre Soundx, all models  | 4Meg/8Meg/16Meg          |  | 89/129/239<br>119/199/379<br>79/129<br>69/19   |
| Sharp 3030, 3070  | 8Meg/16Meg/32Meg         |  | 119/199/379  |
| Sharp 6/81, 6881, 6785, 6700, 6800, 67  | 41 2Mag/4Meg             |  | 79/129   |
| Sharp 8700, 8800, 8660, 7700, 7760  | 4Meg/16Meg               |  | 69/109/189   |
| Sharp 2010, 3020, 3050, 3060  | 4Man/8Mag/16Mag          |  | 69/109/189   |
| Sharp 9000, 9030  | 16Meg/32Meg              |  |  |
| Sharp 9040, 9070 (pairs)  | 4Meg/8Meg/16Meg/32Meg    |  | 69/129/265/525<br>140/719<br>109/219<br>219/399<br>59/99/169   |
| TI 4000, TI 4000E, TI 4000M   | 4Meg/16Meg               |  | 140/719  |
| TI 5000, 5100, 5200, 5300   | 8Meg/16Meg               |  | 109/219  |
| TI Extense 450 450* AEE AEET  | AMen/Phicolishian        |  | 279/399<br>EDIOD/150   |
| TI Friance 550 555 568 565 (noire)  | AMARIKMAN/16MAR          |  | 59/99/160  |
| Tandy 1510 2810 3810  | 1Meg                     |  | 59/99/169<br>59.00   |
| Tandy 2820, 3820, 3830  | 2Meg/4Meg/6 Meg          |  |  |
| Tulip, all models 4Meg/8.   | Meg/16Meg/32Meg/64Meg    |  | Call   |
| I winnead, Attima, Compudyne, 486SX, OX, Tand   | y 4860 4Meg/16Meg        |  | 89/219   |
| I Winnead Slimnote 5  | 4Meg/8Meg/16Meg          |  | 79/119/219<br>79/119/219<br>79/119/219   |
| Winhook XP  | 4Men/16Men/32Men         |  |  |
| Zens 386SX Notebook (not the a version)   | →wicur i uwicurozweg     |  | 49.00  |
| Zenith Master Sport 386SX   | 2Meg                     | ZA-300-1<br>ZA-4-4   | 49.00<br>69.00<br>69.00  |
| Zenith Master Sport SL, SLE, 600, 620, 6  | 25NL 2Meg                | ZA-4-4   | 69.00  |
| Zenith Z-Note 425LN, LNC, LNP   | 4Meg                     |  | 85.00  |
| Zentin Z -Note MX   | 4Meg/8Meg/16Meg          |  | 79/119/199   |
| MOOEL ACER 730, 725C, 76U, 18U ACER 730, 725C, 76U, 18U ACER 730, 755, 782, 784, 786, 787, ACER 750, 785, 782, 784, 786, 787, ACER 750, 785, 782, 784, 786, 787, ACER 750, 785, 782, 784, 786, 787, ACER 750, 782, 784, 786, 787, ACER 750, 782, 784, 786, 787, ACER 750, 784, 784, 784, 784, 784, 784, ACER 750, 784, 784, 784, 784, 784, 784, ACER 750, 784, 784, 784, 784, 784, 784, 784, ACER 750, 784, 784, 784, 784, 784, 784, 784, 784 | AMag/BMag/ISMag          |  | 59/119<br>59/109/169   |
| EVITAL E'SIGI EA  | amay/omay/rumay          |  | 03/103/103   |
|   |                          |  | _  |

#### PCMCIA VERSION 9 0

| FUNCIA VENSION 2.0               |       |                                     |       |  |  |  |
|----------------------------------|-------|-------------------------------------|-------|--|--|--|
| MODEL                            | PRICE | MODEL                               | PRICE |  |  |  |
| S-RAM Cards 1MEG                 | \$119 | 6X CD Rom                           | \$398 |  |  |  |
| S-RAM Cards 2MEG                 | 199   | BX CO Rom                           | 449   |  |  |  |
| 2B.B/14.4 Oata/Fax Modem         | 159   | SCSI Type II                        | 139   |  |  |  |
| 14.400/14.400 Oata/Fax Modern    | 59    | Audio Card                          | 149   |  |  |  |
| Readwriter Card (ISA Slot)       | 149   | Multimedia Combo, Sound/SCSI        | 499   |  |  |  |
| Lan Ethernet (Coax), (10 Base T) | 89    | Type III 340 Mg Hard Orive          | 479   |  |  |  |
| OR B Comm from Cimple w/Compline |       | Virgom Combo Ethornot - Madem It 20 |       |  |  |  |

FLASH RAM (ATA) — Works with Digital Cameras Kodak OC-50 & More 4 Meg-169 8 Meg-239 16Meg-399 20Meg & 40Meg-CALL NON ATA-CALI

#### LASER PRINTER MEMORY UPGRADES

| AMOUNT UPGRADED   | OK Ba       | 256k | 1        | 2         | 3          | 3.5 | 4   | 5          | 6 | 8   | 16  |  |
|---|-------------|------|----------|-----------|------------|-----|-----|------------|---|-----|-----|--|
| Brother 630, 631, 641, 645                              | **          | -    | 69       | 89        |            | -   | _   |            | - | -   | -   |  |
| Canon LBP 430   | _           | _    | 39       | -         | _          | -   | 49  | ***        | _ | -   | -   |  |
| Canon LBP 860, 1260                                     |             | -    | -        | 39<br>179 | -          | -   | 69  | -          | _ | 94  | 144 |  |
| Canon LBP4, 4Lite, 4plus                                | -           |      | 129      | 179       | -          | -   | -   | -          | - | -   | -   |  |
| Epson 6000, Action Laser                                | _           | -    |          | 129       | -          | -   | 229 | -          | _ | -   | -   |  |
| Epson Action Laser 1100, 1                              | 600 -       | _    | 69       | 70        | _          | -   | 99  | -          | - | 199 | 359 |  |
| Epson Action Laser II                                   | -           | -    | 74       | _         | 173<br>173 | -   | **  | 272<br>272 | - | _   |     |  |
| Epson 8000, 1800, 4000, 4100,                           | 4300 -      | -    | 69       | _         | 173        | -   | -   | 272        | - | -   | -   |  |
| Epson 1000, 1500, 5000, 52                              | 00 -        | _    | -        | 89        | -          | _   | 178 | - Gran     | - | _   | -   |  |
| HP 2, 2D-   | -           | -    | _        | 69        | _          | -   | 99  | ***        | - | _   | -   |  |
| HP 3, 30, 3P, 2P 2P+                                    | -           | -    | _        | 69        | -          | _   | 99  | -          | _ | _   | _   |  |
| HP 4, 4M, 4SI, 4SIMX                                    | _           | -    | _        | 49        | ***        | -   | 59  | ***        | - | 99  | _   |  |
| HP 4P, 4PLUS, 4MPm 1600, 1                              | GOOCHE      | _    | 19       | 49<br>29  | _          | -   | 49  | _          | _ | 89  | _   |  |
| HP 4L   | - 100000141 | _    | 34       | 23        | _          | _   | 45  | _          | _ | 05  |     |  |
| HP 3SI  | _           |      | 39       | -         |            | _   | 69  | _          | _ | 99  | _   |  |
| HP 5L   | _           | -    | 49       | 74        |            | _   | 89  | _          | _ | 199 | _   |  |
| HP 5P, 5MP, 4V, 4MV                                     | _           | _    | 19       | 39        | -          | _   | 49  | _          | _ | 89  | 124 |  |
| HP SP. SIMP, 4V, 4MV                                    | -           | -    | 19       | 39        | -          | _   | 49  | -          | _ | 69  | 139 |  |
| HP Design Jet 600, 650, 200                             | 0.500       | -    | -        | 39        | -          | -   | 49  | -          | _ | 89  | 139 |  |
| HP Deskjet 500, 500C, 519, 55                           | U, 200 —    | 34   | _        | -         | _          | _   |     | -          | - | -   | -   |  |
| HP Desket 1200C, 1200C/P                                |             | -    | -        | 39        | ***        | -   | 49  | -          | - | 89  | -   |  |
| HP Paintlet XL300                                       | 54          |      | -        | _         | -          |     | 69  | -          | - | 144 | 299 |  |
| 18M Laser 4019, 4019E                                   |             | -    | -        | -         | -          | 139 |     | -          | - | -   | -   |  |
| I8M Laser 4029, 4037                                    | _           | _    | -        | **        |            | -   | 89  | -          | _ |     | -   |  |
| 18M Laser 4039, 4079                                    | _           | ~    | -        | 60        |            | -   | 89  | -          | - | 189 | -   |  |
| Konica LP-3110, 3115                                    | _           | -    | 119      | 189       | 239        | -   | -   | -          | - | -   | _   |  |
| Lexmark Medley 4C, 4x, 4S                               | Х –         | -    | Call     | Call      | Call       | -   | 444 | -          | _ | -   | -   |  |
| Lexmark, Optra L, LX, R, R.                             | X -         | -    | -        | -         |            | -   | 59  |            | - | 94  | 139 |  |
| Lexmark Valuwriter 300,60                               | 0 -         | _    | 29<br>29 | 39        | -          | -   | 89  | -          | - | _   | -   |  |
| Lexmark Winwriter 200, 40                               | 0.600 -     | _    | 29       | 39        | -          | -   | 89  | -          | - | -   | _   |  |
| NEC 90, 290   | -           | ***  | -        | 89        | -          | -   | -   | -          | - |     | -   |  |
| NEC 95, 97  | _           | -    | -        | 89<br>79  | _          | -   | _   | -          | - | _   | _   |  |
| Oki 400   | _           | _    | -        | 79        | _          | _   | _   | _          | - | _   | -   |  |
| Oki 400E, 400EX, 410E, 410                              | DEX -       | _    | 89       | 109       | 169        | -   | 189 | -          | - | -   | _   |  |
| Oki 810E, EX, 600E, EX, 611                             | OF FX -     | -    | 29       | 39        | - 40       | _   | 79  | -          | - | 119 | 179 |  |
| Oki 830, 840  | on, no.     | -    | -        | 89        | ***        | -   | -   | _          | - | -   | -   |  |
| Oki 2350, 2450  | _           | -    | Call     | Call      | -          | -   | -   | _          | _ | _   | _   |  |
| Packard Bell PB 9500                                    | _           | _    | Oun      | 139       | _          | _   | 227 | _          | _ | -   | _   |  |
| Packard Bell 9815                                       | -           | _    |          | 139       | _          | _   | 229 |            | _ | _   | _   |  |
| Panasonic 4420/44501                                    | _           |      | -        | 99        |            | _   | 169 | _          | _ | _   | _   |  |
| Panasonic 4410/4430                                     | _           |      | _        | 89        |            | _   | 129 |            | _ | _   | _   |  |
| Danasaire 44 (W4430                                     | _           | _    | 89       | 03        | •          | _   | 129 | -          | - | _   | _   |  |
| Panasonic 4450  | _           | _    | 99       | 99        | _          | -   | 100 | _          | - | _   | -   |  |
| Panasonic 4400/5400                                     | -           | -    | 89       | 99        | -          | -   | 189 | -          | - | _   | _   |  |
| Panasonic 4440, 5410, 650                               | -           | -    | 79       | 99        | _          | -   | 159 | -          | - | _   | -   |  |
| Sharp 9400, 9460, 9600, 97<br>Sharp 9500, E. H. 9700, H | ruut -      | -    | 69       | 99        | -          | -   | 149 | eu.        | - | -   | -   |  |
| Snarp 9500, E. H. 9700, H                               | -           | -    | 79       | -         | -          | _   | 259 | -          | _ | -   | -   |  |
| TI XL/PS17/PS35   | -           | _    | 49       | _         | -          | -   | -   | -          | _ | _   | -   |  |
| II VOI SILLI 900  |             |      |          |           |            |     |     |            |   |     |     |  |
| Ti Microtaser Pro E, Powerpro, F<br>Ti Micrownter       | Prc 600 -   | -    | 89<br>79 | 129       | -          | _   | 189 | -          | - | 329 | -   |  |

# NAMES YOU KNOW. PRICES YOU'L



## Megahertz XJ4288

Built-in XJACK connector pops out to ok to a standard phone cord • Connect

llular phones th directnnect cables om Megahertz old separately) Modem ito-configures nen switching

m standard



cellular connections • Features Digital ne Guard to protect modem from high-Itage lines and Flash ROM for remote dates • Includes full-featured Fax orks Data V3.0 for Megahertz data/fax ftware for Windows

\$237.67

## COREL **VordPerfect**

uite 7 2-bit office uite, graph<mark>ics</mark>

nd Internet ower for indows 95

#### ull suite inclu<mark>des:</mark>

WordPerfect 7 ◆ Quattro Pro 7 Presentations 7 ◆ CorelFlow3, Sidekick , Dashboard 95, Envoy 7, AT&T orldNet Service software including etscape Navigator, 150 fonts, 10,000 part images and much more! \$93.15 CDW 70309

| grade CD        | 900410   | CDVV | 10003 |
|-----------------|----------|------|-------|
| grade 3.5" & CD | \$133.70 | CDW  | 69790 |
|                 | \$241.34 | CDW  | 70483 |
| " & CD          | \$274.38 | CDW  | 70484 |

#### **SENS 810** AMSUNG

120MHz or 133MHz tel\* Pentium\* processor 16MB EDO RAM andard, expandable to MB 🔺 1.3GB or

IGB hard disk drive 1.44MB floppy disk ive 🔺 6X CD-ROM ive A 12.1" activeatrix color display

28.8K bps odem (68419 only) 🔺 3-year warranty

омнz, 1.3**GB но \$4199.00** CDW 68417

**змн<sub>z</sub>, 2.1GB но \$4999.00** CDW 68419

#### WINDOWS® AND DOS SOFTWARE

| Adobe PageMaker V6.0 WIN 3,5/CD               | 552.71 |
|---|--------|
| Adobe PageMaker V6.0 WIN upg 3.5/CD           |        |
| Adobe Photoshop V3.0.5 WIN 3.5/CD             |        |
| Adobe Photoshop V3.0.5 WIN upg                |        |
| Adobe Triple Play V3.0 WIN                    | 608.30 |
| Adobe Type Manager V4.0 WIN CD                | 49.51  |
| Autodesk AutoCAD LT V2.0 WIN                  | 243,17 |
| Autodesk Generic CADD V6.1 DOS                | 62.36  |
| Borland C++ V5.0 CD                           | 327.72 |
| Borland Paradox V7.0 WIN                      |        |
| Borland Paradox V7.0 WIN upg                  | 115.03 |
| Borland Visual dBASE Professional V5.5        | 258.39 |
| Broderbund Print Shop Deluxe II               | 72.12  |
| Broderbund Print Shop Deluxe V2.0 WIN         | 48.68  |
| Caere OmniPage Pro V6.0 WIN upg               | 114.87 |
| Connectix RAM Doubler for WIN                 | 54.54  |
| Corel Gallery 2 WIN CD                        | 47.20  |
| Corel Office Professional WIN comp/vers upg C |        |
| Corel Quattro Pro V6.0 WIN CD                 | 61.84  |

**OmniPage** 

for Windows 95

**Broadcast** 

for Windows 95

CD \$19.33 CDW 74530

omedia FreeHand V5.0 WIN vers upg oft Mathcad V6.0 WIN ..... be VirusScan V2.2 DOS.... be VirusScan V2.2 WIN .....

V2.5 WIN NT

News

Version upg \$113.65 CDW 68064

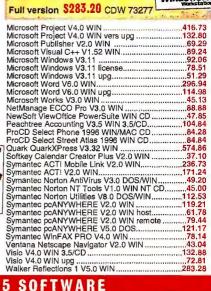
Full version \$459.12 CDW 68063

PointCast\*

Pro V7.0







# WINDOWS 95 SOFTWARE

|   | Arcada backup idi windows 95                     | .30.  | an |
|---|--|-------|----|
|   | Borland Delphi Developer V2.0 WIN95/NT upg       | .237. | 14 |
|   | Caere OmniForm V2.0 WIN95                        | .171. | 13 |
|   | Caere OmniPage Pro V7.0 WIN95 vers upg           |       |    |
|   | Claris FileMaker Pro V3.0 WIN95/WIN/NT upg       |       |    |
|   | Claris FileMaker Pro V3.0 WIN95/WIN/NT CD ,      |       |    |
|   | Corel Graphics Pack WIN95 CD                     | 92    | 00 |
|   | Corel Graphics Pack WIN95 CD                     | 241.  | 34 |
|   | Corel WordPerfect Suite V7.0 WIN95 upg 3.5/CD    | 133.  | 70 |
|   | Corel WordPerfect Sulte V7.0 WIN95 upg CD        | 93.   | 15 |
| i | CorelDRAW! V3.0 or V4.0 to V6.0 WIN95 upg CD     | 354.  | 02 |
|   | CoreIDRAW! V5.0 to V6.0 WIN95 upg CD             | 183.  | 47 |
|   | CorelDRAW! V6.0 WIN95 CD                         |       |    |
|   | Datastorm Procomm Plus V3.0 WIN95/WIN            | 122.  | 77 |
|   | Datastorm Procomm Plus V3.0 WIN95/WIN CD         |       |    |
|   | Datastorm Procomm Plus V3.0 WIN95/WIN upg .      | 68.   | 09 |
|   | Delrina CommSuite WIN95 CD                       | 95,   | 41 |
|   | Delrina WinFAX PRO V7.0 WIN95                    |       |    |
|   | Delrina WinFAX PRO V7.0 WIN95 CD                 | 76.   | 84 |
|   | Helix Hurricane V2.0 WIN95/WIN                   |       |    |
|   | Lotus Organizer 97 WIN95 CD                      |       |    |
|   | Lotus Organizer V2.1 WIN95                       |       |    |
|   | Lotus SmartSuite 96 WIN95 upg                    |       |    |
|   | Lotus SmartSuite 96 WIN95 upg CD                 | 138.  | 72 |
|   | McAfee VirusScan V2.0 WIN95                      | 44.   | 23 |
|   | Microcom Carbon Copy V3.0 WIN95                  | .,85. | 18 |
|   | Microsoft Access V7.0 WIN95                      | 296.  | 94 |
|   | Microsoft Access V7.0 WIN95 dev kit              |       |    |
|   | Microsoft Access V7.0 WIN95 upg                  | 94.   | 05 |
|   | Microsoft Bookshelf WIN95 CD                     | 44.   | 94 |
|   | Microsoft Encarta '96 World Atlas WIN95 CD       | 44.   | 94 |
|   | Microsoft FrontPage V1.1 WIN95                   |       |    |
|   | Microsoft Office Professional w/Access WIN95 upg |       |    |
|   | Microsoft Office Professional WIN95              |       |    |
|   | Microsoft Office Professional WIN95 CD w/Bkshelf | 539.  | 03 |
|   |  |       |    |
|   |  |       |    |

| Microsoft Office Professional WIN95 upg CD w/Bkshelf. |         |
|---|---------|
| Microsoft Office Std WIN95                            | 456.06  |
| Microsoft Office Std WIN95 CD                         | .461.57 |
| Microsoft Office Std WIN95 upg                        | 223.97  |
| Microsoft Office Std WIN95 upg CD                     | .229.31 |
| Microsoft Plusi WIN95                                 |         |
| Microsoft Plus! WIN95 CD                              |         |
| Microsoft Project WIN95                               | .421.73 |
| Microsoft Publisher CD Deluxe WIN95                   |         |
| Microsoft Small Business Financial Mgr WIN95          |         |
| Microsoft Visual Basic Pro V4.0 WIN95/WIN/NT CD.      |         |
| MS Visual Basic Pro V4.0 WIN95/WIN/NT comp upg CD.    |         |
| MS Visual Basic Pro V4.0 WIN95/WIN/NT vers upg CD     |         |
| Microsoft Visual Basic Std V4.0 WIN95/WIN/NT CD       |         |
| Microsoft Visual C++ Subscription WIN95               | 447.93  |
| Microsoft Visual C++ Subscription WIN95 upg CD        | 313.28  |
| Microsoft Windows 95                                  | 183.47  |
| Microsoft Windows 95 upg                              |         |
| Microsoft Windows 95 upg CD                           |         |
| Microsoft Word V7.0 WIN95 upg ,                       |         |
| Microsoft Works WIN95                                 | 45,13   |
| Ouarterdeck Clean Sweep V2.0 WIN95                    |         |
| Ouarterdeck OEMM V8.0 WIN95/WIN                       |         |
| Symantec Norton AntiVirus V2.0 WIN95                  |         |
| Symantec Norton AntiVirus WIN95                       |         |
| Symantec Norton AntiVirus WIN95 trade-up              |         |
| Symantec Norton Navigator WIN95 CD                    | 91.80   |
| Symantec Norton Navigator WIN95 trade-up              | 39,65   |
| Symantec Norton Utilities WIN95                       | .116.15 |
| Symantec Norton Utilities WIN95 trade-up              | 57.24   |
| Symantec Norton Your Eyes Only WIN95                  | 75.34   |
| Symantec pcANYWHERE V7.5 WIN95/NT upg                 | 81.79   |
| Symantec pcANYWHERE32 V7.5 WIN95/NT                   | .131.24 |
| Visio Technical V4.1 WIN95/WIN/NT                     |         |
| Vislo Technical V4.1 WIN95/WIN/NT upg                 | 135.67  |

#### Pentium® OverDrive® **Processors**



#### The ultimate PC upgrade

Upgrade path for upgradeble Pentium® processor-based systems

| Original Pentium®<br>Processor |   | Pentium OverDrive®<br>Processor Upgrade | Price    | CDW   |
|--------------------------------|---|---|----------|-------|
| 601 or 66MHz                   |   | 1201/133MHz                             | \$253.45 | 65937 |
| 75MHz                          |   | 125MHz                                  | \$253.45 | 65939 |
| 90MHz                          | • | 150MHz                                  | \$319.20 | 65940 |
| 100MHz                         | þ | 166MHz                                  | \$456.23 | 65943 |

#### PACKARD **HEWLETT® HP JetDirect EX Plus3 Print Servers**

◆ Install and manage any 3 parallel-port printers at any point on your

network • Fully compatible with all major network operating systems and protocols Provides support for up to 16 Novell\*

NetWare" file servers and 64 print queues SNMP agents for support of industry-standard network management applications ◆ Includes HP JetAdmin software for Novell NetWare, Windows 95, IBM LAN Server, and UNIX"

◆ 3-year, return-to-HP warranty ◆ Compatible with most HP printers

**Ethernet** ...... **\$461.84** CDW 54928

RJ-45, BNC and 3 parallel connections

Token Ring...... \$509.79 CDW 54927

RJ-45, DB9 and 3 parallel connections

## ViewSonic® 17GS monitor

#### Advanced features at an affordable price

- ♦ 17" flat square CRT
- .27mm dot pitch ◆ Up to 86Hz refresh rate at 1024 x 768
- ◆ 1280 x 1024 maximum resolution • Plug and Play (PnP) compliant (requires DDC-compatible video card) MPR-II and Energy Star'

compliant



\$616.79 CDW 54350

**CDW**® sells for less and services you better!™

800-865-4239<sub>(4CDW)</sub>





# POWERFUL NEW



#### **AST Bravo MS**

**Practical business computing** solution with unparalleled value





| Model | CPU            | RAM  | Hard Orive | Price     | CDW   |
|-------|----------------|------|------------|-----------|-------|
| 5100  | 100MHz Pentium | 16MB | 1.2GB      | \$1399.54 | 66976 |
| 5100  | 100MHz Pentium | 16MB | 2.1GB      | \$1543.36 | 66977 |
| 5133  | 133MHz Pentium | 16MB | 1.2G8      | \$1654.48 | 66979 |
| 5133  | 133MHz Pentium | 16MB | 2.1GB      | \$1707.60 | 66980 |

|       | AST Bravo WS desktop computers |      |            |        |           |       |  |  |  |
|-------|--------------------------------|------|------------|--------|-----------|-------|--|--|--|
| Model | CPU                            | RAM  | Hard Drive | CD-ROM | Price     | CDW   |  |  |  |
| 5100  | 100MHz Pentium                 | 16MB | 1,2GB      | _      | \$1377.41 | 66967 |  |  |  |
| 5100  | 100MHz Pentium                 | 16MB | 2.1GB      | -      | \$1488.05 | 66968 |  |  |  |
| 5133  | 133MHz Pentium                 | 16MB | 1.2GB      | _      | \$1499.11 | 66970 |  |  |  |
| 5133  | 133MHz Pentium                 | 16MB | 2.1GB      | -      | \$1609.74 | 66971 |  |  |  |
| 5166  | 166MHz Pentium                 | 16MR | 2 1GB      | 6Y     | \$2052.28 | 66073 |  |  |  |

#### **HP Vectra 500 Series**

- 100MHz, 120MHz or 133MHz Intel
  Pentium processors 8MB RAM
   850MB or 1.28GB hard drives Selected models include 28.8K bps data/fax modems and CD-ROM drives Windows 95
- Pre-installed software: ClarisWorks; Lotus Organizer; Adobe Acrobat and more!



## **HP Vectra 500 Series PCs**

#### The best PCs for small business

Hewlett Packard Vectra 500 Series PCs give you the power of Pentium<sup>®</sup> processors, the ease and versatility of Windows' 95, the convenience of a built-in 28.8K bps modem (515CCx, 515MCx), Microsoft productivity software and the unmatched reliability of Hewlett Packard products. No matter what your business, there's an HP Vectra 500 Series PC to meet your needs.

- Intel\* Pentium\* processors RAM: 16MB standard, 128MB maximum ■ 1.28GB or 1.62GB EIDE hard drive ■ 6X CD-ROM drive
- S3 Trio64 graphics with 1MB DRAM standard, 2MB maximum
- 28.8K bps data/fax modem with answering machine and speakerphone (515CCx, 515MCx) ■ Pre-installed Windows\* 95
- Pre-installed software: Microsoft\* Office Professional with Bookshelf; Microsoft Publisher; Microsoft Plus! Companion for Windows 95; HP Discover; HP Help; HP Printer Ready; Microcom Carbon Copy Host for HP Remote Support; Cheyenne BitWare (515CCx, 515MCx)

1-year on-site warranty







Monitor sold separately

|            | Hewlett Packard Vectra 500 Series PCs |      |                   |        |           |       |  |  |  |  |
|------------|---------------------------------------|------|-------------------|--------|-----------|-------|--|--|--|--|
| Desktop    | CPU                                   | RAM  | <b>Hard Drive</b> | CD-ROM | Price     | CDW   |  |  |  |  |
| 510CD      | 120MHz Pentium                        | 16MB | 1.28GB            | 6X     | \$1616.99 | 72888 |  |  |  |  |
| Mini-tower | CPU                                   | RAM  | Hard Drive        | CD-ROM | Price     | CDW   |  |  |  |  |
| 515CCx     | 120MHz Pentium                        | 16MB | 1.28GB            | 6X     | \$1819.45 | 72890 |  |  |  |  |
| 515CD      | 133MHz Pentium                        | 16MB | 1.62GB            | 6X     | \$1828.75 | 72891 |  |  |  |  |
| 515MCx     | 133MHz Pentium                        | 16MB | 1.62GB            | 6X     | \$2064,29 | 72892 |  |  |  |  |
| 515MCx     | 150MHz Pentium                        | 16MB | 1.62GB            | 6X     | \$2174.31 | 72893 |  |  |  |  |
| 515MCx     | 166MHz Pentium                        | 16MB | 1.62GB            | 6X     | \$2353.19 | 72894 |  |  |  |  |



The Intel Inside\* Logo and Pentium\* are Registered Trademarks of Intel Corporation



Visit our web site! /ww.cdw.com

# DESKTOP OPTIONS

# COMPAQ **PRESARIO**



## **NEW AT CDW!**

#### Special Features:

- ▲ Easy Access Buttons offer quick access to the audio CD player, speakerphone, phone messages, SmartQ help and energy-saving sleep mode functions
- Amazing sight, sound and motion with JBL Pro speakers and full-motion MPEG support
- ▲ Fast online access with a 33.6K bps data/fax modem



Monitor sold separately

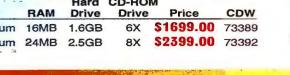
| Deskto         | p . CPU        | RAM         | Hard<br>Drive | CD-RO           | M<br>Price | CDW   |
|----------------|----------------|-------------|---------------|-----------------|------------|-------|
| 4112           | 120MHz Pentium | 16MB        | 1.6GB         | 6X              | \$1499.00  | 73385 |
| 4122           | 150MHz Pentium | 16MB        | 2.5GB         | 8X              | \$1899.00  | 73386 |
| Mini-<br>tower | CPU            | RAM         | Hard<br>Drive | CD-ROI<br>Drive | M<br>Price | CDW   |
|                |                |             |               |                 | 04000 00   |       |
| 4704           | 133MHz Pentium | <b>16MB</b> | 1.6GB         | 6X              | \$1699.00  | 73389 |



\$1299.00 CDW 72133

\$1399.00 CDW 72137

Monitor sold separately





#### Touch new worlds of power with IBM's Aptiva

All Aptiva models come with a host of advanced telephony capabilities that include a phone answering

system, voice mail with remote access, full-duplex speakerphone and more. Aptiva's Total Image Video provides full screen, full motion MPEG playback for remarkably sharp video images and TheatreSound produces powerful "CD-quality" sound from two amplified stereo speakers.

Monitor sold separately

■ Intel\* Pentium\* processors: 133MHz (C33), 166MHz (C65), 200MHz (C73) ■ 16MB RAM standard, expandable to 128MB ■ 1.6GB (C33), 2GB (C65) or 2.5GB (C73) hard drive ■ 8X CD-ROM drive ■ 2MB video memory standard ■ 28.8K bps data/fax/voice modem ■ Windows\* 95 software 3-year limited warranty with 1-year on-site repair

Aptiva C65 \$2449.00 CDW 73084 \$2899.00 CDW 73085 Aptiva C73.....

### PC 340 Series

#### **Exceptional value with** Pentium processor power

IBM PC 340 systems provide an excellent combination of price and performance. Whether used as a single, stand-alone system or in a LAN environment, the PC 340 delivers the speed and solid functionality needed for off-theshelf or customized applications.

■ 100MHz or 133MHz Intel\* Pentium\* processor 16MB EDO RAM standard, expandable to 128MB Optional 256KB Level 2 cache 1.2GB EIDE hard disk drive Software: Windows\* 95, NetFinity and Easy Tools network management tools Lotus SmartSuite license 3-year limited warranty

\$1389.16 CDW 71857 PC 340 100MHz Pentium .....

■ 100MHz Pentium ■ 8MB RAM ■ 850MB hard drive

■ DOS/Windows V3.1

The Intel Inside\* Logo and Pentium\* are Registered Trademarks of Intel Corporation

CDW® sells for less and services you better!™

800-865-4239 (4CDW)

configuration of your

pentium

new PC purchase from CDW®!



# POWERFUL MOBILE



# TOSHIBA HURRY! Quantities are limited!

#### Satellite 110CS and 110CT

The affordable, value-packed mobile computing solution

100MHz Intel Pentium\* processor ◆ 8MB EDO RAM standard. upgradeable to 40MB ◆ 810MB

hard drive • 11.3" dual-scan (110CS) or active-matrix (110CT) SVGA color display

110CS 110CT \$1939.75

CDW 70247 CDW 70248

## Portege 620CT

Ultra-portable multimedia-to-go

- ◆ 100MHz Intel Pentium\* processor
- ◆ 8MB EDO RAM standard, expandable to 40MB • 1.2GB hard disk drive
- ◆ 1.44MB, 3.5" floppy disk drive
- ◆ 10.4" TFT active-matrix color display ◆ 4.8 lbs.

CDW 74664



#### **Satellite Pro** 420CDS and **420CDT**

pentium

◆ 100MHz Intel Pentium\* processor

◆ 8MB EDO RAM standard, upgradeable to 40MB ◆ 810MB (420CDS) or 1.26GB (420CDT) hard drive Internal 6X CD-ROM drive, swaps with standard 1.44MB floppy drive • 11.3" dual-scan (420CDS) or

TFT active-matrix (420CDT) SVGA color display

420CDS

**420CDT** 

\$2472.85 CDW 70245

\$3267.89 CDW 70246



#### Tecra 500CS and 500CDT

◆ 120MHz Intel Pentium® processor ◆ 16MB EDO RAM standard, upgradeable to 144MB

◆ 1.26GB hard drive ◆ Internal 6X CD-ROM drive, swaps with standard 1.44MB floppy drive (500CDT) ◆ 12.1" dual-scan (500CS) or TFT active-matrix (500CDT) SVGA color display

◆ Integrated 28.8K bps fax/modem

500CS \$3657.56 CDW 70242

500CDT \$4519.30 CDW 70243

## Portege 650CT

Ultra-portable multimedia-to-go

◆ 133MHz Intel Pentium\* processor ◆ 16MB EDO RAM standard, upgradeable to 80MB

◆ 1.26GB hard drive ◆ External 1.44MB floppy drive ◆ 11.3" TFT active-matrix SVGA color display • Integrated 28.8K bps fax/modem

\$4339.19 CDW 70244



## Tecra 730CDT

◆ 150MHz Intel Pentium\* processor

◆ 16MB EDO RAM standard, expandable to 144MB ◆ 2GB removable hard drive, 3.5" 1.44MB floppy drive ◆ 6X CD-ROM drive

◆ 12.1" TFT active-matrix color display

◆ Integrated 28.8K bps (V.34) modem

\$6002.37 CDW 73155 Tecra 720CDT

◆ 133MHz Intel Pentium\* processor

◆ 16MB RAM ◆ 1.2GB hard drive

\$5289.11 CDW 66319



#### TOSHIBA NOTEBOOK OPTIONS

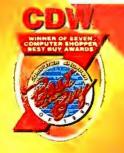
|                          | Tecra 500      | Tecra 700              | 100CS/110              | 610CT                  | 650CT                  | 420CS/CDT              |
|--------------------------|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| 8MB RAM upgrade          | \$129.93/71251 | \$153.77/61421         | <b>\$204.97</b> /56319 | <b>\$204.97</b> /56319 | \$129.93/71251         | \$204.97/56319         |
| 16MB RAM upgrade         | \$229.98/71633 | <b>\$271.61</b> /61422 | \$569.21/57173         | \$569.21/57173         | <b>\$229.98</b> /71633 | \$569.21/57173         |
| 32MB RAM upgrade         | \$419.90/71634 | \$506.10/65436         | \$671.98/56792         | \$671.98/56792         | _                      | <b>\$671.98</b> /56792 |
| AC adapter               | _              | \$116.48/62056         | _                      | \$69.86/56400          | \$69.86/56400          | _                      |
| Lithium Ion battery pack | \$221.86/71637 | \$248.02/62025         | _                      | \$229.03/56414         | <b>\$223.53</b> /71675 | \$197.80/57484         |
| NiMH battery pack        |                | _                      | \$223.13/62734         | _                      | _                      | _                      |
| Battery pack recharger   | \$275.04/71638 | \$329.25/62357         | \$145.26/52122         | \$265.89/33641         | \$299.97/71676         | \$284.00/58012         |
| Desk Station V Plus      | \$829.12/68691 | <b>\$829.12</b> /68691 | _                      | _                      | \$829.12/68691         | _                      |
| NoteDock Enhanced        |                |                        |                        |                        |                        |                        |
| Port Replicator          | <u> </u>       | _                      | \$343.68/64604         |                        |                        | \$343.68/64604         |

NoteDock II Enhanced Port Replicator \$531.88/69168

\$531.88/69168

\$531.88/69168

The Intel Inside\* Logo and Pentium\* are Registered Trademarks of Intel Corporation



Visit our web site! ww.cdw.com

# COMPUTING SOLUTIONS

#### **Ascentia P** Series

personal notebook

✓ Intel Pentium\* processor ✓ RAM: 8MB, 16MB or 24MB

standard, expandable to 40MB 🗸 1GB, 1.2GB or 2.1GB removable hard drive ✓ SmartBay houses a 4X or 6X CD-ROM drive, interchangeable with a floppy drive or optional Lithium ion battery 11.3" pentium

dual-scan (CSS models), 11.3" active-matrix (CTS11 models) or 12.1" active-matrix (CTS12 models) SVGA color display ✓ 28.8K bps data/fax internal modem (P40, P50 CTS12 models only)

| Model     | CPU    | RAM  | <b>Hard Drive</b> | CD-ROM | Price     | CDW   |
|-----------|--------|------|-------------------|--------|-----------|-------|
| P30 CSS11 | 100MHz | 8MB  | 1.2GB             | 4X     | \$2596.09 | 65839 |
| P40 CTS11 | 120MHz | 16MB | 1GB               | 6X     | \$3287.93 | 73028 |
| P40 CTS11 | 120MHz | 16MB | 2.1GB             | 6X     | 3749.59   | 73029 |
| P50 CTS12 | 133MHz | 24MB | 1GB               | 6X     | \$4217.73 | 73030 |
| P50 CTS12 | 133MHz | 24MB | 2.1GB             | 6X     | \$4676.95 | 73032 |



ThinkPad® 365ED

The speed and value you need in a full-size,

multimedia notebook computer

✓ 100MHz 5x86C CPU ✓ 8MB RAM standard, expandable to 24MB <a> 540MB</a> hard drive ✓ Integrated 4X CD-ROM drive ✓ External 3.5", 1.44MB floppy disk drive ✓ 10.4" dual-scan color display ✓ Pre-loaded Windows\* 95 ✓ 6.4 lbs. ✓ 1-year warranty with International Warranty Service'

PRICE DROP! ThinkPad 365ED with 4X CD-ROM

\$2537.28

CDW 73202

SPECIAL

**PURCHASE!** 

IBM

ThinkPad

365ED

✓ 100MHz 5x86C CPU

✓ 810MB hard drive

✓ 4X CD-ROM drive ✓ 10.4" active-matrix

✓ 16MB RAM

\*Lotus SmartSuite 96 CD-ROM included with all IBM ThinkPads shipping with the Windows' 95 operating system. Diskette copies and hard copy documentation can be ordered for a fee through the IBM fullfillment center at 800-672-6165.



#### **TravelMate** 6020 and 6030

◆ 120MHz or 133MHz Intel Pentium\* processor ◆ 8MB or 16MB EDO RAM standard, upgradeable to 72MB ◆ 1.08GB or 1.35GB hard disk drive • Optional integrated 6X CD-ROM drive ◆ 11.3" (6020) or 12.1" (6030) TFT active-matrix SVGA color display ◆ 28.8K bps PC Card modem

TravelMate 6020 \$4041.95 CDW 70835 TravelMate 6030

\$4806.26 CDW 70837

pentium

## Extensa 555

CALL for the new

TravelMate 6050:

#### Optimal performance at an industry-leading price

- ◆ 75MHz Intel Pentium\* processor • 8MB RAM standard, expandable
- to 40MB 524MB hard drive
- Removable 1.44MB 3.5" floppy disk drive, interchangeable with optional 4X CD-ROM drive ◆ 10.4" dual-scan color ◆ Software: Microsoft\* Windows\* 95, Microsoft Works, Lotus Organizer, Quicken SE and more!

1-year limited warranty

CDW 74366



## COMPAQ Armada 1100

A winning combination of features

◆ 100MHz Intel Pentium<sup>®</sup> processor

♦ 8MB RAM standard, expandable to 24MB ◆ 810MB hard disk drive ◆ 10.4" dual-scan (1120) or TFT active-matrix (1120T) color display ◆ 32-bit

PCI local bus graphics ♦ 1-year worldwide limited warranty

pentium

\$1888.23 CDW 71110 1120T \$2208.02 CDW 71111



### Versa 6000 Series

- ◆ 100MHz or 133MHz Intel Pentium<sup>5</sup> processor
- ◆ 16MB RAM standard, expandable to 48MB
- ◆ 1.08GB, 1.35GB or 1.44GB hard drive ◆ Includes 1.44MB floppy drive, 6X CD-ROM ◆ 11.3" or 12.1" TFT active-matrix color display ◆ Supports full-screen, full-motion MPEG video (6000H, 6030H) ◆ Cellularready 28.8K bps data faxmodem

♦ 6.9 lbs. ♦ 3-year limited warranty

COMPUTER



**6030X** 133MHz, 1.44GB, 12.1" **\$5399.00** CDW 69808

6000H 100MHz, 1.08GB, 11.3" \$3999.00 CDW 69805 **6030H** 133MHz, 1.35GB, 12.1" **\$4999.00** CDW 69807

The Intel Inside' Logo and Pentium' are Registered Trademarks of Intel Corporation

configuration of your new notebook purchase from CDW®!

CDW® sells for less and services you better!™

800-865-4239<sub>(4CDW)</sub>





▲ One platform for e-mail, file server, databases and

communications A Integrates seamlessly with existing systems, including NetWare Built-in Internet, Intranet and communications services Includes web services: FrontPage and Internet Information Server Distributed on CD-ROM

Call your CDW Account Executive for Microsoft Windows NT

Server V3.51 and other V4.0 configuations!



# WHY RETAIL?

# CDW Sells For Less!

DATA STORAGE

iomega

SONY

SyQuest

 EZ135 135MB IDE internal
 119.23

 EZ135 135MB SCSI external
 119.23

 EZ135 135MB external
 119.23

 EZ135 135MB cartridge
 19.45

 EZFlyer 230MB SCSI external
 291.47

 EZFlyer 230MB external
 291.47

 EZFlyer 230MB cartridge
 29.18

MULTIMEDIA

Jaz drive 1GB internal SCSI-2 . Jaz drive 1GB external SCSI-2 . Jaz drive 1GB cartridge . . . . . .

SDT-5200 DDS-2 DAT internal. SDT-5200 DDS-2 DAT external . SDT-5000 DDS-2 DAT internal . SDT-5000 DDS-2 DAT external . SDT-7000 DDS-2 DAT internal.

#### MICROTEK

ScanMaker E6 Capture lifelike color at a real-life price

♦ 600 x 1200 dpi optical, 4800 dpi interpolated resolution ♦ Single-pass scanning ♦ 30-bit color ♦ 8 x 13 scan area ♦ Includes: Image Pals 2 Go, OmniPage LTD and ScanWizard

E6 Standard w/PhotoImpact

\$526.07 CDW 72263 E6 Pro w/full Photoshop

\$695.10 CDW 65671

#### ScanMaker E3

676.90 788.58 843.63

◆ 300 x 600 dpi optical resolution ◆ Single-pass scanning ◆ 24-bit color ◆ Includes PhotoImpact SE. Image Pals 2 Go, OmniPage LTD and ScanWizard

**New lower price! \$349.81** CDW 72264

#### PERIPHERALS AT DISCOUNT PRICES HARDWARE,

## NETWORKING PRODUCTS Novell 5-user CD 10-user CD 25-user CD 50-user CD 3231.25 4509.48 100-user CD NetWare 3.12 5-user 3.5" 1574.17 2325.28 10-user 3.5" 25-user 3.5" 50-user 3.5 3231.25 4509.48 100-user 3.5" 100-user 3.5" 4509.48 GroupWise V4.1 Multilingual client/admin CD 471.75 Single-user license 93.91 5-user CD 487.29 25-user CD 2337.53 ManageWise V2.0 10-user CD 875.62 875.62 LAN WorkPlace V5.0 Single-user CD. 10-user CD. 100-user CD. 4678.57 Microsoft BackOffice Server V2.0 Version upg CD Comp upg CD Full version CD -5-client license Windows NT Server V3.51 Server CD 1591.06 1958.91 MICrosoft Systems Mgmt Server V1.1 SMS Server CD . 579.18 SMS Server upg CD . 583.18 Single-client license . 48.14 20-client license . 716.04 Microsoft SNA Server V2.11

 SNA Server CD.
 359.59

 Single-client license
 55.37

 20-client license pack
 861.40

 20-client license pack
 861.40

 Microsoft Exchange Server V4.0

 Server + 5-client license CD
 889.76

 Server + 10-client license CD
 1218.21

 Server + 25-client license CD
 1905.20

3Com

| SOFTWARE & PEI  |
|---|
| NETWORKING PRODUCTS   |
|   |
| SuperStack II Hub 24-port 10BT  |
| Artisoft  |
| LANtastic V7.0   Starter kit 3.5* + CD   245.54   |
| 4 shared ports, unlimited users   |
| Bay Networks BayStack 12-port hub 10BT  |
| COMPAQ  |
| Netelligent 10BT PCI controller   |
| int <sub>e</sub> l.   |
| EtherExpress PRO/10+ PCI combo  |
| <b>DLINKSYS</b>   |
| Combo Ether16 LAN card.       35.39         Combo EtherPCI LAN card.       79.54         Combo PC/Ethernet card 10BT       105.71         PC Card LANmodem 10BT       339.85         EtherFast 10/100BTX LAN card       104.92         EtherFast 100BTX 12-port hub       1093.74 |
| SMC*  |
| EtherEZ 5T 10BT hub       86.00         EtherEZ 8TC 10BT hub       151.97         EtherEZ 16TC 10BT hub       344.12         EtherEZ 10BT ISA       92.03         EtherEZ 10BT ISA 5-pack       372.03         EtherPower 10BT PCI       117.39                                   |

| 59.70<br>. 190.00<br>. 147.00<br>. 181.93 | 86.00<br>. 151.97<br>. 344.12<br>. 92.03<br>. 372.03<br>. 117.39<br>. 139.36<br>. 499.02<br>. 858.25 | 35.39<br>79.54<br>105.71<br>339.85<br>104.92<br>1093.74 | . 139.71<br>. 591.23<br>. 131.64<br>. 592.28<br>. 1516.05<br>. 3185.23<br>. 606.15<br>. 1805.17 |
|---|--|---|---|
| Lo<br>Mi<br>Mi<br>Pla<br>Ur<br>Vis<br>Vis | Ep<br>He<br>He<br>Ko<br>Ko<br>Lo<br>Lo   | Ali<br>Ca<br>Ca<br>Ep                                   | NE NE Su  |

| MULTIMEDIA  |
|---|
| ADS TV Superscan 2 PC to TV converter 292.20 Connectix QuickCam for Windows 98.05 Connectix Color QuickCam for Windows 209.44 EXP 8X CD w/game port PCMCIA 733.30 EXP 8X CD w/sound module PCMCIA 859.51 Microsolutions 4X CD parallel 219.67 Microsolutions 6X CD w/sound parallel 359.58 Microsolutions 6X CD parallel 359.58 Microsolutions 8X CD parallel 337.55 NEC 4x4 4X CD 4-disc changer internal 99.00 NEC 4Xc 4X CD 7-disc changer external 342.15 NEC 6Xi 6X CD internal 1DE 153.71 NEC 8V 8X CD internal 1DE 153.71 NEC 8Xi 8X CD internal SCSI-2 449.51 Panasonic portable 4X CD SCSI 399.00 Sony portable 4X CD Discman 347.46 SunMoonStar 6X CD portable 259.37 SunMoonStar 8X CD internal IDE/ATAPI 161.12 SunMoonStar 8X CD portable 271.88   |
| INPUT DEVICES   |
| III OI DETICES  |
| Alps Desktop GlidePoint 61.58 Alps GlidePoint Windows 95 keyboard 87.19 Calcomp Drawing Slate II 6x9 wypressure pen 179.94 Calcomp Drawing Slate II 12x12 wypressure pen 199.95 Epson PhotoPC digital camera 499.00 Epson ActionScanning System II 403.27 Epson ES1000C color scanner 539.86 Epson ES1000C Pro color scanner 134.01 Hewlett Packard ScanJet 4p 468.08 Howlett Packard ScanJet 4p 468.08 Howlett Packard ScanJet 4p 468.08 Howlett Packard ScanJet 4c 894.09 Kodak DC20 Digital Science Camera 229.00 Kodak DC20 Digital Science Camera 599.00 Logitech MouseMan 96 49.17 Logitech Cordless MouseMan 67.44 Logitech TrackMan Marble 75.51 Logitech TrackMan Livel cordless pointer 109.40 Logitech PageScan color scanner 297.71 Microtek PageWiz compact scanner 114.69 Microtek ScanMaker E3 color flatbed 349.81 Play Snappy video still capture 165.92 Umax Vista-S-6E SOHO scanner 796.86 Visioneer PaperPort Vx scanner 297.24 |
| MONITORS  |
|   |

|                | MC   | ONI.         | TOF   | S   |       |        |
|----------------|------|--------------|-------|-----|-------|--------|
| Mag Innovision | DX15 | 5 <b>9</b> 5 | PnP   | 15" | .28mm | 359.58 |
| Mag Innovision | DX17 | 795          | PnP   | 17" | .26mm | 612.61 |
| Mag Innovision | DX15 | 5 <b>T</b> 1 | 5" .2 | 6mi | n     | 394.49 |

| MONITORS                                      |
|---|
| Mag Innovision DX17T 17" .26mm 668.51         |
| Mag Innovision MXP17F 17* .26mm 713.22        |
| Mag Innovision MX21F 21" .28mm 1484.25        |
| Magnavox CM2099 14" .28mm 244.24              |
| Magnavox CM2015 15" .28mm 324.88              |
| Magnavox CM1215 15" .28mm 342.50              |
| Magnavox CM4018 17" .28mm 599.50              |
| Magnavox 20CM64 20" .31mm 924.01              |
| NEC C400 14" .28mm 308.75                     |
| NEC XV15+ 15" .28mm 473.13                    |
| NEC M500 15" .25mm                            |
| NEC XV17+ 17" .28mm 799.84                    |
| NEC XE21 21" .28mm 1711.15                    |
| NEC XP21 21" .28mm 1943.57                    |
| Samsung 17GLI 17" .28mm ,                     |
| Samsung 17GLsi 17" .26mm 929.00               |
| Sony Multiscan 15sx 15" PnP .25mm 395.63      |
| Sony Multiscan 15sfll 15" PnP .25mm 469.90    |
| Sony Multiscan 17sfll 17" PnP .25mm 775.83    |
| Sony Multiscan 17sell 17" PnP .25mm 976.41    |
| Sony Multiscan 20sfll 20" PnP .30mm . 1635.53 |
| ViewSonic 15GS 15" .27mm 385.06               |
| ViewSonic 17GS 17" .27mm 616.79               |
| ViewSonic G810 21" .25mm                      |
| ViewSonic P810 21" .25mm 1579.50              |
| ViewSonic P815 21" .25mm 1858.06              |
| ViewSonic PT810 21" .30mm 1632.17             |

| ATI 3D Xpression PCI 2MB 147.90 ATI Graphics Xpression PCI 2MB 94.71 ATI Graphics Xpression ISA 2MB 95.93 ATI Graphics Pro Turbo PCI 2MB 223.72 ATI Graphics Pro Turbo PCI 4MB 315.66 ATI Video Xpression PCI 2MB 116.69 |
|--|
| Diamond Stealth64 2120 PCI 1MB   |
| OVERDRIVE PROCESSORS   |



| Intel OverDrive DX4//5                            | 138.50 |
|---|--------|
| Intel OverDrive DX4/100                           | 178.74 |
| Intel OverDrive Pentium 63MHz                     | 138.66 |
| Intel OverDrive Pentium 83MHz                     | 189.27 |
| htel OverDrive Penium 120/133MHz upg for 560, 566 | 253.45 |
| Intel OverDrive Pentium 125MHz upg for 5/75.      | 253.45 |
| Intel OverDrive Pentium 150MHz upg for 5/90.      | 319.20 |
| Intel OverDrive Pentium 166MHz upg for 5/100.     | 456.23 |
|   |        |

| PC CARDS                                    |        |
|---|--------|
|   |        |
| 3Com Etherlink IIIC                         | 138.55 |
| 3Com Etherlink III 28.8 Enet 10BT           | 414.30 |
| Adaptec APA1460 SCSI-2                      | 165.15 |
| Hayes EZJack V.34 33.6 w/fax                | 225.38 |
| IBM Ethernet adapter 10BT                   | 122.07 |
| IBM 28.8 data/fax modem                     |        |
| IBM Token Ring 16/4                         | 297.53 |
| Megahertz 10BT Enet adapter w/XJACK         | 122.07 |
| Megahertz 28.8 V.34 data/fax w/ XJACK       | 249.04 |
| Megahertz 28.8 V.34 cellular w/XJACK .      | 244.60 |
| Megahertz 28.8/Enet cellular w/XJACK .      | 318.58 |
| Megahertz 28.8/Enet combo cellular w/XJACK. |        |
| Megahertz AllPoints wireless                | 464.12 |
| Motorola Montana 28.8 cellular              | 231.95 |
| New Media 28.8 NetSurfer fax/modem          |        |
| Simple 14.4 modem + voice                   | 59.89  |
| Simple 28.8 Communicator cellular           |        |
| Simple 28.8 Communicator                    |        |
| SMC EtherEZ 10BT                            | 123.25 |
| SMC EtherEZ combo                           | 166.75 |

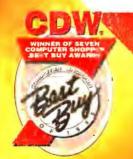
USR Sportster V.34 28.8 with DataView 199.65

 Xircom Ethernet 10BT
 139.23

 Xircom Ethernet combo
 172.57

 Xircom Ethernet+modem 28.8 10BT
 311.51

 Xircom Ethernet+modem 28.8 combo
 339.60



#### NASDAQ

BUY WITH CONFIDENCE CDW® IS A NASDAQ TRADED COMPANY

D & B rated 5A1 Duns 10-762-7952



EtherPower 10BT PCI ..... EtherPower 10/100BTX PCI. TigerStack 10BT 12-port hub TigerStack 10BT 26-port hub

DATA STORAGE

COLORADO MEMORY SYSTEMS INC

iomega

Jumbo 350 350MB TBU internal.
Jumbo 1400 1.3GB TBU internal.
Trakker 350MB TBU parallel.
T1000E 800MB TBU parallel.





## CDW® TELEPHONE HOURS

Sales Monday-Friday 7am-9pm CST Saturday 9am-5pm CST Tech Support for Customers Monday-Friday 8am-9pm CST Saturday 9am-5pm CST If you find a better price, call CDW® before you buy

847-465-6800 Fax: 800-865-4239 (4CDW) Sales:



# **SERVICES YOU** BETTER!™

# J Series

- ♦ Intel' Pentium' processor
- ◆ 8MB RAM, upgradeable to 40MB ◆ Hard drive upgradeable to 1.35GB
- ◆Integrated 14.4K bps data/fax modem (J10, J30, J50) ◆5.8lbs



#### pentium

| Model | CPU    | Drive | Display             | Price     | CDW   |
|-------|--------|-------|---------------------|-----------|-------|
| J10   | 75MHz  | 500MB | 10.4" dual-scan     | \$1958.56 | 64481 |
| J20   | 100MHz | 540MB | 11.3" dual-scan     | \$1736.97 | 73027 |
| J30   | 100MHz | 800MB | 10.4" active-matrix | \$2434.62 | 64483 |
| J50   | 133MHz | 800MB | 10.4" active-matrix | \$2808.50 | 67377 |

The Intel Inside' Logo and Pentium' are Registered Trademarks of Intel Corporation

#### CDW CARRIES OVER 20,000 PRODUCTS. IF YOU DON'T SEE IT, CALL!

#### TOSHIBA

| Satellite & Satellite Pro Notebooks                 |  |  |  |  |
|---|--|--|--|--|
| 100CS 5/75 8MB 500MB 10.4" dual 1529.77             |  |  |  |  |
| 110CS 5/100 8MB 810MB 11.3" dual 1939.75            |  |  |  |  |
| 110CT 5/100 8MB 810MB 11.3" active . 2469.07        |  |  |  |  |
| 410CS 5/90 8MB 772MB 11.3" dual 2274.62             |  |  |  |  |
| 410CDT 5/90 8MB 772MB 11.3" active 4X CD . 2739.39  |  |  |  |  |
| 420CDS 5/100 8MB 810MB 11.3" dual 6X CD. 2505.75    |  |  |  |  |
| 420CDT 5/100 8MB 1.26GB 11.3" active 6X CD. 3289.82 |  |  |  |  |
| Portege Notebooks                                   |  |  |  |  |

| Fortege Notebooks                    |         |  |  |  |
|--------------------------------------|---------|--|--|--|
| 610CT 5/90 8MB 720MB 9.5" active     | 2429.66 |  |  |  |
| 620CT 5/100 8MB 1.2GB 10.4" active   |         |  |  |  |
|                                      |         |  |  |  |
| 650CT 5/133 16MB 1.26GB 11.3" active | 4339.19 |  |  |  |
| Tecra Notebooks                      |         |  |  |  |

| Tecia Notebooks                                |        |  |  |  |
|--|--------|--|--|--|
| 500CS 5/120 16MB 1.26GB 12.1" dual . 36        | 57.56  |  |  |  |
| 500CDT5/120 16MB 1.26GB 12.1"active 6X CD., 45 | 19.30  |  |  |  |
| 720CDT5/133 16MB 1.13GB 12.1" active 6X CD. 52 | 289.11 |  |  |  |
| 730CDT 5/150 16MB 2GB 12.1" active 6X CD 60    | 02.37  |  |  |  |
|  |        |  |  |  |

#### AST.

| Ascentia Notebooks                       |         |  |  |  |  |
|--|---------|--|--|--|--|
| J10 5/75 8MB 500MB 10.4" dual            | 1979.47 |  |  |  |  |
| J20 5/100 8MB 540MB 11.3° dual           | 1736.97 |  |  |  |  |
| J30 5/100 8MB 800MB 10.4" dual           | 2063.79 |  |  |  |  |
| J30 5/100 8MB 800MB 10.4" active         | 2434.62 |  |  |  |  |
| J50 5/133 8MB 800MB 10.4" active         | 2808.50 |  |  |  |  |
| P30 5/100 8MB 800MB 11.3" dual 4X CD .   | 2408.28 |  |  |  |  |
| P30 5/100 8MB 1.2GB 11.3" dual 4X CD.    | 2596.09 |  |  |  |  |
| P40 5/120 16MB 1GB 11.3" active 6X CD.   | 3287.93 |  |  |  |  |
| P40 5/120 16MB 2.1GB 11.3" active 6X CD. | 3749.59 |  |  |  |  |
| P50 5/133 8MB 800MB 11.3" active 4X CD.  | 3528.11 |  |  |  |  |
| P50 5/133 8MB 1,2GB 11,3" active 4X CD   | 3809.67 |  |  |  |  |
| P50 5/133 24MB 1GB 12.1" active 6X CD    | 4217,73 |  |  |  |  |
| P50 5/133 24MB 2.1GB 12.1" active 6X CD. | 4676.95 |  |  |  |  |
|  |         |  |  |  |  |

| 1 00 0 100 LTIVID TOD 12.1 active on OD 4211.10   |  |
|---|--|
| P50 5/133 24MB 2.1GB 12.1" active 6X CD . 4676.95 |  |
| Advantage! Lifestyle Mini-towers                  |  |
| 9312 5/166 24MB 2.5GB 8X CD 2445.84               |  |
| 9310 5/166 24MB 2.5GB 8X CD 2351.94               |  |
| 9315 5/166 32MB 2.5GB 8X CD 2633.64               |  |
| 9316 5/200 32MB 3GB 8X CD 2821.44                 |  |
| Advantage   0200 Carios Mini toward               |  |

| 9304 5/133 24MB 1.6GB 8X CD | 1659.53 |
|-----------------------------|---------|
| 9308 5/166 24MB 2.5GB 8X CD | 2073.30 |
| 9314 5/200 24MB 4GB 8X CD   | 2633.64 |
| Bravo Desktops              |         |
| LC 5100 5/100 8MB 630MB     | 1167.46 |
| LC 5100 5/100 16MB 1.2GB    | 1287.19 |
| LC 5133 5/133 8MB 630MB     | 1293.52 |
| LC 5133 5/133 16MB 1.2GB    |         |
| LC 5166 5/166 16MB 1.2GB    |         |
| MO FACO FILOD ADMD A DOD    |         |

| MS 5100 5/100 16MB 1.2GB 1377.41       |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
| MS 5100 5/100 16MB 2.1GB 1488.05       |  |  |  |  |  |  |
| MS 5133 5/133 16MB 1.2GB 1499.11       |  |  |  |  |  |  |
| MS 5133 5/133 16MB 2.1GB 1609.74       |  |  |  |  |  |  |
| MS 5166 5/166 16MB 2.1GB 6X CD 2052.28 |  |  |  |  |  |  |
| Bravo Mini-towers                      |  |  |  |  |  |  |
| MS-T 5100 5/100 16MB 1.2GB 1399.54     |  |  |  |  |  |  |
| MD T 5100 5/100 46MD 0 10D 4540 96     |  |  |  |  |  |  |

# MS-T 5133 5/133 16MB 1.2GB MS-T 5133 5/133 16MB 2.1GB

#### COMPAG Armada Notebooks 1120 5/100 8MB 810MB 10.4" dual . . . . 1888.23 1120T 5/100 8MB 810MB 10.4" active . . 2208.02

| 4110 5/100 8MB 810MB 11.3" dual 2496.17          |
|--|
| 4110D 5/100 8MB 810MB 11.3" dual 2879.37         |
| 4120 5/120 16MB 1.08GB 11.3" dual 3072.47        |
| 4120T 5/120 16MB 1.08GB 11.8" active 3744.82     |
| 4130T 5/133 16MB 1.08GB 11.8" active 4417.17     |
| LTE 5000 Series Notebooks                        |
| 5000 5/75 8MB 810MB 10.4" active 3648.77         |
| 5100 5/90 8MB 810MB 10.4" active 4032.97         |
|  |
| 5100 5/90 8MB 810MB 10.4" active 2X CD , 4417.17 |
| 5150 5/100 8MB 810MB 11.3" dual 2879.37          |
| 5200 5/120 8MB 1.35GB 10.4" active 4801.37       |
| 5250 5/120 16MB 810MB 10.4" active 3648.77       |
| 5280 5/120 16MB 1.35GB 11.3" active . 4417.17    |
| 5300 5/133 16MB 1.35GB 12.1" active . 4801.37    |
| 5380 5/133 16MB 2.16GB 12.1" active . 5761.87    |
| Deskpro 2000 Series Desktops                     |
| 5100/630 5/100 8MB 630MB 1118.70                 |
| 5100/1200 5/100 8MB 1.2GB 1282.55                |
| 5100/1200 5/100 16MB 1.2GB 1384.25               |
| 5120/1200 5/120 8MB 1.2GB 1401.20                |
| 5120/1200 5/120 16MB 1.2GB 1502.90               |
| 5133/1200 5/133 16MB 1.2GB 1655.45               |
| 5133/2500 5/133 16MB 2.5GB 1858.85               |
| 5166/1200 5/166 16MB 1.2GB 1966.20               |
| 5166/2500 5/166 16MB 2.5GB 2169.60               |
| 5200/2500 5/200 32MB 2.5GB 2768.50               |
| 6180/1200/CD 6/180 16MB 1.2GB 8X CD . 2542.50    |
| 6200/2500/CD 6/200 16MB 2.5GB 8X CD. 3152.70     |
| OEOGIEGOOTOD GIEGO TORID E.JGD BX CD., 3132.70   |

#### COMPAQ

| 5100/2500/CD5 5/100 32MB 2.5GB 6A CD , 266 1.50 |
|---|
| Deskpro 6000 Series Desktops                    |
| 5166/1080/CDS 5/166 16MB 1.08GB 3X CD . 2847.60 |
| 5166/1080/CDS 5/166 32MB 1.08GB 8X CD . 3107.50 |
| 5200/1080/CDS 5/200 32MB 1.08GB 8X CD. 3519.95  |
| 6180/2150/CDS 6/180 32MB 2.15GB 8X CD. 3813.75  |
| 6200/2150/CDS 6/200 32MB 2.15GB 8X CD. 3983.25  |
| 6200/4200/PDS 6/200 32MB 4.2GB PD-CD . 4847.70  |
| Deskpro 6000 Series Mini-towers                 |
| EACONATO DO ENCODOS ADO ACODO ON OD ACADO DE    |

| Deskpro 6000 Series Mini-towers                         |  |  |  |  |  |
|---|--|--|--|--|--|
| 5166/2150/CDS 5/166 32MB 2.15GB 8X CD., 3519.95         |  |  |  |  |  |
| 6200/4200/PDS 6/200 32MB 4.2GB PD-CD . 4881.60          |  |  |  |  |  |
| Presario Desktops                                       |  |  |  |  |  |
| 4112 5/120 16MB 1.6GB 6X CD 1499.00                     |  |  |  |  |  |
| 4122 5/150 16MB 2.5GB 8X CD 1899.00                     |  |  |  |  |  |
| 44025/133 16MB 1.6GB 6X CD built in 15" monitor 1999.00 |  |  |  |  |  |

| Presario Mini-towers |      |       |      |   |  |       |    |
|----------------------|------|-------|------|---|--|-------|----|
| 4704 5/133           | 16MB | 1.6GB | 6X C | D |  | 1699. | 00 |
| 4712 5/166           | 24MB | 2.5GB | 6X C | D |  | 2199. | 00 |
| 6704 5/166           | 24MB | 2.5GB | 8X C | D |  | 2399. | 00 |
| 8702 5/166           | 24MB | 2.5GB | 8X C | D |  | 2499. | 00 |
| 4716 5/200           | 32MB | 2.5GB | 8X C | D |  | 2799. | 00 |
| 6708 5/200           |      |       |      |   |  |       |    |

## IBM ThinkPad Notebooks

| 365ED 5/100 8MB 540MB 10.4" dual 4X CD 1969.0      | 0 |
|--|---|
| 365ED 5/100 16MB 810MB 10.4" active 4X CD . 2537.2 | 8 |
| 365X 5/100 8MB 810MB 10.4" dual 1999.0             | 0 |
| 365X 5/100 8MB 810MB 10.4" active 2339.0           | 5 |
| 365XD 5/100 8MB 810MB 10.4" dual 4X CD 2365.3      | 7 |
| 365XD 5/120 8MB 1GB 11.3" dual 4X CD . 2562.1      | 8 |
| 365XD 5/120 8MB 1GB 10.4" active 4X CD. 2887.2     |   |
| 560 5/100 8MB 810MB 11.3" dual 2761.7              |   |
| 560 5/120 8MB 810MB 12.1" active 3743.7            |   |
| 560 5/133 8MB 1GB 12.1" active 4195.1              | 5 |
| 760E 5/120 8MB 810MB 12.1" active 4407.2           | 4 |
| 760E 5/120 8MB 1.2GB 12.1" active 4427.7           | • |
| 760E 5/133 16MB 1.08GB 12.1" active . 5947.8       |   |
| 760ED 5/133 16MB 1.2GB 12.1" active 4X CD . 6994.9 |   |
| 760EL 5/100 8MB 810MB 11.3" dual 3206.6            |   |
| 760ELD 5/100 8MB 810MB 12.1" active 4X CD . 4599.8 |   |
| 760EL 5/120 8MB 810MB 11.3" dual 3409.8            |   |
| 760FL 5/120 8MB 1 08GB 12 1" active 4392.5         | n |

| Aptiva Series Desktops        |         |  |  |  |
|-------------------------------|---------|--|--|--|
| C33 5/133 16MB 1.6GB 8X CD    | 1999.00 |  |  |  |
| C65 5/166 16MB 2GB 8X CD      | 2449.00 |  |  |  |
| C73 5/200 16MB 2.5GB 8X CD    | 2899.00 |  |  |  |
| PC300 Series Desktops         |         |  |  |  |
| PC330 5/133 16MB 1.2GB 3 bays | 1739.91 |  |  |  |
| PC330 5/133 16MB 1.6GB 3 bays |         |  |  |  |
| PC340 5/100 16MB 1.2GB 4 bays |         |  |  |  |
| PC340 5/133 16MB 1.2GB 4 bays |         |  |  |  |
| PC350 5/100 16MB 1 2GB 5 have | 1589 87 |  |  |  |

| L (22) | 101100 | LOIND       | 1.200  | o Days |       | 1773.71 |
|--------|--------|-------------|--------|--------|-------|---------|
| PC356  | 5/133  | 16MB        | 1.6GB  | 5 bays |       | 1839.39 |
| PC35   | 5/133  | 16MB        | 1.6GB  | 5 bays | 6X CD | 1998.83 |
| PC356  | 5/166  | 16MB        | 1.6GB  | 5 bays |       | 2146.32 |
|        | F      | PC700       | Series | Deskto | ops   |         |
| PC70   | 5/100  | 16MB        | 1.2GB  | 5 bays |       | 1708.23 |
| PC700  | 5/133  | <b>16MB</b> | 1.2GB  | 5 bays |       | 1916.19 |
|        |        |             |        | 5 have |       | 2542 16 |

# Versa Notebooks 2400 5/100 8MB 810MB 11.3" dual . . . . 2299.00 2400CD 5/100 16MB 1GB 11.3" dual 6X CD . 2699.00 4200 5/100 8MB 810MB 10.4" active . . . 2999.00

| 4200 5/100 6MB 610MB 10.4 active 2999.00             |  |
|--|--|
| 4230 5/133 8MB 1.08GB 10.4" active 6X CD . 3899.00   |  |
| 4050H 5/90 8MB 810MB 10.4" active 2999.00            |  |
| 4080H 5/120 8MB 1GB 10.4" active 3699.00             |  |
| 6000H 5/100 16MB 1.08GB 11.3" active 6X CD . 3999.00 |  |
| 6030H5/133 16MB 1.35GB 12.1" active 6X CD 4999.00    |  |
| 6030X 5/133 16MB 1.44GB 12.1" active 6X CD . 5399.00 |  |
|  |  |

#### COMPUTERS

| Deskpro 2000 Series Mini-towers<br>3/2500/CD 5/133 16MB 2.5GB 8X CD , 2073.55<br>6/2500/CD 5/166 32MB 2.5GB 8X CD , 2621.60<br>0/2500/CD 6/200 32MB 2.5GB 8X CD , 3406.95<br>Deskpro 4000 Series Desktops<br>0/1080 5/120 16MB 1.08GB | Extensa Notebo<br>510 5/100 8MB 810MB 10.4" di<br>555CD 5/75 8MB 524MB 10.4"<br>570CD 5/100 8MB 810MB 11.3" du<br>570CDT 5/100 8MB 12GB 10.4" ad |
|---|--|
| 0/1620/LS 5/120 16MB 1.62GB 1875.80<br>0/1620/LS 5/120 16MB 1.62GB 1875.80<br>3/1080 5/133 16MB 1.62GB 1875.80<br>0/1620 5/133 16MB 1.62GB 1875.80<br>6/1620 5/166 16MB 1.62GB 2186.55<br>6/2500/LS 5/166 16MB 2.5GB 2508.60          | TravelMate Noted<br>TM5200 5/120 8MB 1.2GB 11.3<br>TM5300 5/133 8MB 1.2GB 11.3<br>TM6020 5/120 8MB 1.08GB 11<br>TM6030 5/133 16MB 1.35GB 12.     |
| 0/1620/CDS 6/180 32MB 1.62GB 8X CD., 3051.00<br>0/2500/LS/CDS 6/200 32MB 2.5GB 8X CD., 3638.60  | PACKAR   |

| 6180/1620/CDS 6/180 32MB 1.62GB 8X CD., 3051.00   |
|---|
| 6200/2500/LS/CDS 6/200 32MB 2,5GB 8X CD . 3638.60 |
| Deskpro 4000 Series Mini-towers                   |
| 5133/1620/L\$ 5/133 32MB 1.62GB 2309.85           |
| 5166/2500/CDS 5/166 32MB 2.5GB 8X CD , 2881.50    |
| Deskpro 6000 Series Desktops                      |
| 5166/1080/CDS 5/166 16MB 1.08GB 3X CD . 2847.60   |

| THE STATE OF THE PROPERTY OF THE STATE OF TH | 1333.00 |
|--|---------|
| Presario Mini-towers   |         |
| 4704 5/133 16MB 1.6GB 6X CD  | 1699.00 |
| 4712 5/166 24MB 2.5GB 6X CD  | 2199.00 |
| 6704 5/166 24MB 2.5GB 8X CD  | 2399.00 |
| 8702 5/166 24MB 2.5GB 8X CD  | 2499.00 |
| 4716 5/200 32MB 2.5GB 8X CD  | 2799.00 |

| /60EL 5/133 16MB 1.08GB 12.1" active | 5497.32 |
|--------------------------------------|---------|
| Aptiva Series Desktops               |         |
| C33 5/133 16MB 1.6GB 8X CD           | 1999.00 |
| C65 5/166 16MB 2GB 8X CD             | 2449.00 |
| C73 5/200 16MB 2.5GB 8X CD           | 2899.00 |
| PC300 Series Desktops                |         |
| PC330 5/133 16MB 1.2GB 3 bays        | 1739.91 |
| PC330 5/133 16MB 1.6GB 3 bays        |         |

| PC330 | 5/133 | 16MB        | 1.2GB  | 3 bays  |       | 1739. | .91 |
|-------|-------|-------------|--------|---------|-------|-------|-----|
| PC330 | 5/133 | <b>16MB</b> | 1.6GB  | 3 bays  |       | 1808. | .89 |
| PC340 | 5/100 | <b>16MB</b> | 1.2GB  | 4 bays  |       | 1389. | 16  |
| PC340 | 5/133 | <b>16MB</b> | 1.2GB  | 4 bays  |       | 1618. | 87  |
| PC350 | 5/100 | 16MB        | 1.2GB  | 5 bays  |       | 1589. | 87  |
| PC350 | 5/133 | <b>16MB</b> | 1.2GB  | 5 bays  |       | 1775. | .70 |
| PC350 | 5/133 | <b>16MB</b> | 1.6GB  | 5 bays  |       | 1839. | .39 |
| PC350 | 5/133 | <b>16MB</b> | 1.6GB  | 5 bays  | 6X CD | 1998  | .8  |
| PC350 | 5/166 | <b>16MB</b> | 1.6GB  | 5 bays  |       | 2146. | 32  |
|       | F     | C700        | Series | Deskto  | ops   |       |     |
| PCZOO | 5/100 | 16MP        | 1 2CB  | 5 hours |       | 1700  | 22  |

#### NEC

| 4200 3/100 divid dividid 10.4 active 25         | 33,00 |
|---|-------|
| 4230 5/133 8MB 1.08GB 10.4" active 6X CD . 38   | 99.00 |
| 4050H 5/90 8MB 810MB 10.4" active 29            | 99.00 |
| 4080H 5/120 8MB 1GB 10.4" active 36             | 99.00 |
| 6000H 5/100 16MB 1.08GB 11.3" active 6X CD . 39 | 99.00 |
| 6030H 5/133 16MB 1.35GB 12.1" active 6X CD 49   | 99.00 |
| 6030X 5/133 16MB 1.44GB 12.1" active 6X CD . 53 | 99.00 |
|   |       |

#### TEXAS

| Extensa Notebooks                              |             |
|--|-------------|
| 510 5/100 8MB 810MB 10.4" dual 173             | 9.77        |
| 555CD 5/75 8MB 524MB 10.4" dual 135            | 4.90        |
| 570CD 5/100 8MB 810MB 11.3" dual 6X CD . 224   | 8.27        |
| 570CDT 5/100 8MB 1.2GB 10.4" active 6X CD. 289 | 4.07        |
| TravelMate Notebooks                           |             |
| TM5200 5/120 8MB 1.2GB 11.3" active . 270      | 1.43        |
| TM5300 5/133 8MB 1.2GB 11.3" active . 270      |             |
| TM6020 5/120 8MB 1.08GB 11.3" active 404       | 1.95        |
| TM6030 5/133 16MB 1.35GB 12.1" active . 480    | <b>6.26</b> |

#### TT\*

| Vectra 500 Series Desktops             |
|--|
| 510CD 5/120 16MB 1.28GB 6X CD 1616.99  |
| Vectra 500 Series Mini-towers          |
| 515CCx 5/120 16MB 1.28GB 6X CD 1819.49 |
| 515CD 5/133 16MB 1.62GB 6X CD 1828.7   |
| 515MCx 5/133 16MB 1.62GB 6X CD 2064.29 |
| 515MCx 5/150 16MB 1.62GB 6X CD 2174.3  |
| 515MCx 5/166 16MB 1.62GB 6X CD 2353.19 |

#### Canon\*

| BJ30 monochrome  |    | 265.50 |
|--|----|--------|
| BJC70  |    | 293.86 |
| BJC210   |    |        |
| BJC610   |    |        |
| BJC4100  |    | 229.00 |
| MultiPASS 800 print/copy/scan/fax<br>MultiPASS C2500 color print/copy/scan/fax |    | 499.00 |
| MultiPASS C2500 color print/copy/scan/fax                                      | Χ. | 599.00 |
|  |    |        |

### **EPSON**°

| AP5000+ | 48 Stylus 1500 995.0<br>13 Stylus Color 500 279.0<br>45 Stylus Color II . 279.0<br>56 Stylus Color IIs . 157.0<br>379.0<br>379.0 |
|---------|--|
|         | O3 Stylus Pro color. 379.0<br>O4 Stylus Pro XL color 1799.0  |

#### PACKARD

| HP DeskJet 400 printer. HP DeskJet 340 portable inkjet printer. HP DeskJet 682C color printer. HP DeskJet 820Cse color printer. HP LaserJet 5L Xtra printer HP LaserJet 5P printer HP OfficeJet inkjet fav/copier/printer | 293.84<br>299.00<br>399.00<br>479.00<br>881.83<br>494.03 |
|---|--|
| HP OfficeJet inkjet fax/copier/printer  | 494.03<br>549.00   |

#### LEXMARK

| 4039 10 Plus |    |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  | 1037.8  |
|--------------|----|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|---------|
| Optra E      | ٠. |  |   |   |   |   |   |   |   |   | , |   |   | i | i |   |  | . 542.1 |
| Optra LX+ .  |    |  |   |   |   |   |   |   | ٠ | , |   |   | , |   |   |   |  | 1849.3  |
| Optra N      |    |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  | 2686.1  |
| Optra R+     |    |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  | 1253.6  |
| Optra Rt+    |    |  |   |   |   |   |   |   |   |   |   | ٠ |   |   | ٠ | , |  | 1481.5  |
|              |    |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |         |
|              |    |  | 1 | Г | H | K | I | Г | 1 | Δ | Ī | A | 1 |   |   |   |  |         |

| 184 Turbo 228.28 | ML590 445.72      |
|------------------|-------------------|
| 320 Turbo 317.15 |                   |
| 321 Turbo 445.72 | Okipage 4w 299.00 |
| ML395 1005.20    |                   |
| ML520 381.94     | OL610e/PS 693.66  |
| ML521 509.02     | OL810E 755.42     |
|                  |                   |

#### DRIVES & CONTROLLERS

#### Seagate

| 631MB Fast-ATA          | 165.9  |
|-------------------------|--------|
| 1.08GB Fast-ATA2        | 196.0  |
| 1.08GB Fast SCSI-2      | 265.2  |
| 2.1GB Fast ATA-2        | 279.7  |
| 2.14GB Fast SCSI-2      | 736.6  |
| 2.1GB ultra wide SCSI-3 | 573.1  |
| 4.29GB Fast SCSI-2      | 988.7  |
| 9GB Fast SCSI-2 1       | 965.49 |

#### HARD DRIVES & CONTROLLER

#### WESTERN DIGITAL

| Caviar 853MB EIDE                          | 171.71  |
|--|---------|
| Caviar 1.2GB EIDE                          | 222.82  |
| Caviar 1.62GB EIDE                         | 239.78  |
| Caviar 2.1 GB EIDE-2                       | 308.36  |
| Caviar 2.5GB EIDE-2                        | 346.43  |
| CONTROLLERS                                |         |
| Acculogic SIDE-4+ w/par 2 serial game      | . 27.74 |
| Acculogic SIDE-3+ w/on-board BIOS          | . 37.18 |
| Adaptec AVA1505 SCSI-2 CD Kit              | . 48.07 |
| Adaptec 1542CP SCSI Master Kit             | 252,65  |
| Adaptec PCI Ultra Wide SCSI Kit            | 289.83  |
| Promise EIDEMAX ISA 2HD on-brd BIOS        | 25.81   |
| Promise EIDE2300+ VLB 4HD on-brd BIOS 6550 |         |

WAREHOUSE

#### Hayes ■

| ACCURA 366 V.34 internal w/fax      | 141.13 |
|-------------------------------------|--------|
| ACCURA 366 V.34 external w/fax      | 149.36 |
| ACCURA 366 DSVD internal            | 201.80 |
| ACCURA 366 DSVD external            | 225.38 |
| ACCURA 366 V.34 internal voice      | 158.77 |
| OPTIMA 366 Business Modern external | 236.48 |
|                                     |        |

#### (M) MOTOROLA

| BitSURFH ISDN adapter internal     | 263.97 |
|------------------------------------|--------|
| BitSURFR ISDN adapter external     | 263.63 |
| BitSURFR Pro ISDN terminal adapter | 345.90 |
| ModemSURFR V.34 28.8 internal      |        |
| ModemSURFR V.34 28.8 external      | 127.02 |
| OnlineSURFR V.34 28.8 internal     |        |
| OnlineSURFR V.34 28.8 external     | 151.71 |
| VoiceSURFR V.34 28.8 internal      | 157.97 |
|                                    |        |

#### PERIPHERALS.

| 14.4 | internal w/fax        |    |  |  |  |  |  | . 66.77 |
|------|-----------------------|----|--|--|--|--|--|---------|
| 14.4 | Mini-tower w/fax      |    |  |  |  |  |  | . 79.05 |
| V.34 | 28.8 internal w/fax   |    |  |  |  |  |  | 116.54  |
| V.34 | 28.8 Mini-tower w/fax | ١. |  |  |  |  |  | 139.95  |
|      |                       |    |  |  |  |  |  |         |

#### **Robotics**

# Sportster Series

| V.34 28.8 external w/fax          | 169.29 |
|-----------------------------------|--------|
| Voice V.34 28.8 internal w/fax    | 169.29 |
| Voice V.34 28.8 external w/fax    | 189.40 |
| Winmodem V.34 28.8 internal w/fax | 114.93 |
| ISDN 128K terminal adapter        | 297.91 |
| Courier Series                    |        |
| V.34 28.8 internal w/fax          | 238.90 |
| V 24 28 8 autornal willow         | 275 65 |

#### TERY & BACK UPS

#### APC

| Back-UPS Office                               | 138.33   |
|---|----------|
| Back-UPS Pro 280 PNP Protect                  | . 145.12 |
| Back-UPS Pro 420 PNP                          | . 241.90 |
| Back-UPS Pro 650 PNP                          | . 298.56 |
| Smart-UPS 700                                 | . 362.89 |
| Smart-UPS 1000                                | . 496.46 |
| Smart-UPS 1400                                | . 621.50 |
| SurgeArrest Personal                          | 16.14    |
| SurgeArrest Personal SurgeArrest Professional | 26.18    |
| SurgeArrest Network                           | 29.24    |
|   |          |

## THIPP LITE

| BC250          |       |   |   |   |   |    | ٠ |   |         |  |  |   |   |   |   |   | <br>9 | 3.2 | 20 |  |
|----------------|-------|---|---|---|---|----|---|---|---------|--|--|---|---|---|---|---|-------|-----|----|--|
| BC PERS        |       |   |   |   |   |    |   |   |         |  |  |   |   |   |   |   |       |     |    |  |
| <b>BC PERS</b> |       |   |   |   |   |    |   |   |         |  |  |   |   |   |   |   |       |     |    |  |
| BC PRO 5       |       |   |   |   |   |    |   |   |         |  |  |   |   |   |   |   |       |     |    |  |
| BC PRO         |       |   |   |   |   |    |   |   |         |  |  |   |   |   |   |   |       |     |    |  |
| BC PRO 8       |       |   |   |   |   |    |   |   |         |  |  |   |   |   |   |   |       |     |    |  |
| BC PRO         |       |   |   |   |   |    |   |   |         |  |  |   |   |   |   |   |       |     |    |  |
| Isobar 4 o     |       |   |   |   |   |    |   |   |         |  |  |   |   |   |   |   |       |     | )5 |  |
| Isobar 6 o     |       |   |   |   |   |    |   |   |         |  |  |   |   |   |   |   |       | 67  |    |  |
| OmniSma        |       |   |   |   |   |    |   |   |         |  |  |   |   |   |   |   |       |     |    |  |
| <b>OmniSma</b> |       |   |   |   |   |    |   |   |         |  |  |   |   |   |   |   |       |     |    |  |
| <b>OmniSma</b> | rt 67 | 5 | Ρ | Ν | P | ٠. |   | , | <br>. , |  |  | 2 | 3 | 4 | 2 | 1 |       |     |    |  |

CDW® sells for less and services you better!™

Call for a FREE CDW® catalog!

][mn][

Call The PC Zone

**AS LOW AS** 

Cyrix 5x86C 100/33MHz,

• 100MHz & 120MHz

Pentium® CPUs

\*8MB RAM, expandable to 24MB or 40MB
 \*540MB to 1.08GB hard drives • 10.4" to 11.3" displays
 \*Type III PCMCIA slot (one Type III) or two Type II)

• IR transceiver for wireless data transfer • AND MORE

Local Bus video with acceleration

**IBM Aptiva** 

Aptiva C33 P133 16M8/1.6G8 8X CD MT. . . . \$1,999.00 Aptiva C55 P150 16M8/2.0G8 8X CD MT. . . \$2,249.00 Aptiva C65 P166 16M8/2.0G8 8X CD MT. . . \$2,449.00

Aptiva C67 P166 16M8/2.5G8 8X CD MT.... \$2,499.00 Aptiva C77 P200 32M8/3.2G8 8X CD MT.... \$3,299.00 Packard Bell Platinum Platinum 40 P133 16M8/1.2G8 8X CD MT... \$1,799.00

Platinum 60 P166 16M8/1.6G8 8X CD MT... \$2.199.00 Platinum 70 P200 24MB/2.0G8 8X CD MT. . . \$2,599.00 AST Advantage

Advantage 9304 P133 24/1.6G8HD 8X CD MT. . \$1,649.00

Advantage 9308 P166 24/2.5G8HD 8X CD MT. \$2,099.00
Advantage 9310 P166 24/2.5G8HD 8X CD MT. \$2,399.00
Advantage 9312 P166 24/2.5G8HD 8X CD MT. \$2,499.00 Advantage 9315 P166 32/2.5G8HD 8X CD MT. . \$2,599.00 Advantage 9314 P200 24/4.0G8HD 8X CD MT. . \$2,649.00 Advantage 9316 P200 32/3.0G8HD 8X CD MT. . \$2,849.00 **NOTEBOOKS** IBM Thinkpad 560 33175 P100 8M8/810HD 11.3° DSCAN Win95 . . .

P120 8M8/810HD 12.1' SVGA TFT Win95 . . . \$3,749.00 P133 8M8/1.08G8HD 12.1' SVGA TFT Win95 . . \$4,199.00

Texas Instruments
TM5300 P133 8/1.268HD 11.3" SVGA TFT . . \$3,299.00

TM5200 P120 8/1.2G8HD 11.3' SVGA TFT ... \$2,899.00 Extensa 560CDT P75 8/1.2 4xCD 10.4 Active. \$2,399.00 Extensa 570CO P100 8/810HD 6CD DSCAN. \$2,239.00

Extensa 570CDT P100 8/1.2G8HD 6CD TFT. . \$2,899.00

Hitachi E-1000 P100 8/810 11.3° DSCAN Win95 . . . \$1,999.00 M120T P120 16/16G8HD 4CD 11.8° TFT Win95 \$4,499.00

M133T P133 16/1G8HD 6CD 11.8' TFT Win95. \$4,999.00 E-133 P133 16/810 11.3' TFT Win95. \$2,999.00 C120T P120 8/1G8HD 11.8' SVGA TFT Win95. \$3,199.00

AST
Ascentia P30 P100 8/800HD 4CD 11.3° DS ... \$2,349.00
Ascentia P30 P100 8/1.2G8HD 4CD 11.3° OS ... \$2,539.00
Ascentia P50 P133 8/800HD 4CD 11.3° TFT ... \$3,459.00

Ascentia P50 P133 8/1.2G8HD 4CD 11.3 TFT . . \$3,639.00 **Canon**360CD 5x133 8/810 10.4\* DSCN 4xCD.....\$2,399.00
475CDS P100 8/810 11.3\* SVGA DSCN 4CD. \$2,599.00

31833 475CDT P100 8/810 11.3" SVGA TFT 4xCD . \$2,899.00 PRINTERS Canon

3.3 V CPU (ThinkPad 365E/ED)

Brand names. Discount prices!

Over 20,000 products

Great customer service



HEWLETT PACKARD **HP Vectra** 

Call for prices

desktops and minitowers

**US Robotics** 

 Everything is integrated for you and backed by HP's unparalleled service and support - call for details!

#### THE RIGHT TOOL FOR YOUR TRADE!



\$499.98

\$399 nn

500 Series Pentium® processor-based

Cutting-edge communica-

tions capabilities Choose complete Microsoft or Claris software suites to boost business success

### Call for GREAT Prices on **Notebooks and Desktops!**



## Tecra 500CS

• 120MHz Intel® Pentium® processor

• 16MB fast **EDO RAM** 

Lotus

**SmartSuite** 

36658

34184

 Optional 6X CD-ROM



# 3639

## HITACHI



#### **Hitachi E Series**

- Up to 133MHz Intel® Pentium® processor
- Up to 16MB EDO RAM standard
- 11.3" DSCAN or TFT screen available
- Windows 95 pre-loaded

(16" viewable)

3-year

MICROTEK COMPAG 1-800-258-8088 SONY OF Packard Bell. CAMON

Zone

warranty



#### HOTTEST PRICED LASER PRINTER!



**Packard Factory** 

Reconditioned

**LaserJet 5P Printer** 

- 600x600 dpi resolution teaturing REt and 120 levels of gray
- 4 ppm print speedIncludes font management software

# ViewSonic<sup>®</sup> See The Difference! 17GS 17" Color Monitor Maximum resolution: 1280x1024 .27mm dot pitch limited

| 21909 | CAHOLL DOC-10 LOLITONE COLOL ORDINE DEL LILIE | . 4436,30    |
|-------|---|--------------|
| 25886 | Canon BJC-210 Color 8ubble Jet Printer        | . \$148.98   |
| 34191 | Canon BJC-4550 Color SubbleJet Printer        | . \$498.98   |
| 34188 | Canon BJC-240 Color SubbleJet Printer         | \$178.98     |
| 34190 | Canon BJC-620 Color Bubble Jet Printer        | \$398.98     |
| 34189 | Canon BJC-4200 Color 8ubbleJet Printer        | . \$278.98   |
| 31828 | Canon MultiPASS C2500 Color Printer           | .,\$598.98   |
| 31827 | Canon MultiPASS 800 Printer                   | . \$498.98   |
|       | Epson   |              |
| 27932 | Epson Stylus IIS Color InkJet Printer         | .,\$179.98   |
| 17633 | Epson LQ-570+ 24 pin narrow dot mat ptrs      | . \$245.98   |
| 17639 | Epson OFX-8000 9 Pin wide printers            | \$2,332.00   |
| 17635 | Epson LO-870 24 pin narrow printers           | . \$443.98   |
| 87980 | Epson Stylus Color Pro XL InkJet Printer      | \$1,799.00   |
| 89901 | Epson Stylus Color Pro Ink Jet Printer        | . \$449.98   |
| 20670 | Epson Stylus Color II InkJet Printer          | . , \$279.98 |
|       | <b>Hewlett-Packard</b>                        |              |
| 31068 | HP Deskjet 1600C Printer.                     | \$1,349.00   |
| 36155 | HP DeskJet 400 InkJet Printer                 | .\$179.98    |
| 86325 | HP DeskJet 682C Color InkJet Printer          | . \$329.98   |
| 86326 | HP DeskJet 820Cse Color InkJet Printer        | .,\$399.98   |
| 86321 | HP DeskJet 855Cse Color InkJet Printer        | \$499.98     |
| 36154 | HP LaserJet 5L Xtra Printer                   | . \$479.98   |
| 23786 | HP LaserJet 5MP Printer                       | \$1,049.00   |
| 23556 | HP LaserJet 5P Printer                        | \$858.98     |
|       |   |              |

| 20001                            | Oriuala OTOE LLD Page Pilliel   |  |
|----------------------------------|---|--|
| 23493                            | Okidata OL810E LED Page Printer   | . <b>. \$</b> 755.98                                 |
| 24596                            | Okidata OL1200 120V Printer   | ., \$976.98  |
| 19153                            | Okidata MicroLine 320 9pin Dot Matrix Prntr.  | \$315 98   |
| 21694                            | Okidata MicroLine 590 24pin Dot Matrix Pmtr   | CAAS OR  |
| 21004                            |   | <del>911</del> 0.50                                  |
|                                  | MONITORS  |  |
|                                  | IBM Aptiva  |  |
| 29901                            | G40 14" Color Monitor   | \$299.98   |
| 36660                            | G41 14° Color Monitor   | \$380 QR   |
| 29902                            | G50 15" Color Monitor.  |  |
|                                  | C70 475 Color Monitor   | 9700 00  |
| 29903                            | G70 17" Color Monitor   | . \$199.90   |
|                                  | MAG Innovision  |  |
| 25857                            | DX1795 17" Digital Color Monitor  | . <mark>. \$649.98</mark>                            |
| 25858                            | DX1495 14" Oigital Color Monitor  | \$249.98   |
| 25859                            | DX1595 15* Digital Clr Monitor  | \$359.98   |
| 21396                            | MAG Innovision MX21F 21" Monitor  | \$1 485 00   |
| 29930                            | MAG Innovision DX17T 17' Trinitron Mtr  | \$715 NO   |
|                                  | MAG Innovision DVACT 4CT Tickers Atta   | \$710.90   |
| 29929                            | MAG Innovision DX15T 15" Trinitron Mtr  | 2733.30  |
|                                  | NEC   |  |
| 27642                            | NEC Multisync C400 14" Monitor  | . \$329.98   |
| 19722                            | NEC XP21 21" Color Monitor  | \$1,942,00   |
| 19719                            | NEC XE21 21' Color Monitor  |  |
| 27645                            | NEC Multisync XV15 Plus Monitor   | CA72 08  |
|                                  | NEC MUNICIPAL NO. 17 Plus Manha   | e200.00  |
| 27646                            | NEC Multisync XV17 Plus Monitor   | \$798.98   |
| 86792                            | NEC MultiSync M500 Clr Monitor  |  |
| 86793                            | NEC Multisync M700 Cir Monitor  | <mark> \$879.98</mark>                               |
|                                  | Sony  |  |
| 06675                            | Sony Multiscan 15sx Monitor   | ., \$399,98  |
| 06676                            | Sony Multiscan 15sf Il Monitor  | \$489 98   |
| 06677                            | Sony Multiscan 17sf II Monitor  | ¢700 09  |
|                                  | Constitutions 17 or II Monitor  | enna na  |
| 06909                            | Sony Multiscan 17se II Monitor  | . 2999.98  |
| 06678                            | Sony Multiscan 20sf II Monitor  | \$1,698.00   |
| 06679                            | Sony Multiscan 20se II Monitor  | \$1,998.00   |
|                                  | ViewSonic   |  |
| 23485                            | ViewSonic 15GS 15* Monitor  | \$399.98   |
| 23484                            | ViewSonic 15GA 15" Multimedia Monitor   | \$479 98   |
| 23486                            | ViewSonic 17GS 17' Monitor  |  |
| 87296                            | ViewSonic G1770 17 Color Monitors   | 6740.00  |
|                                  | ViewConin 1774 17 Multimodia Manifer  | \$143,30   |
| 23483                            | ViewSonic 17GA 17 Multimedia Monitor  | ** \$009.90  |
| 26526                            | ViewSonic 17PS 17" Color Monitor  | \$824.98   |
| 29932                            | ViewSonic PT770 17" Color Monitor   | <mark> \$845.98</mark>                               |
| 23487                            | ViewSonic 20G 20" Monitor   | \$1,270.00   |
| 23488                            | ViewSonic 21PS 21° Monitor  | \$1,579.00   |
| 87295                            | ViewSonic GT800 20' Color Monitors  | \$1,545,00   |
| 29933                            | ViewSonic PT810 21° Color Monitor   | \$1,745,00   |
| 20000                            |   | ***************************************              |
|                                  | MODEMS  |  |
|                                  | Cardinal  |  |
| 30812                            | Speakerphone & Int 28,8 Kbps Fax Modern   | ., \$179.98  |
| 30813                            | Speakerphone & Ext 28.8 Kbps Fax Modem .  | \$199,98   |
| 35130                            | Cardinal 33.6 v 34 Fax/Modem Ext PnP  | \$149.98   |
| 35129                            | Cardinal 33.6 v.34 Fax/Modern Ext PnP<br>Cardinal 33.6 v.34 Fax/Modern Int PnP                                    | \$129 98   |
| 35131                            | Cardinal 33.6 v.34 Voice/Fax/MDM Int PnP  | ¢130 08  |
| 35132                            | Cardinal 33.6 v.34 Voice/Fax/MDM Ext PnP  | e450.00  |
| 33132                            |   | \$109.90   |
|                                  | Hayes   |  |
| 33328                            | Total Internet Solution Accura 288 Int  | \$129,98   |
| 33329                            | Total Internet Sol w/ACCURA 28.8 Ext  | . \$148.98   |
| 33331                            | Total Gaming Sol w/ACCURA 28.8 Int DSVD.  | . \$224.98   |
| 33332                            | Total Gaming Sol w/ACCURA 28,8 Ext DSVD   |  |
|                                  | * After Haves \$20 mail in rebate (expires 10/3   |  |
|                                  | Motorola  |  |
| 26725                            |   | \$247.00   |
|                                  | BitSURFR PRO  |  |
| 777744                           |   |  |
| 33341                            | VoiceSurfr V.32bis 14.4 Int Fax/Modem   |  |
| 33343                            | ModemSurfr V.34 28.8 Fax Modem Int  | <mark> \$108.98</mark>                               |
| 33343<br>33344                   | ModemSurfr V.34 28.8 Fax Modem Int ModemSurfr V.34 28.8 Fax Modem Ext   | \$108.98<br>\$129.98                                 |
| 33343                            | ModemSurfr V.34 28.8 Fax Modem Int  | \$108.98<br>\$129.98                                 |
| 33343<br>33344                   | ModemSurfr V.34 28.8 Fax Modem Int ModemSurfr V.34 28.8 Fax Modem Ext   | . \$108.98<br>. \$129.98<br>. \$149.98               |
| 33343<br>33344<br>33345          | ModemSurfr V.34 28.8 Fax Modem Int  | . \$108.98<br>. \$129.98<br>. \$149.98               |
| 33343<br>33344<br>33345<br>33346 | ModernSurfr V.34 28.8 Fax Modern Int ModernSurfr V.34 28.8 Fax Modern Ext OnlineSurfr Total Internet Pkg V.34 Int | . \$108.98<br>. \$129.98<br>. \$149.98<br>. \$159.98 |

HARDWARE

Okidata Okidata OkiPage OL4W LED Printer Okidata OL410e/PS Prts (Post Script)

Okidata OL600e LED Page Printer.....

Okidata 610e LED Page Printer ......

|   | 40.470   | Sportster 14.4 Ext Fax Moderns for Win   | 6400.00  |
|---|--|--|--|
|   | 18478  |  |  |
|   | 32088  | Sportster Winmodern 28.8 Int   |  |
|   | 19448  | Sportster V.34 28.8 Int Fax/Mod for Win  |  |
|   | 33333  | Sportster Voice 28.8/33.6 Int w/Speaker  |  |
|   | 19449  | Sportster V.34 28.8 Ext Fax/Mod for Win  | . \$199.98   |
|   | 33334  | Sportster Voice 28.8/33.6 Ext w/Speaker  | \$219.98   |
|   | 26361  | Sportster Vi DSVD 28.8 V.34 Int Modern   |  |
|   | 85609  | USR ConferenceLink CS1000 Speakerphone.  | 6300 08  |
|   | 03003  |  |  |
|   |  | VIDEO CARDS  |  |
|   |  | ATI  |  |
|   | 31800  | Video Xpression 2M8 EDO DRAM PCI MPEG.   | . \$145.98   |
|   | 19902  | Graphics Pro Turbo 2Mb (VL bus)  | \$219.98   |
|   | 19904  | Graphics Pro Turbo 2Mb (PCI)   | \$249 98   |
|   | 19905  | Graphics Pro Turbo 4Mb (PCI)   | \$380 08   |
|   | 19906  | Graphics Pro Turbo 2Mb (ISA)   | \$250.08   |
|   |  | Complies Pro Turbo 48th (ICA)  | 6200.00  |
|   | 19907  | Graphics Pro Turbo 4Mb (ISA)   | . \$390.90   |
|   | 19909  | Graphics Xpression 1Mb (VLB)   | ., \$119.98  |
|   | 19910  | Graphics Xpression 2Mb (ISA)   | \$715.98   |
|   | 19911  | Graphics Xpression 2Mb (VL8)   | \$139.98   |
|   | 19912  | Graphics Xpression 2Mb (PCI)   | \$115.98   |
|   |  | <b>Diamond Computer System</b>   | ns   |
|   | 34177  | Stealth 3D 2000 PCI 2M8 EOO DRAM   | .\$169.98  |
|   | 34181  | Stealth 64 Video 2121TV PCI 1M8 DRAM   |  |
|   | 34182  | Stealth 64 Video 2201TV PCI 2M8 EDO DRAW   |  |
|   | 30815  | Stealth 64 Video 2121XL PCI 1M8 DRAM   |  |
|   | 30816  | Stealth 64 Video 2201XL PCI 2M8 DRAM   |  |
|   |  |  |  |
|   | 26155  | Stealth 64 Video 3240XL PCI 2M8 VRAM   |  |
|   | 26156  | Stealth 64 Video 3400XL PCI 4M8 VRAM   | \$479,98   |
|   |  | Hercules   |  |
|   | 31846  | Dynamite128 PCI 2MB MDRAM  | \$189.98   |
|   | 31847  | Terminator 64/3D 2M8 PCI EDO ORAM  | ., \$179.98  |
|   | 31848  | Terminator 64/Video PCI 1M8 DRAM   | \$89.98  |
|   | 31849  | Terminator 64/Video PCI 2M8 EDO DRAM   |  |
|   |  | Number Nine  |  |
|   | 34531  | 9FXReality 332 2M8 DRAM PCI  | £170.00  |
|   |  | 9FXMotion 771 2MB VRAM PCI   | +200.00  |
|   | 24836  | SPANIOLION 771 ZIVIB VRAIVI PCI  | . \$200.90   |
|   | 24837  | 9FXMotion 771 4M8 VRAM PCI   | . \$438.98   |
|   | 24838  | 9FXMotion 771 2M8 VRAM VL  | ., \$288.98  |
|   | 24839  | 9FXMotion 771 4M8 VRAM VL  | \$438,98   |
|   | 28576  | Imagine 128 2M8 VRAM PCI   | <b>. , \$349,98</b>  |
|   | 24840  | Imagine 128 4M8 VRAM PCI   | PCDD DD  |
|   | 24842  | Imagine 128 Pro 8M8 VRAM PCI   | . * \$923.30   |
|   | 34530  |  | \$1,328.00   |
|   |  | Imagine 128 Series 2 4M8 VRAM PCI  | \$1,328.00   |
|   |  | Imagine 128 Series 2 4M8 VRAM PCI  | \$1,328.00<br>\$629.98   |
|   |  | Imagine 128 Series 2 4M8 VRAM PCI  STORAGE PRODUCTS  | \$1,328.00<br>\$629.98<br>S  |
|   | 20225  | Imagine 128 Series 2 4M8 VRAM PCI  STORAGE PRODUCTS Colorado Memory System   | \$1,328.00<br>\$629,98<br>S  |
|   | 30335  | Imagine 128 Series 2 4M8 VRAM PCI  | \$1,328.00<br>. \$629.98<br>S<br>. \$159.98  |
|   | 30102  | Imagine 128 Series 2 4M8 VRAM PCI  | \$1,328.00<br>. \$629.98<br>S<br>. \$159.98<br>. \$159.98  |
| ı |  | Imagine 128 Series 2 4M8 VRAM PCI  STORAGE PRODUCT  Colorado Memory System Colorado T1000  Colorado Trakker T1000E  Colorado Jumbo 1400.   | \$1,328.00<br>. \$629.98<br>S<br>. \$159.98<br>. \$159.98  |
|   | 30102  | Imagine 128 Series 2 4M8 VRAM PCI  STORAGE PRODUCT  Colorado Memory System Colorado Trakker T1000E Colorado Jumbo 1400  Fuitsu   | \$1,328.00<br>. \$629.98<br>\$<br>. \$159.98<br>. \$189.98<br>. \$228.98   |
|   | 30102  | Imagine 128 Series 2 4M8 VRAM PCI  STORAGE PRODUCT  Colorado Memory System Colorado Trakker T1000E Colorado Jumbo 1400  Fuitsu   | \$1,328.00<br>. \$629.98<br>\$<br>. \$159.98<br>. \$189.98<br>. \$228.98   |
|   | 30102<br>30328   | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT  Colorado Memory System Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fuiltsu DynaMo 230M8 Int for PC  | \$1,328.00<br>\$629.98<br>\$<br>\$<br>\$159.98<br>\$189.98<br>\$228.98<br>\$499.98   |
|   | 30102<br>30328<br>20298  | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT  Colorado Memory System Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fuiltsu DynaMo 230M8 Int for PC  | \$1,328.00<br>\$629.98<br>\$<br>\$<br>\$159.98<br>\$189.98<br>\$228.98<br>\$499.98   |
|   | 30102<br>30328<br>20298<br>21910   | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT Colorado Memory System Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext MO 8asic   | \$1,328.00<br>\$629.98<br>\$<br>\$<br>\$159.98<br>\$189.98<br>\$228.98<br>\$479.98<br>\$479.98<br>\$645.98   |
|   | 30102<br>30328<br>20298<br>21910<br>21911  | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT  Colorado Memory System Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fujitsu DynaMo 230MbInt for PC DynaMo 230 Int Kit W/ Host Adapter Fujitsu DynaMo 230 3,5 M.O. Drv Par Prt  | \$1,328.00<br>\$629.98<br>\$<br>\$<br>\$159.98<br>\$189.98<br>\$228.98<br>\$479.98<br>\$479.98<br>\$645.98   |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584   | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT Colorado Memory System Colorado T1000 Colorado Takker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fujitsu DynaMO 230MbInt for PC DynaMO 230 Int Kit W/ Host Adapter Fujitsu DynaMO 230 3.5 M.O. Drv Par Prt Iomega  | \$1,328.00<br>\$629.98<br>\$<br>\$<br>\$159.98<br>\$189.98<br>\$228.98<br>\$499.98<br>\$479.98<br>\$429.98   |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584<br>26197  | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT Colorado Memory System Colorado 11000 Colorado Trakker 11000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fujitsu DynaMo 230MbInt for PC DynaMO 230 Int Kit W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Drv Par Prt  Lomega Ditto Easy 800 Insider   | \$1,328.00<br>\$629.98<br>S<br>\$159.98<br>\$189.98<br>\$228.98<br>\$499.98<br>\$449.98<br>\$429.98  |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584<br>26197<br>26169   | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT  Colorado Memory System Colorado 11000 Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fujitsu DynaMo 230MbInt for PC DynaMo 230 Int Kit W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Drv Par Prt  Iomega  Ditto Easy 800 Insider Ditto Easy 800M8 Ext Par Port Tape Dr   | \$1,328.00<br>\$629.98<br>S<br>\$159.98<br>\$189.98<br>\$228.98<br>\$499.98<br>\$479.98<br>\$429.98<br>\$429.98  |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584<br>26197<br>26169<br>22339  | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT  Colorado Memory System Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fujitsu DynaMo 230MbInt for PC DynaMo 230 Int Kit W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Drv Par Prt Iomega Ditto Easy 800 Insider Ditto Easy 800M8 Ext Par Port Tape Dr Zip 100 Parallel Port   | \$1,328.00<br>\$629.98<br>\$<br>\$<br>\$189.98<br>\$189.98<br>\$228.98<br>\$479.98<br>\$449.98<br>\$449.98<br>\$119.95<br>\$149.95   |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584<br>26197<br>26169<br>22339<br>91825                                     | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT Colorado Memory System Colorado Trido Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext MO 8asic Fujitsu DynaMO 230 Int Kit W/ Host Adapter Fujitsu DynaMO 230 3.5 M.O. Drv Par Prt Iomega Ditto Easy 800 Insider Ditto Easy 800 M8 Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 Parallel Port  | \$1,328.00<br>\$629.98<br>\$<br>\$<br>\$189.98<br>\$189.98<br>\$228.98<br>\$479.98<br>\$479.98<br>\$429.98<br>\$119.95<br>\$119.95<br>\$199.95   |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584<br>26197<br>26169<br>22339<br>91825<br>25665                            | Imagine 128 Series 2 4M8 VRAM PCI  STORAGE PRODUCT  Colorado Memory System Colorado 11000 Colorado 14000 Eujítsu Fujítsu Fujítsu DynaMo 230M8 Ext M0 8asic Fujítsu DynaMo 230MbInt for PC DynaMo 230 Insider Fujítsu DynaMo 230 NS. M.O. Drv Par Prt Iomega Ditto Easy 800 M8 Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI Ditto 3200 Insider   | \$1,328,00<br>\$629,98<br>\$<br>\$159,98<br>\$189,98<br>\$189,98<br>\$429,98<br>\$479,98<br>\$429,98<br>\$119,95<br>\$149,95<br>\$199,95<br>\$199,95<br>\$249,95                         |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584<br>26197<br>26169<br>22339<br>91825<br>25665<br>32073                   | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT Colorado Memory System Colorado 11000 Colorado Trakker 11000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fujitsu DynaMo 230MbInt for PC DynaMO 230 Int Kt W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Drv Par Prt Lomega Ditto Easy 800 Insider Ditto Easy 800M8 Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI Ditto 3200 Insider Ditto 3200 Parallel Port  | \$1,328,00<br>\$629,98<br>\$<br>\$<br>\$159,98<br>\$189,98<br>\$228,98<br>\$479,98<br>\$479,98<br>\$429,98<br>\$119,95<br>\$119,95<br>\$199,95<br>\$199,95<br>\$299,95                   |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584<br>26197<br>26169<br>22339<br>91825<br>25665<br>32073<br>25658          | Imagine 128 Series 2 4M8 VRAM PCI.  STORAGE PRODUCT  Colorado Memory System Colorado 11000 Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fujitsu DynaMo 230MbInt for PC DynaMO 230 Int Kit W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Drv Par Prt  Iomega Ditto Easy 800 Insider Ditto Easy 800M8 Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI Ditto 3200 Parallel Port Jaz 168 SCSI Insider Drive   | \$1,328.00<br>\$629.98<br>\$<br>\$159.98<br>\$189.98<br>\$228.98<br>\$479.98<br>\$479.98<br>\$429.98<br>\$119.95<br>\$119.95<br>\$199.95<br>\$199.95<br>\$249.95<br>\$299.95<br>\$399.95 |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584<br>26197<br>26169<br>22339<br>91825<br>25665<br>32073                   | Imagine 128 Series 2 4M8 VRAM PCI  STORAGE PRODUCT  Colorado Memory System Colorado T1000  Colorado Jumbo 1400.  Fujitsu  Fujitsu DynaMo 230M8 Ext M0 8asic  Fujitsu DynaMo 230MbImt for PC.  DynaMO 230 Int Kit W/ Host Adapter  Fujitsu DynaMo 230 3.5 M.O. Drv Par Prt  Iomega  Ditto Easy 800 Insider  Ditto Easy 800 M8 Ext Par Port Tape Dr  Zip 100 SCSI  Ditto 3200 Insider  Ditto 3200 Parallel Port  Jaz 168 SCSI Insider Drive  Iomega Jaz 16b External Drive   | \$1,328.00<br>\$629.98<br>\$<br>\$159.98<br>\$189.98<br>\$228.98<br>\$479.98<br>\$479.98<br>\$429.98<br>\$119.95<br>\$119.95<br>\$199.95<br>\$199.95<br>\$249.95<br>\$299.95<br>\$399.95 |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584<br>26197<br>26169<br>22339<br>91825<br>25665<br>32073<br>25658<br>25659 | Imagine 128 Series 2 4M8 VRAM PCI  STORAGE PRODUCT  Colorado Memory System Colorado 11000 Colorado 11000 Evijitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fujitsu DynaMo 230M8 Ext M0 8asic Fujitsu DynaMo 230M8 int Kir W/ Host Adapter Fujitsu DynaMo 230 int Kir W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Drv Par Prt  Iomega Ditto Easy 800 M8 Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI Ditto 3200 Insider Ditto 3200 Insider Ditto 3200 Parallel Port Jaz 1G8 SCSI Insider Drive Iomega Jaz 1Gb External Drive  Quantum | \$1,328,00<br>\$629,98<br>\$<br>\$159,98<br>\$159,98<br>\$189,98<br>\$228,98<br>\$4499,98<br>\$449,98<br>\$449,95<br>\$199,95<br>\$249,95<br>\$299,95<br>\$399,95                        |
|   | 30102<br>30328<br>20298<br>21910<br>21911<br>28584<br>26197<br>26169<br>22339<br>91825<br>25665<br>32073<br>25658<br>25659 | Imagine 128 Series 2 4M8 VRAM PCI  STORAGE PRODUCT  Colorado Memory System Colorado 11000 Colorado 11000 Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230M8 Ext M0 8asic Fujitsu DynaMo 230MbInt for PC DynaMo 230 Instit W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Drv Par Prt  Iomega Ditto Easy 800 M8 Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 Parallel Port Jizo 168 SCSI Instider Drive Iomega Jaz 168 SCSI Instider Drive Iomega Jaz 16b External Drive  Quantum Ouantum 5.25* 1268 H0 Int                            | \$1,328,00<br>\$629,98<br>\$<br>\$159,98<br>\$159,98<br>\$189,98<br>\$228,98<br>\$4499,98<br>\$449,98<br>\$449,95<br>\$199,95<br>\$249,95<br>\$299,95<br>\$399,95                        |

# FOR CURRENT

**Most orders ship** the same day.

Credit cards are not charged until the order is shipped. Most products ship the same day for overnight delivery. Packages shipped overnight at \$7 for the first 7 pounds and \$1 for each additional pound, or at \$3 for the first 8 pounds via UPS ground. Call for international shipping rates. Returns subject to a restocking fee. Prices and product availability subject to change without notice. Specials and promotions may be limited to stock on hand. Not responsible for typographical errors

Performantz V.34 28.8 PC Card Modem . . . . . \$189.98

37500 Performantz 33.6Kbps PC Card Fax/Modem . . . \$199.98

Knowledgeable Sales Advisors!

Quantum 5.25' 2.5GB HO Int .....

SyQuest
SyQuest EZ135M8 Ext SCSI & 1st Cartridge . . . \$119.98

m 3.5" 3.5G8 HD Int . .

28116 SvQuest EZ135M8 Drvs Parallel Port ...

# Catalog Supe







Microsoff LOUUS, WordPerfect

The PC Zone 1-800-258-8088 NE

# **Powerful Multimedia!**

- **IBM Aptiva** • 133 to 200MHz Intel®
- Pentium® processor
   Up to 3.2GB hard drive
- 8x CD-ROM drive
- 16MB to 32MB RAM standard
- Powerful, 30-watt speakers
- 28.8 fax/voice/data modem
- Advanced telephony center with full duplex line
- Lots of pre-installed software



## Run with the Pag!



### Compag Armada Notebook Series

- 100 or 120MHz Intel® Pentium® processor 8MB RAM, expandable to 24 or 40MB
- 810MB or 1.08GB hard drive





- 8MB RAM, expandable to 136MB
- 1.2GB hard drive
- 4X PC-CD rewritable CD-ROM drive

22337 Zip Media PC100 3 PACK

| ## CD-ROMS  Addonics  27505 Addonics Portable CD ROM Drive 4X \$199.98  27518 Addonics Portable CD ROM Drive 4X \$199.98  30823 6X CD-RDM Drive \$289.98  30824 6X CD-ROM Drive with SoundCard \$199.98  ### PI-VAL  24804 HI-VAL 4X SCSI CD Multimedia Upgr Kit. \$149.98  26745 HI-VAL 4X Ext SCSI \$189.98  28556 HI-VAL 4X DE CD-ROM Kit Internal \$59.98  30323 HI-VAL 4X IDE CD ROM Kit Internal \$59.98  30323 HI-VAL 6X IDE CD Kit \$89.98  30847 HI-VAL 6X IDE CD Kit \$199.98  30847 HI-VAL 6X IDE CD Kit \$199.98  30830 Vibra 6x CD-RDM Upgrade \$139.98  30831 Vibra 6x CD-RDM Upgrade \$139.98  30832 Vibra 6x CD-RDM Upgrade \$139.98  30834 Vibra Value 6x CD-RDM \$245.98  30827 Sound Blaster Discovery CD 8x Int PnP \$339.98  30828 Sound Salester Performance CD 8x Int PnP \$395.98  #### MicroSolutions  31886 Sound Card Upgrade Kit For 4x CD Drive \$259.98  31892 BackPack Plug-And-Play 4x CD-ROM Drive \$259.98  31893 BackPack Plug-And-Play 6X CD-ROM Drive \$259.98  31894 BackPack Plug-And-Play 6X CD-ROM Drive \$259.98  31895 BackPack Plug-And-Play 6X CD-ROM Drive \$259.98  31896 Sound Card Upgrade Kit For 4x CD Drive \$339.98  PHIIPS 8X Internal CD-ROM Drive Wo SCSI \$239.98  PHIIPS 8X Internal CD-ROM Drive WO SCSI \$239.98  PHIIPS 8X Internal CD-ROM Drive SCSI \$239.98  PHIIPS SCANNERS  PHIIPS SONY 4X Speed IDE CD-ROM Drive SCSI \$39.98  33157 Sony 4X Speed IDE CD-ROM Drive SCSI \$149.98  SCANNERS                    |       | MAR                                      | E           |
|---|-------|--|-------------|
| 27505         Addonics Portable CD ROM Drive 4X         \$199.98           27518         Addonics Portable CD 4XW/16Bit Sound         \$359.98           30823         6X CD-RDM Drive         \$289.98           30824         6X CD-RDM Drive with SoundCard         \$519.98           HI-VAL           24804         HI-VAL 4X SCSI CD Multimedia Upgr Kit         \$189.98           26745         Hi-VAL 4X Ext SCSI         \$189.98           28556         Hi-VAL 4X IDE CD ROM Kit Internal         \$59.98           30323         HI-VAL 6X IDE CD Kit         \$88.98           30847         Hi-VAL 6X IDE CD Kit         \$89.98           30847         Hi-VAL 6X IDE CD Kit         \$89.98           30848         Hi-VAL 6X Int IDE         \$99.98           Creative Labs           30834         Vibra 6x CD-RDM Upgrade         \$139.98           30835         Vibra Value 6x CD-RDM         \$245.98           30827         Sound Blaster Discovery CD 8k Int PrP         \$339.98           30828         Sound Blaster Proformance CD 8k Int PrP         \$399.98           31890         Backpack Plug-And-Play 4x CD-ROM Drive         \$29.98           31892         Backpack Plug-And-Play 6X CD-Rom Drive         \$259.98   |       |  |             |
| 27518         Addonics Portable CD 4XW/16Bit Sound         \$359.98           30823         6X CD-RDM Drive         \$289.98           30824         6X CD-ROM Drive with SoundCard         \$519.98           Hi-VAL           24804         Hi-VAL 4X SCSI CD Multimedia Upgr Kit         \$149.98           26745         Hi-VAL 4X Ext SCSI         \$189.98           28556         Hi-VAL 4X Upgrade Kit         \$209.98           30323         HI-VAL 6X IDE CD Kit         \$58.98           30846         Hi-VAL 6X IDE CD Kit         \$88.98           30847         Hi-VAL 6X IDE CD Kit         \$59.98           30848         Hi-VAL 6X IDE CD Kit         \$88.98           30849         Hi-VAL 6X IDE CD Kit         \$189.98           30831         Vibra 6x CD-RDM Upgrade         \$139.98           30832         Vibra Value 6x CD-RDM         \$245.98           30834         Vibra Value 6x CD-RDM         \$245.98           30827         Sound 8laster Discovery CD 8x Int PnP         \$339.98           30828         Sound Card Upgrade Kit For 4x CD Drive         \$259.98           31890         Backpack Plug-And-Play 4x CD-ROM Drive         \$29.98           31892         Backpack Plug-And-Play 4x CD-ROM Drive         \$29.98   |       |  |             |
| 30823 6X CD-RDM Drive with SoundCard \$299.98 30824 6X CD-ROM Drive with SoundCard \$519.98 Hi-VAL 24804 HI-VAL 4X SCSI CD Multimedia Upgr Kit. \$149.98 26745 Hi-VAL 4X EX SCSI CD Multimedia Upgr Kit. \$149.98 28556 Hi-VAL 8X Upgrade Kit \$209.98 30323 HI-VAL 8X IDE CD-ROM Kit Internal \$59.98 30847 Hi-VAL 6X IDE CD Kit \$88.98 30847 Hi-VAL 6X IDE CD Kit \$88.98 30833 Vibra 6x CD-RDM Upgrade \$139.98 32063 Blaster CD 8x IDE \$99.98  Creative Labs 30833 Vibra 6x CD-RDM Upgrade \$139.98 30834 Vibra Value 6x CD-RDM \$245.98 30827 Sound 8laster Discovery CD 8x Int PnP \$339.98 30828 Sound 8laster Discovery CD 8x Int PnP \$339.98 30828 Sound 8laster Performance CD 8x Int PnP \$339.98 31896 Sound Card Upgrade Kit For 4x CD Drive. \$229.98 31892 Backpack Plug-And-Play 4x CD-ROM Drive. \$259.98 31893 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31894 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31895 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31896 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31897 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31898 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31899 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31890 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31891 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31892 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31893 Backpack Plug-And-Play 6X CD-Rom Drive. \$335.98 31894 Plug-And-Play 6X CD-Rom Drive. \$335.98 31895 Backpack Plug-And-Play 6X CD-Rom Reader. \$339.98 31896 Backpack Plug-And-Play 6X CD-Rom Drive. \$299.98 31896 Backpack Plug-And-Play 6X CD-Rom Drive. \$335.98 31897 Philips 8X Internal CD-RDM Drive. \$335.98 31898 Backpack Plug-And-Play 6X CD-Rom Drive. \$335.98 31899 Philips 8X External CD Drive. \$335.98 31890 Philips 8X Seed IDE CD-Rom Drive CD-7608 3199.98 31815 Sony 4X Speed IDE CD-Rom Drive CD-7608 3 |       |  |             |
| Signature   Sign  | 27518 |  |             |
| ## Wi-VAL  24804 Hi-VAL 4x SCSI CD Multimedia Upgr Kit. \$149.98 26745 Hi-VAL 4x Ext SCSI \$189.98 28556 Hi-VAL 4x IDE CD-ROM Kit Internal \$299.98 30826 Hi-VAL 6X IDE CD-ROM Kit Internal \$59.98 30847 Hi-VAL 6X IDE CD Kit \$88.98 30847 Hi-VAL 6X IDE CD Kit \$88.98 30847 Hi-VAL 6X IDE CD Kit \$189.98 30834 Vibra 6x CD-RDM Upgrade \$139.98 30833 Vibra 6x CD-RDM Upgrade \$139.98 30834 Vibra 6x CD-RDM Upgrade \$139.98 30835 Vibra 6x CD-RDM Upgrade \$139.98 30827 Sound Blaster Discovery CD 8x Int PnP \$339.98 30828 Sound Blaster Performance CD 8x Int PnP \$339.98 30829 Sound Blaster Performance CD 8x Int PnP \$339.98 31079 Backpack Plug-And-Play 4x CD-ROM Drive \$209.98 31890 BackPack Plug-And-Play 4x CD-ROM Drive \$299.98 31890 BackPack Plug-And-Play 6X CD-Rom Drive \$299.98 31893 BackPack PnP 4x CD Drvs w/Sound Card \$299.98 31893 BackPack PnP 4x CD Drvs w/Sound Card \$299.98 31894 NEC MultiSpin 4X4 Internal \$98.98 24316 NEC MultiSpin 6XC CD-ROM Drive w/SOSS \$339.98 NEC MultiSpin 6XC CD-ROM Drive w/SSS \$339.98 24316 NEC MultiSpin 6XC CD-Rom Reader \$339.98 38604 Philips 8X Internal CD-RDM Drive \$219.98 85839 Philips 8X External CD Drive \$335.98 33604 Philips 8X External CD Drive \$335.98 33604 Philips CDD2000/12 Internal CD Recorder \$349.98 23157 Sony 4X Speed IDE CD-Rom Drvs CSD-760E \$99.98 23157 Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S \$149.98   |       |  |             |
| 24804         HI-VAL 4x SCSI CD Multimedia Upgr Kit.         \$149.98           26745         HI-VAL 4x Ext SCSI         \$189.98           28556         HI-VAL 8X Upgrade Kit         \$209.98           30323         HI-VAL 4x IDE CD-ROM Kit Internal         \$59.98           30846         HI-VAL 6X IDE CD Kit         \$88.98           30847         HI-VAL 6X IDE CD Kit         \$189.98           32081         HI-VAL 6X IDE CD Kit         \$19.98           32083         HI-VAL 6x Int IDE         \$99.98           Creative Labs           30834         Vibra 6x CD-RDM Upgrade         \$139.98           30836         Vibra Value 6x CD-RDM         \$245.98           30827         Sound Blaster Discovery CD 8x Int PnP         \$339.98           30828         Sound Blaster Performance CD 8x Int PnP         \$395.98           MicroSolutions           31886         Sound Card Uggrade Kit For 4x CD D Inve         \$129.98           31079         Backpack Plug-And-Play 6X CD-Rom Drive         \$209.98           31892         BackPack Plug-And-Play 6X CD-Rom Drive         \$259.98           31893         BackPack PnP 4x CD D Inve w/Sound Card         \$299.98           31893         BackPack PnP 6X CD D Inve w/Sound Card         \$29  | 30824 |  | . \$519.98  |
| 26745 Hi-VAL 4X Ext SCSI \$189.98 28556 Hi-VAL &X Upgrade Kit \$209.98 30323 HI-VAL 4X IDE CD-ROM Kit Internal \$59.98 30846 Hi-VAL &X IDE CD Kit \$88.98 30847 Hi-VAL &X IDE CD Kit \$189.98 30831 Vibra &X IDE CD Kit \$199.98  Creative Labs 30833 Vibra &X CD-RDM Upgrade \$139.98 30834 Vibra &X CD-RDM Upgrade \$139.98 30834 Vibra Value &X CD-RDM \$245.98 30827 Sound &Iaster Discovery CD &X Int PnP \$339.98 30828 Sound &Iaster Discovery CD &X Int PnP \$339.98 30828 Sound &Iaster Discovery CD &X Int PnP \$339.98 30828 Sound &Iaster Piscovery CD &X Int PnP \$395.98  MicroSolutions 31886 Sound Card Upgrade Kit For 4x CD Drive \$259.98 31079 Backpack Plug-And-Play 4x CD-ROM Drive \$209.98 31892 BackPack Plug-and-Play 6X CD-Rom Drive \$299.98 31893 Backpack PnP 4x CD Drive W/Sound Card \$299.98 31893 BackPack PnP 6X CD Drive W/Sound \$354.98  NEC MultiSpin 4x4 Internal \$98.98 34360 NEC MultiSpin 6x4 CD-ROM Drive w/Sound \$339.98 34316 NEC MultiSpin 6x4 CD-ROM Drive w/Sound \$339.98 34316 NEC MultiSpin 6x6 CD-Rom Reader \$339.98 34316 NEC MultiSpin 6x6 CD-ROM Drive \$239.98 343189 Philips &X Internal CD-RDM Drive w/S SSI \$339.98 3485 Philips &X Internal CD-RDM Drive \$335.98 34860 Philips &X Internal CD-RDM Drive \$335.98 3487 3488 Philips &X Internal CD-RDM Drive \$335.98 3489 Philips &X Setemal CD Drive \$335.98 349.98 Philips &X Setemal CD Drive \$349.98 349.98 Sony 4X Speed IDE CD-Rom Drive SCD-760E \$99.98 34157 Sony 4X Speed IDE CD-Rom Drive SCD-760E \$99.98 34156 Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S \$149.98   |       |  |             |
| 28556 Hi-VAL 8X Upgrade Kit \$209.98 30323 HI-VAL 4x IDE CD-ROM Kit Internal \$59.98 30846 Hi-VAL 6X IDE CD Kit \$88.98 30847 Hi-VAL 6X IDE CD Kit \$59.98 32081 Hi-VAL 6X IDE CD Kit \$59.98 32081 Hi-VAL 6X Int IDE \$99.98  Creative Labs 30833 Vibra 6x CD-RDM Upgrade \$139.98 30834 Vibra 6x CD-RDM Upgrade \$139.98 30835 Vibra 6x CD-RDM Upgrade \$139.98 30836 Vibra 6x CD-RDM \$245.98 30837 Sound 8laster Discovery CD 8x Int PnP \$339.98 30828 Sound 8laster Discovery CD 8x Int PnP \$339.98 30828 Sound 8laster Performance CD 8x Int PnP \$339.98 31886 Sound Card Upgrade Kit For 4x CD D rive \$209.98 31079 Backpack Plug-And-Play 4x CD-ROM Drive \$209.98 31892 BackPack Plug-And-Play 6X CD-Rom Drive \$209.98 31893 Backpack PnP 4x CD Drive WSound Card \$299.98 31893 BackPack PnP 4x CD Drive WSound \$354.98 NEC MultiSpin 4x4 Internal \$98.98 24316 NEC MultiSpin 6x6 CD-ROM Drive w6 SCSI \$239.98 34816 NEC MultiSpin 6x1 CD-RDM Drive w6 SCSI \$239.98 34828 Phillips 8x Internal CD-RDM Drive w6 SCSI \$239.98 35639 Phillips 8x Internal CD-RDM Drive \$259.98 35839 Phillips 8x Internal CD-RDM Drive \$259.98 35839 Phillips 8x External CD Drive \$335.98 35804 Phillips 8x Internal CD-RDM Drive \$335.98 359.98 3504 Sony 4X Speed IDE CD-Rom Drivs CSD-760E \$99.98 23157 Sony 4X Speed CD-RDM w7SCSI Kit CSD-760E \$99.98  |       |  |             |
| 30323 HI-VAL 4x IDE CD-ROM Kit Internal \$59,98 30846 HI-VAL 6X IDE CD Kit \$88,98 30847 HI-VAL 8X IDE CD Kit \$89,98 32081 HI-VAL 6X Int IDE \$99,98 32083 Vibra 6x CD-RDM Upgrade \$139,98 32083 Vibra 6x CD-RDM Upgrade \$139,98 32083 Sound 8laster CD 8x IDE \$188,98 30834 Vibra Value 6x CD-RDM \$245,98 30827 Sound 8laster Performance CD 8x Int PnP \$339,98 30828 Sound 8laster Performance CD 8x Int PnP \$395,98  MicroSolutions 31886 Sound Card Upgrade Kit For 4x CD Drive \$209,98 31892 Backpack Plug-And-Play 4x CD-ROM Drive \$209,98 31893 Backpack PnP 4x CD Drivs w/Sound Card \$299,98 31893 Backpack PnP 4x CD Drivs w/Sound Card \$299,98 31893 BackPack PnP 6X CD Drive w/Sound \$359,98 31812 NEC MultiSpin 4x4 Internal \$98,98 24316 NEC MultiSpin 6Xc CD-ROM Drive w/o SCSI \$239,98 30485 Phillips 8x Internal CD-RDM Drive w/o SCSI \$239,98 30604 Phillips 8x External CD Drive \$339,98 33604 Phillips 8x External CD Drive \$339,98 33604 Phillips 8x Setemal CD Drive \$339,98 33604 Sony 4X Speed IDE CD-Rom Drivs CSD-760E \$99,98 33157 Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S \$149,98   |       | Hi-VAL 4X Ext SCSI                       | \$189.98    |
| 30846   Hi-VAL 6X IDE CD Kit   \$88.98     30847   Hi-VAL 6X IDE CD Kit   \$189.98     30847   Hi-VAL 6X IDE CD Kit   \$199.98     30831   Hi-VAL 6X Int IDE   \$99.98     Creative Labs   \$139.98     30833   Vibra 6X CD-RDM Upgrade   \$139.98     30834   Vibra 6X CD-RDM Upgrade   \$188.98     30835   Vibra Value 6X CD-RDM   \$245.98     30827   Sound 8laster Discovery CD 8X Int PnP   \$399.98     30828   Sound 8laster Discovery CD 8X Int PnP   \$399.98     30828   Sound 8laster Discovery CD 8X Int PnP   \$399.98     31896   Sound Card Upgrade Kit For 4X CD Drive   \$129.98     31079   Backpack Plug-And-Play 4X CD-ROM Drive   \$299.98     31890   BackPack Plug-And-Play 6X CD-ROM Drive   \$299.98     31890   BackPack Plug-And-Play 6X CD-ROM Drive   \$299.98     31893   BackPack PnP 6X CD Drive w/Sound Card   \$299.98     31893   BackPack PnP 6X CD Drive w/Sound Card   \$299.98     31893   BackPack PnP 6X CD Drive w/Sound Card   \$334.98     NEC MultiSpin 4X4 Internal   \$98.98     24316   NEC MultiSpin 6X1 CD-RDM Drive w/S SCS   \$239.98     NEC MultiSpin 6X2 CD-ROM Drive w/S SS   \$239.98     Philips 8X Internal CD-RDM Drive   \$339.98     Philips 8X External CD Drive   \$339.98     Philips 8X External CD Drive   \$339.98     Philips CDD2000/12 Internal CD Recorder   \$949.98     33157   Sony 4X Speed IDE CD-Rom Drivs CSD-760E   \$99.98     23157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     SCANNIERS   \$149.98     SCANNIERS   \$149.98     SCANNIERS   \$149.98     SCANNIERS   \$149.98     SCANNIERS   \$149.98     30826   30827          |       | Hi-VAL 8X Upgrade Kit                    | ,\$209.98   |
| 30847   Hi-VAL 8X IDE CD Kit   \$189.98     32081   Hi-VAL 6X Int IDE   \$99.98     Creative Labs   \$139.98     30833   Vibra 6X CD-RDM Upgrade   \$138.98     30834   Vibra Value 6X CD-RDM Upgrade   \$245.98     30827   Sound Blaster Discovery CD 8X Int PnP   \$339.98     30827   Sound Blaster Performance CD 8X Int PnP   \$339.98     30828   Sound Blaster Performance CD 8X Int PnP   \$395.98     MicroSolutions   \$189.98     31896   Sound Card Upgrade Kit For 4X CD Drive   \$129.98     31079   Backpack Plug-And-Play 4X CD-ROM Drive   \$259.98     31892   BackPack Plug-And-Play 6X CD-Rom Drive   \$259.98     31893   Backpack PnP 4X CD Drvs w/Sound Card   \$299.98     31893   BackPack PnP 6X CD Drvs w/Sound Card   \$299.98     31812   NEC MultiSpin 4X4 Internal   \$98.98     28660   NEC MultiSpin 6XC CD-Rom Reader   \$339.98     24316   NEC MultiSpin 6XC CD-Rom Reader   \$339.98     38639   Philips 8X Internal CD-RDM Drive w/o SCS   \$239.98     38639   Philips 8X External CD Drive   \$335.98     33604   Philips CDD2000/12 Internal CD Recorder   \$349.98     2929   Sony 4X Speed IDE CD-Rom Drvs CSD-760E   \$99.98     23157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     SCANNIERS   \$149.98     SCANNIERS   \$149.98     SCANNIERS   \$149.98     SCANNIERS   \$149.98     SCANNIERS   \$149.98     32156   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32157   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149.98     32158   Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S   \$149   | 00000 | HI-VAL 4x IDE CD-ROM Kit Internal        | : . \$59.98 |
| 3081  |       | Hi-VAL 6X IDE CD Kit                     | \$88.98     |
| Creative Labs   |       |  |             |
| 30833 Vibra 6x CD-RDM Upgrade \$139.98 32063 Blaster CD 8x IDE \$188.98 30834 Vibra Value 6x CD-RDM \$245.98 30827 Sound Blaster Discovery CD 8x Int PnP \$339.98 30828 Sound Blaster Performance CD 8x Int PnP \$339.98  MicroSolutions 31886 Sound Card Upgrade Kit For 4x CD Drive \$259.98 31079 Backpack Plug-And-Play 4x CD-ROM Drive \$209.98 31892 BackPack Plug-And-Play 6X CD-Rom Drive \$299.98 31893 BackPack PnP 4x CD Drvs w/Sound Card \$299.98 31893 BackPack PnP 4x CD Drvs w/Sound Card \$299.98 31894 NEC MultiSpin 4x4 Internal \$99.98 31812 NEC MultiSpin 4x4 Internal \$99.98 324316 NEC MultiSpin 6X CD-RDM Drive w/S CSI \$239.98 324316 NEC MultiSpin 6X CD-RDM Drive w/S CSI \$239.98 324316 NEC MultiSpin 6X CD-RDM Drive w/S SSI \$239.98 33604 Philips 8x Internal CD-RDM Drive \$335.98 33604 Philips 8x External CD Drive \$335.98 33604 Philips CDD2000/12 Internal CD Recorder \$949.98 3359.98 21929 Sony 4X Speed IDE CD-Rom Drvs CSD-760E \$99.98 33156 Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S \$149.98  | 32081 |  | , . \$99.98 |
| 32063 Blaster CD 8x IDE   |       | Creative Labs                            |             |
| 32063 Blaster CD 8x IDE   | 30833 | Vibra 6x CD-RDM Upgrade ,                | \$139.98    |
| 30827         Sound 8laster Discovery CD 8x Int PnP         \$339.98           30828         Sound 8laster Performance CD 8x Int PnP         \$395.98           MicroSolutions           31886         Sound Card Upgrade Kit For 4x CD Drive         \$129.98           31079         Backpack Plug-And-Play 4x CD-ROM Drive         \$209.98           31892         Backpack Plug-and-Play 6X CD-Rom Drive         \$259.98           31893         Backpack PnP 4x CD Drive w/Sound Card         \$299.98           31893         BackPack PnP 6X CD Drive w/Sound         \$354.98           NEC           31812         NEC MultiSpin 4x4 Internal         \$98.98           24316         NEC MultiSpin 6XI CD-RDM Drive w/o SCSI         \$239.98           90485         NEC MultiSpin 6XI CD-RDM Drive w/o SCSI         \$239.98           90485         NEC MultiSpin 6XC CD-Rom Reader         \$339.98           Philips           87485         Phillips 8x Internal CD-RDM Drive         \$219.98           85839         Phillips 8x External CD Drive         \$335.98           33604         Phillips CDD2000/12 Internal CD Recorder         \$94.98           85839         Phillips CDD2000/12 Internal CD Recorder         \$94.98           Sony 4X Speed IDE CD-Rom Drvs CS  |       | Blaster CD 8x IDE                        | , \$188.98  |
| 30828   Sound Blaster Performance CD 8x Int PnP   \$395.98  |       |  |             |
| MicroSolutions   \$129.98   | 30827 |  |             |
| 31886         Sound Card Upgrade Kit For 4x CD Drive         \$129.98           31079         Backpack Plug-And-Play 4x CD-ROM Drive         \$209.98           31892         BackPack Plug-and-Play 6X CD-Rom Drive         \$259.98           31890         BackPack PnP 4x CD Drvs w/Sound Card         \$299.98           31893         BackPack PnP 6X CD Drive w/Sound         \$354.98           NEC           31812         NEC MultiSpin 4XC 4X Changer 7Disc w/Cable         \$339.98           24316         NEC MultiSpin 6XC CD-RDM Drive w/o SCSI         \$239.98           90455         NEC MultiSpin 6XE CD-Rom Reader         \$339.98           Philips           87485         Phillips 8X Internal CD-RDM Drive         \$219.98           85399         Phillips 8X External CD Drive         \$335.98           33604         Phillips CDD2000/12 Internal CD Recorder         \$94.98           Sony         XX Speed IDE CD-Rom Drvs CSD-760E         \$99.98           23157         Sony 4X Speed IDE CD-Rom Drvs CSD-760E         \$99.98           23156         Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S         \$149.98  | 30828 |  | ,\$395.98   |
| 31079   Backpack Plug-And-Play 4x CD-ROM Drive   \$209.98     31892   BackPack Plug-And-Play 6X CD-Rom Drive   \$259.98     31893   Backpack PnP 4x CD Drvs w/Sound Card   \$299.98     31893   BackPack PnP 6X CD Drive w/Sound   \$354.98     NEC   |       |  |             |
| 31892       BackPack Plug-and-Play 6X CD-Rom Drive       \$259.98         31893       Backpack PnP 4x CD Drive w/Sound Card       \$299.98         31893       BackPack PnP 6X CD Drive w/Sound       \$354.98         NEC         31812       NEC MultiSpin 4x4 Internal       \$98.98         28660       NEC MultiSpin 6XI CD-RDM Drive w/Goble       \$339.98         24316       NEC MultiSpin 6XI CD-RDM Drive w/GoSI       \$239.98         90485       NEC MultiSpin 6XC CD-Rom Reader       \$339.98         Philips         87485       Philips 8x Internal CD-RDM Drive       \$219.98         85839       Philips 8x External CD Drive       \$335.98         33604       Philips CDD2000/12 Internal CD Recorder       \$949.98         Sony       Sony       \$4X Speed IDE CD-Rom Drive CSD-760E       \$99.98         23157       Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S       \$149.98         SCANNERS  | 31886 | Sound Card Upgrade Kit For 4x CD Drive   | \$129.98    |
| 31890       Backpack PnP 4x CD Drvs w/Sound Card       \$299.98         31893       BackPack PnP 6X CD Drvb w/Sound       \$354.98         NEC       NEC         31812       NEC MultiSpin 4x4 Internal       \$99.98         28660       NEC MultiSpin 4x4 Internal       \$339.98         24316       NEC MultiSpin 6XI CD-RDM Drive w/o SCSI       \$239.98         90485       NEC MultiSpin 6Xe CD-Rom Reader       \$339.98         Philips       Philips         87485       Philips 8x Internal CD-RDM Drive       \$219.98         85839       Phillips 8x External CD Drive       \$335.98         33604       Phillips CDD2000/12 Internal CD Recorder       \$949.98         Sony       Sony         21929       Sony 4X Speed IDE CD-Rom Drvs CSD-760E       \$99.98         23157       Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S       \$149.98         SCANNERS  | 31079 |  |             |
| 31893         BackPack PnP 6X CD Drive w/Sound         \$354.98           NEC         NEC           31812         NEC MultiSpin 4x4 Internal         \$98.98           28660         NEC MultiSpin 6XL CD-RDM Drive w/o SCSI         \$339.98           24316         NEC MultiSpin 6XL CD-RDM Drive w/o SCSI         \$239.98           90485         NEC MultiSpin 6Xe CD-ROM Drive w/o SCSI         \$339.98           Philips           87485         Philips 8x Internal CD-RDM Drive         \$219.98           85839         Phillips 8X External CD Drive         \$335.98           33604         Phillips CDD2000/12 Internal CD Recorder         \$949.98           Sony         Sony 4X Speed IDE CD-Rom Drvs CSD-760E         \$99.98           23157         Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S         \$149.98           SCANNIERS  | 31892 |  |             |
| NEC   S98.98   S98.98   S98.98   S98.98   S98.98   S98.98   S98.98   S98.98   S99.98   S99.  | 31890 |  |             |
| 31812         NEC MultiSpin 4x4 Internal         \$98.98           28660         NEC MultiSpin 4XC 4X Changer 7Disc w/Cable         \$339.98           24316         NEC MultiSpin 6XI CD-RDM Drive w/o SCSI         \$239.98           90485         NEC MultiSpin 6XC CD-Rom Reader         \$339.98           Philips           87485         Phillips 8x Internal CD-RDM Drive         \$219.98           85839         Phillips 8X External CD Drive         \$335.98           33604         Phillips CDD2000/12 Internal CD Recorder         \$949.98           Sony         Sony           21929         Sony 4X Speed IDE CD-Rom Drvs CSD-760E         \$99.98           23157         Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S         \$149.98           SCANNERS  | 31893 | BackPack PnP 6X CD Drive w/Sound         | \$354.98    |
| 28660         NEC Multispin 4XC 4X Changer 7Disc w/Cable.         \$339.98           24316         NEC MultiSpin 6XI CD-RDM Drive w/o SCSI.         \$239.88           90485         NEC MultiSpin 6Xe CD-Rom Reader.         \$339.98           Philips           87485         Phillips 8x Internal CD-RDM Drive.         \$219.98           85839         Phillips 8X External CD Drive.         \$335.98           33604         Phillips CDD2000/12 Internal CD Recorder         \$949.98           Sony         Sony           21929         Sony 4X Speed IDE CD-Rom Drvs CSD-760E         \$99.98           23157         Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S         \$149.98           SCANNIERS   |       | NEC                                      |             |
| 24316         NEC MultiSpin 6XI CD-RDM Drive w/o SCSI         \$239.98           90485         NEC MultiSpin 6Xe CD-Rom Reader         \$339.98           Philips           87485         Philips 8x Internal CD-RDM Drive         \$219.98           85839         Phillips 8x External CD Drive         \$335.98           33604         Phillips CDD2000/12 Internal CD Recorder         \$949.98           Sony         Sony 4X Speed IDE CD-Rom Drvs CSD-760E         \$99.98           23157         Sony 4X Speed IDE CD-Rom CSD-76S8         \$99.98           23156         Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S         \$149.98  | 31812 | NEC MultiSpin 4x4 Internal               | \$98.98     |
| 90485 NEC MultiSpin 6Xe CD-Rom Reader. \$339.98  Philips 87485 Philips 8x Internal CD-RDM Drive. \$219.98 85839 Philips 8X External CD Drive. \$335.98 33604 Philips CDD2000/12 Internal CD Recorder \$949.98  Sony 21929 Sony 4X Speed IDE CD-Rom Drvs CSD-760E \$99.98 23157 Sony 4X Speed CD-RDM W/SCSI Kit CSD-760S \$149.98  SCANNERS  | 28660 |  |             |
| ### Philips   Ph  | 24316 |  |             |
| 87485         Phillips 8x Internal CD-RDM Drive         \$219.98           85839         Phillips 8X External CD Drive         \$335.98           33604         Phillips CDD2000/12 Internal CD Recorder         \$949.98           Sony         Sony           21929         Sony 4X Speed IDE CD-Rom Drvs CSD-760E         \$99.98           23157         Sony 4X Speed CD-RDM cSD-76S8         \$99.98           23156         Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S         \$149.98  | 90485 | NEC MultiSpin 6Xe CD-Rom Reader          | \$339.98    |
| 85839 Philips 8X External CD Drive  |       | Philips                                  |             |
| 85839 Philips 8X External CD Drive  | 87485 | Philips 8x Internal CD-RDM Drive         | \$219.98    |
| 33604 Phillips CDD2000/12 Internal CD Recorder \$949.98  Sony 21929 Sony 4X Speed IDE CD-Rom Drvs CSD-760E \$99.98 23157 Sony 4X Speed SCSI CD-Rom CSD-76S8 \$99.98 23156 Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S \$149.98  SCANNERS   | 85839 | Phillips 8X External CD Drive            | \$335.98    |
| 21929 Sony 4X Speed IDE CD-Rom Drvs CSD-760E \$99.98 23157 Sony 4X Speed SCSI CD-Rom CSD-76S8 \$99.98 23156 Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S \$149.98  SCANNERS   | 33604 | Phillips CDD2000/12 Internal CD Recorder | \$949.98    |
| 23157 Sony 4X Speed SCSI CD-Rom CSD-76S8 \$99.98 23156 Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S \$149.98  SCANNERS  |       | Sonv                                     |             |
| 23157 Sony 4X Speed SCSI CD-Rom CSD-76S8 \$99.98 23156 Sony 4X Speed CD-RDM w/SCSI Kit CSD-760S \$149.98  SCANNERS  | 21929 | Sony 4X Speed IDE CD-Rom Drvs CSD-760E . | \$99.98     |
| 23156 Sony 4X Speed CD-RDM w/SCSI Kit CSD-7605 \$149.98  SCANNERS   | 23157 |  |             |
| SCANNERS  | 23156 | Sony 4X Speed CD-RDM w/SCSI Kit CSD-7608 | \$149.98    |
|   |       |  | 1           |
|   |       | Artec Ultima                             |             |

| 85839 | Philips 8X External CD Drive             | \$335.98   |
|-------|--|------------|
| 33604 | Philips CDD2000/12 Internal CD Recorder  | . \$949.98 |
|       | Sony                                     |            |
| 21929 | Sony 4X Speed IDE CD-Rom Drvs CSD-760E . | \$99.98    |
| 23157 | Sony 4X Speed SCSI CD-Rom CSD-76S8       | .,\$99.98  |
| 23156 | Sony 4X Speed CD-RDM w/SCSI Kit CSD-7605 | \$149.98   |
|       | SCANNERS                                 | 7          |
|       | Artec Ultima                             |            |
| 31837 | ViewStation AT3                          | \$349.98   |
| 21707 | Artec View Scan Color Scanner A2000C     | \$129.98   |
| 34165 | Artec View Scan Color Scanner A2000D ,   | \$119.98   |
| 21708 | Artec View Scan 256                      | \$49.98    |
| 31805 | Artec ViewStation A6000C-Plus            | ,\$369.98  |
|       | Hewlett-Packard                          |            |
| 26202 | HP ScanJet 4C PC                         | :\$949.98  |
| 85463 | HP ScanJet 4p                            | .\$499.98  |
| 28151 | HP ScanJet 4S                            | .\$298.98  |
|       | Logitech                                 |            |
| 25432 | Logitech Pagescan Color Scanner          | . \$349.98 |
|       | Microtek                                 |            |
| 26898 | ScanMaker E6 PC                          | , \$579.98 |
| 30321 | ScanMaker E3 PC                          |            |
| 31807 | ScanMaker E6 Pro PC                      |            |
| 25688 | Microtek Page Wiz                        |            |
| 26734 | ScanMaker III PC                         | 1,887.00   |
|       | UMAX                                     |            |
| 21419 | UMAX PageOffice Mac/PC                   | .\$288.98  |
| 83506 | Vista-S12 w/Photoshop LE                 |            |
| 83510 | Powerlook II w/full Photoshop.           |            |
| 83502 | UMAX Vista S6e w/PhotoDeluxe             | . \$398.98 |
|       | Visioneer                                |            |
| 34166 | Visioneer PaperPort IX for Windows       |            |
| 87562 | Visioneer PaperPort Vx For Windows       | \$272.98   |

| 2                                       | 22336  | Zip Media PC100 Single   | . \$19.98   |   |
|---|--|--|---|---|
|   |  | Sonv   |   | 1 |
| ſ                                       | 06404  | Sony 3.5" 128MB Rewrite M.D. 512b/s  | \$17.98   | 1 |
|   | 1140   | Sony 3.5* 230MB M.O. 512b/s  | \$22.98   |   |
|   | 6418   | Sony 3.5* M.O. Disk Cleaning Kit   |   |   |
|   | 36782  | Sony 3.5" MD 128MB3 Pack   | \$62.00   |   |
|   |  | Sony 3.5° MD 230MB3 Pack   | \$UZ.30<br>\$77.00  |   |
|   | 36780  | SURY 3.5 IVID 23UIVIB3 PACK  | \$11.90   |   |
|   | 14367  | Sony CD-R 4X 553M8 (63 Min)  | \$7.98  |   |
|   | 30458  | Sony CD-R 4X 650 MB (74 Min) 10 Pack   | \$75.98   |   |
| 1                                       | 14368  | Sony CD-R 650MB (74 Min)   | , \$7.98  |   |
| 1                                       | 14359  | Sony DG120M 4mm Data Cart 4GB DDS-2  | \$24.98   |   |
| 1                                       | 14358  | Sony DG90M 4mm Data Cart 2GB   | \$8.98  |   |
| 1                                       | 14394  | Sony OD2120 1/4" Data Cart 120MB   | \$13.98   |   |
|   | 14356  | Sony OD2120 Oic-80 Data Cart 120MB   | \$12.98   |   |
|   | 14355  | Sony DD6250 1/4" Data Cart 250MB   | \$18.08   |   |
|   | 14397  | Sony OD6525 1/4" Data Cart 525MB   | 694.00  |   |
|   |  |  |   |   |
|   | 27605  | Sony OIC-Wide 1.7GB  | . 529.98  |   |
|   | 21407  | Sony DIC-Wide 4.0G8,   | \$29.98   |   |
|   | 21406  | Sony DIC-Wide 420Mb 2 Pk   |   |   |
| 1                                       | 19317  | Sony OIC-Wide 850MB  | \$29.98   |   |
| 2                                       | 27636  | Sony Travan TR-I CTG 400/800M8   | \$29.98   |   |
| 2                                       | 27649  | Sony Zip 100MB PC Dlsk   |   |   |
|   |  | SyQuest  |   |   |
| ,                                       | 00400  | Culturent Coutridae COMO   | 642.00  |   |
| -                                       | 00183  | SyOuest Cartridge 88M8   | \$43.90   |   |
|   | 00278  | SyDuest 200Mb 5.25" Removable Cartridge  | . \$63.98   |   |
|   | 02183  | SyOuest 44MB Cartridge Unformatted   | \$41.98   |   |
| ç                                       | 97992  | SyOuest 270M8 3.5" Removable Cartridge   | \$51.98   |   |
| 5                                       | 99922  | SyDuest 105M8 Cartridge  | \$39.98   |   |
| 7                                       | 24998  | SyOuest EZ135M8 Cartridge (PC or Mac)  | \$23.98   |   |
|   |  | Verbatim   |   |   |
| 4                                       | 7895   |  | ê7 00   |   |
|   |  | Verbatim 4mm DL 90m 2.0G8 Tape   | 97.00   |   |
|   | 90985  | Verbatim 8mm DL 112m Data Tape   | \$7.98  | ' |
|   | 33616  | Verbatim 8mm DL 160m Data Cartridge  | \$14.98   |   |
| 4                                       | 17876  | Verbatim DC2120 Data Cart OIC-80 Format  | \$15 DR   |   |
|   |  | TOTALITI DOLICO DUM OUIT OTO GOT OTTIMESTA   | , . 910.30  |   |
|   | 27134  | Verbatim DC2120 Extra OIC-80 Format  | \$24.98   | ı |
| 2                                       |  | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted   | \$24.98   | 1 |
| 2                                       | 27134<br>21924   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted   | \$24.98   |   |
| 200                                     | 27134<br>21924<br>21439  | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 DIC-80 Format 2Pk   | , \$24.98<br>, \$59.98<br>, \$26.98   | ; |
| 2000                                    | 27134<br>21924<br>21439<br>23151   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 DIC-80 Format 2Pk Verbatim DC2120XL Data Cart OIC-80  | \$24.98<br>\$59.98<br>\$26.98<br>\$15.98  |   |
| 14 14 14 15                             | 27134<br>21924<br>21439<br>23151<br>33614  | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted   | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98   |   |
| 24 24 25 25                             | 27134<br>21924<br>21439<br>23151<br>33614<br>33613   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted . Verbatim DC2120 DIC-80 5Pk Formatted  | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98  |   |
| 24 24 25 25                             | 27134<br>21924<br>21439<br>23151<br>33614<br>33613   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted . Verbatim DC2120 DIC-80 5Pk Formatted  | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98  | 1 |
| 24 24 25 25                             | 27134<br>21924<br>21439<br>23151<br>33614<br>33613   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 DIC-80 5Pk Formatted  | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98  | 1 |
| 2 | 27134<br>21924<br>21439<br>23151<br>33614<br>33613   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted . Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 XL Data Cart OIC-80 Verbatim DIC 3020 TR-3 Extra Verbatim DIC-80 TR-1 Extra  | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98  |   |
| 2 | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br>SU<br>94359  | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 DIC-80 5Pk Formatted  | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98  | 1 |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br>SU<br>94359<br>99364   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 XL Data Cart OIC-80  | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>TION<br>, \$89.98<br>, \$140.98   | 1 |
| 2 | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>94359<br>99364<br>11651   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 DIC-80 5Pk Formatted  | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>TION<br>, \$89.98<br>, \$140.98<br>, \$236.98   |   |
| 2 | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>94359<br>99364<br>11651<br>26812  | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted . Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 XL Data Cart OIC-80 Verbatim DIC 3020 TR-3 Extra Verbatim DIC-80 TR-1 Extra  | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>TION<br>, \$89.90<br>, \$140.98<br>, \$236.98<br>, \$287.98   |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>94359<br>99364<br>11651<br>26812<br>27098   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted . Verbatim DC2120 DIC-80 5Pk Formatted . Verbatim DC2120 XL Data Cart OIC-80 . Verbatim DIC 3020 TR-3 Extra . Verbatim DIC-80 TR-1 Extra  | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$287.98<br>, \$143.98   |   |
| 33 33 33 33 33 33 33 33 33 33 33 33 33  | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>24359<br>29364<br>11651<br>26812<br>27098<br>27097  | Verbatim DC2120 Extra OIC-80 Format . Verbatim DC2120 DIC-80 5Pk Formatted . Verbatim DC2120 DIC-80 5Pk Formatted . Verbatim DC2120XL Data Cart OIC-80 . Verbatim DIC 3020 TR-3 Extra . Verbatim DIC-80 TR-1 Extra .  **RGE / POWER PROTEC** American Power** APC 8ack-UPS 200 . APC 8ack-UPS 400 . APC 8ack-UPS 650 PnP . APC 8ack-UPS 650 PnP . APC 8ack-UPS Pro 280 PnP . APC 8ack-UPS Pro 280 PnP . APC 8ack-UPS Pro 420 PnP .   | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$287.98<br>, \$143.98<br>, \$240.98   |   |
| 33 33 33 33 33 33 33 33 33 33 33 33 33  | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>94359<br>99364<br>11651<br>26812<br>27098   | Verbatim DC2120 Extra OIC-80 Format .  Verbatim DC2120 DIC-80 5Pk Formatted .  Verbatim DC2120 DIC-80 5Pk Formatted .  Verbatim DC2120 LIC-80 Format 2Pk .  Verbatim DIC 3020 TR-3 Extra .  Verbatim DIC 3020 TR-3 Extra .  Verbatim DIC-80 TR-1 Extra .  RGE / POWER PROTEC American Power .  APC 8ack-UPS 200 .  APC 8ack-UPS 400 .  APC 8ack-UPS 600 Pr  APC 8ack-UPS 650 Pr  APC 8ack-UPS 650 Pr  APC 8ack-UPS Pro 280 Pr  APC 8ack-UPS Pro 420 Pr  APC Personal Surge Arrest 7 Dutlet .   | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$236.98<br>, \$240.98<br>, \$240.98   |   |
| 3 | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>24359<br>29364<br>11651<br>26812<br>27098<br>27097  | Verbatim DC2120 Extra OIC-80 Format . Verbatim DC2120 DIC-80 5Pk Formatted . Verbatim DC2120 DIC-80 5Pk Formatted . Verbatim DC2120XL Data Cart OIC-80 . Verbatim DIC 3020 TR-3 Extra . Verbatim DIC-80 TR-1 Extra .  **RGE / POWER PROTEC** American Power** APC 8ack-UPS 200 . APC 8ack-UPS 400 . APC 8ack-UPS 650 PnP . APC 8ack-UPS 650 PnP . APC 8ack-UPS Pro 280 PnP . APC 8ack-UPS Pro 280 PnP . APC 8ack-UPS Pro 420 PnP .   | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$236.98<br>, \$240.98<br>, \$240.98   | ] |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>94359<br>99364<br>11651<br>26812<br>27098<br>27097<br>94396   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 DIC-80 5Pk Formatted Verbatim DC2120 LIC-80 Format 2Pk Verbatim DIC 3020 TR-3 Extra Verbatim DIC-80 TR-1 Extra  RGE / POWER PROTEC  American Power  APC 8ack-UPS 400  APC 8ack-UPS 600  APC 8ack-UPS 650 PnP  APC 8ack-UPS 650 PnP  APC 8ack-UPS Pro 420 PnP  APC 8ack-UPS Pro 420 PnP  APC Back-UPS Pro 420 PnP  APC Personal Surge Arrest 7 Dutlet  APC Personal Surge Arrest 7 Dutlet wPhone.   | , \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$287.98<br>, \$143.98<br>, \$143.98<br>, \$16.98<br>, \$19.98   | ] |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>94359<br>99364<br>11651<br>26812<br>27098<br>827097<br>94396<br>94394   | Verbatim DC2120 Extra OIC-80 Format . Verbatim DC2120 DIC-80 5PK Formatted . Verbatim DC2120 DIC-80 5PK Formatted . Verbatim DC2120 DIC-80 Format 2Pk . Verbatim DC2120 ZID-80 Format 2Pk . Verbatim DIC 3020 TR-3 Extra . Verbatim DIC-80 TR-1 Extra .  **SGE / POWER PFOTEO**  **American Power** APC 8ack-UPS 200 . APC 8ack-UPS 200 . APC 8ack-UPS 400 . APC 8ack-UPS 600 . APC 8ack-UPS 600 . APC 8ack-UPS Pro 280 PnP . APC 8ack-UPS Pro 420 PnP . APC 8ack-UPS Pro 420 PnP . APC Personal Surge Arrest 7 Dutlet . APC Professional Surge Arrest 7 Outlet . APC Professional Surge Arrest 7 Dutlet .   | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$29.98   |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br>SU<br>24359<br>29364<br>11651<br>26812<br>27098<br>27097<br>24396<br>24395   | Verbatim DC2120 Extra OIC-80 Format  | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$29.98   |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br>39364<br>11651<br>26812<br>27098<br>27097<br>34396<br>34394<br>34393   | Verbatim DC2120 Extra OIC-80 Format .  Verbatim DC2120 DIC-80 5Pk Formatted .  Verbatim DC2120 DIC-80 5Pk Formatted .  Verbatim DC2120 LIC-80 Formatted .  Verbatim DC2120 LIC-80 Formatted .  Verbatim DIC 3020 TR-3 Extra .  Verbatim DIC-80 TR-1 Extra .  RGE / POWER PROTEC .  American Power .  APC 8ack-UPS 200 .  APC 8ack-UPS 600 .  APC 8ack-UPS 600 PnP .  APC 8ack-UPS 600 PnP .  APC 8ack-UPS Pro 280 PnP .  APC 8ack-UPS Pro 420 PnP .  APC Personal Surge Arrest 7 Dutlet .  APC Professional .  APC PROFESSIO | . \$24.98<br>, \$59.98<br>, \$56.98<br>, \$15.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$240.98<br>, \$143.98<br>, \$149.98<br>, \$19.98<br>, \$240.98  |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br>SU<br>94359<br>99364<br>411651<br>26812<br>27098<br>827097<br>94396<br>94395<br>94394<br>94393   | Verbatim DC2120 Extra OIC-80 Format .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 NLD ata Cart OIC-80 .  Verbatim DIC 3020 TR-3 Extra .  Verbatim DIC-80 TR-1 Extra .  RGE / POWER PROTEC .  American Power .  APC 8ack-UPS 200 .  APC 8ack-UPS 400 .  APC 8ack-UPS 600 PnP .  APC 8ack-UPS 650 PnP .  APC 8ack-UPS Pro 420 PnP .  APC 8ack-UPS Pro 420 PnP .  APC Personal Surge Arrest 7 Dutlet .  APC Professional Surge Arrest 5 Dutlet .  APC Professional Surge Arrest 5 Dutlet .  APC Professional Surge Arrest 5 Dutlet .  APC Decommunications Software .  | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$287.98<br>, \$240.98<br>, \$140.98<br>, \$240.98<br>, \$19.98<br>, \$29.98<br>, \$29.98<br>, \$33.98   |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br>SU<br>94359<br>99364<br>11651<br>26812<br>27098<br>27097<br>94396<br>94395<br>94394<br>94393   | Verbatim DC2120 Extra OIC-80 Format .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 LIC-80 Format 2Pk .  Verbatim DIC 3020 TR-3 Extra .  Verbatim DIC-80 TR-1 Extra .  **RGE / POWER PROTEC**  **American Power**  APC 8ack-UPS 400 .  APC 8ack-UPS 400 .  APC 8ack-UPS 660 PnP .  APC 8ack-UPS 660 PnP .  APC 8ack-UPS Pro 420 PnP .  APC 8ack-UPS Pro 420 PnP .  APC Personal Surge Arrest 7 Dutlet .  APC Professional Surge Arrest 7 Dutlet w/Phone .   | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$236.98<br>, \$240.98<br>, \$149.98<br>, \$19.98<br>, \$19.98<br>, \$29.98<br>, \$33.98  |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>94359<br>99364<br>11651<br>26812<br>27098<br>27097<br>94396<br>94395<br>94393<br>94393<br>94393<br>94394<br>94395   | Verbatim DC2120 Extra OIC-80 Format .  Verbatim DC2120 DIC-80 5PK Formatted.  Verbatim DC2120 DIC-80 5PK Formatted.  Verbatim DC2120 NIC-80 Format 2PK  Verbatim DC2120 NIC-80 Format 2PK  Verbatim DIC 3020 TR-3 Extra .  Verbatim DIC-80 TR-1 Extra .  **SGE / POWER PFOTEO**  **American Power**  APC 8ack-UPS 200 .  APC 8ack-UPS 200 .  APC 8ack-UPS 400 .  APC 8ack-UPS 600 .  APC 8ack-UPS 600 PnP .  APC 8ack-UPS Pro 280 PnP .  APC 8ack-UPS Pro 280 PnP .  APC 8ack-UPS Pro 420 PnP .  APC Personal Surge Arrest 7 Dutlet .  APC Professional Surge Arrest 7 Dutlet .  APC Professional Surge Arrest 7 Dutlet w/Phone .  APC Professional Surge Arrest 7 Dutlet w/Phone .  Optiquest  DPTI-SAFE + UPS Communications Software .  DPTI-SAFE + UPS Communications Software .  DPTI-UPS 280E Uninterruptible Powr Sys .   | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>. \$140.98<br>, \$140.98<br>, \$236.98<br>, \$287.98<br>, \$143.98<br>, \$143.98<br>, \$29.98<br>, \$33.98<br>. \$69.98<br>, \$88.98<br>, \$88.98<br>, \$138.98   |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br>SU<br>94359<br>99364<br>11651<br>26812<br>27098<br>27097<br>94396<br>94395<br>94394<br>94393   | Verbatim DC2120 Extra OIC-80 Format .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 LIC-80 Format 2Pk .  Verbatim DIC 3020 TR-3 Extra .  Verbatim DIC-80 TR-1 Extra .  **RGE / POWER PROTEC**  **American Power**  APC 8ack-UPS 400 .  APC 8ack-UPS 400 .  APC 8ack-UPS 660 PnP .  APC 8ack-UPS 660 PnP .  APC 8ack-UPS Pro 420 PnP .  APC 8ack-UPS Pro 420 PnP .  APC Personal Surge Arrest 7 Dutlet .  APC Professional Surge Arrest 7 Dutlet w/Phone .   | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>. \$140.98<br>, \$140.98<br>, \$236.98<br>, \$287.98<br>, \$143.98<br>, \$143.98<br>, \$29.98<br>, \$33.98<br>. \$69.98<br>, \$88.98<br>, \$88.98<br>, \$138.98   |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>94359<br>99364<br>11651<br>26812<br>27098<br>27097<br>94396<br>94395<br>94393<br>94393<br>94393<br>94394<br>94395   | Verbatim DC2120 Extra OIC-80 Format  | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>. \$140.98<br>, \$140.98<br>, \$236.98<br>, \$287.98<br>, \$143.98<br>, \$143.98<br>, \$29.98<br>, \$33.98<br>. \$69.98<br>, \$88.98<br>, \$88.98<br>, \$138.98   |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br><b>SU</b><br>94359<br>99364<br>11651<br>26812<br>27098<br>27097<br>94396<br>94395<br>94393<br>94393<br>94393<br>94394<br>94395   | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5PK Formatted. Verbatim DC2120 DIC-80 5PK Formatted. Verbatim DC2120 DIC-80 5PK Formatted. Verbatim DC2120 NLD-80 Format 2Pk Verbatim DC2120 NLD-81 Extra Verbatim DIC-80 TR-1 Extra  **SGE / POWER PFOTEO**  **American Power**  APC 8ack-UPS 200.  APC 8ack-UPS 400.  APC 8ack-UPS 600  APC 8ack-UPS 650 PnP.  APC 8ack-UPS 650 PnP.  APC 8ack-UPS Pro 280 PnP.  APC 8ack-UPS Pro 420 PnP.  APC Personal Surge Arrest 7 Dutlet  APC Personal Surge Arrest 7 Dutlet w/Phone.  APC Professional Surge Arrest 7 Dutlet w/Phone.  APC P | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>. \$140.98<br>, \$140.98<br>, \$236.98<br>, \$287.98<br>, \$143.98<br>, \$143.98<br>, \$29.98<br>, \$33.98<br>. \$69.98<br>, \$88.98<br>, \$88.98<br>, \$138.98   |   |
|   | 27134<br>21924<br>21924<br>21439<br>23151<br>33614<br>33613<br>33613<br>33613<br>24359<br>29364<br>11651<br>26812<br>27098<br>27097<br>24396<br>24395<br>24394<br>24393<br>25887<br>25889<br>25889   | Verbatim DC2120 Extra OIC-80 Format . Verbatim DC2120 DIC-80 5PK Formatted . Verbatim DC2120 DIC-80 5PK Formatted . Verbatim DC2120 DIC-80 5PK Formatted . Verbatim DC2120 XL Data Cart OIC-80 . Verbatim DIC 3020 TR-3 Extra . Verbatim DIC-80 TR-1 Extra . Certain DIC-80 TR-1 Extra . C | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$15.98<br>, \$28.98<br>. \$140.98<br>, \$236.98<br>, \$240.98<br>, \$240.98<br>, \$143.98<br>, \$240.98<br>, \$19.98<br>, \$29.98<br>, \$33.98<br>, \$69.98<br>, \$88.98<br>, \$88.98<br>, \$88.98<br>, \$138.98   |   |
|   | 27134<br>21924<br>211439<br>23151<br>33614<br>33613<br>3613<br>3614<br>33613<br>3618<br>3613<br>26812<br>27098<br>24396<br>24396<br>25887<br>25888<br>25889  | Verbatim DC2120 Extra OIC-80 Format .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 NLD-80 Format 2Pk .  Verbatim DIC 3020 TR-3 Extra .  Verbatim DIC-80 TR-1 Extra .  RGE / POWER PROTEC .  American Power .  APC 8ack-UPS 400 .  APC 8ack-UPS 600 .  APC 8ack-UPS 600 .  APC 8ack-UPS 650 PnP .  APC 8ack-UPS 650 PnP .  APC 8ack-UPS Pro 420 PnP .  APC Personal Surge Arrest 7 Dutlet .  APC Personal Surge Arrest 7 Dutlet .  APC Professional Surge Arrest 7 Dutlet .  APC Pofessional Surge Arrest 7 Dutlet .  APC Professional Surge Arrest 9 Dutlet .  APC PROFE   | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$236.98<br>, \$240.98<br>, \$143.98<br>, \$240.98<br>, \$19.98<br>, \$29.98<br>, \$33.98<br>, \$88.98<br>, \$138.98<br>, \$28.98   |   |
|   | 27134<br>21924<br>21924<br>21439<br>23151<br>33614<br>33613<br>33613<br>33613<br>24359<br>29364<br>11651<br>26812<br>27098<br>27097<br>24396<br>24395<br>24394<br>24393<br>25887<br>25889<br>25889   | Verbatim DC2120 Extra OIC-80 Format .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 NLD-80 Format 2Pk .  Verbatim DIC 3020 TR-3 Extra .  Verbatim DIC-80 TR-1 Extra .  RGE / POWER PROTEC .  American Power .  APC 8ack-UPS 400 .  APC 8ack-UPS 600 .  APC 8ack-UPS 600 PnP .  APC 8ack-UPS 650 PnP .  APC 8ack-UPS Pro 420 PnP .  APC Personal Surge Arrest 7 Dutlet .  APC Professional Surge Arrest 7 Dutlet w/Phone .  APC Professional Surge Arrest 7 Dutlet w/Pho | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$240.98<br>, \$143.98<br>, \$240.98<br>, \$19.98<br>, \$19.98<br>, \$29.98<br>, \$33.98<br>, \$69.98<br>, \$33.98<br>, \$69.98<br>, \$33.98<br>, \$69.98<br>, \$28.98<br>, \$33.98<br>, \$69.98<br>, \$28.98<br>, \$33.98  |   |
|   | 27134<br>21924<br>211439<br>23151<br>33614<br>33613<br>3613<br>3614<br>33613<br>3618<br>3613<br>26812<br>27098<br>24396<br>24396<br>25887<br>25888<br>25889  | Verbatim DC2120 Extra OIC-80 Format .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 DIC-80 5PK Formatted .  Verbatim DC2120 NLD-80 Format 2Pk .  Verbatim DIC 3020 TR-3 Extra .  Verbatim DIC-80 TR-1 Extra .  RGE / POWER PROTEC .  American Power .  APC 8ack-UPS 400 .  APC 8ack-UPS 600 .  APC 8ack-UPS 600 PnP .  APC 8ack-UPS 650 PnP .  APC 8ack-UPS Pro 420 PnP .  APC Personal Surge Arrest 7 Dutlet .  APC Professional Surge Arrest 7 Dutlet w/Phone .  APC Professional Surge Arrest 7 Dutlet w/Pho | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$240.98<br>, \$143.98<br>, \$240.98<br>, \$19.98<br>, \$19.98<br>, \$29.98<br>, \$33.98<br>, \$69.98<br>, \$33.98<br>, \$69.98<br>, \$33.98<br>, \$69.98<br>, \$28.98<br>, \$33.98<br>, \$69.98<br>, \$28.98<br>, \$33.98  |   |
|   | 27134<br>27134<br>211429<br>211439<br>33614<br>33613<br>34359<br>39364<br>411651<br>27098<br>27097<br>34396<br>34395<br>34393<br>34393<br>25887<br>25888<br>25889<br>25889   | Verbatim DC2120 Extra OIC-80 Format  Verbatim DC2120 DIC-80 5PK Formatted.  Verbatim DC2120 DIC-80 5PK Formatted.  Verbatim DC2120 DIC-80 5PK Formatted.  Verbatim DC2120 ZID-80 Format 2Pk  Verbatim DIC 3020 TR-3 Extra  Verbatim DIC-80 TR-1 Extra  **CFE / POWER PROTEC  **American Power  APC 8ack-UPS 200.  APC 8ack-UPS 400.  APC 8ack-UPS 600  APC 8ack-UPS 600 PnP.  APC 8ack-UPS 650 PnP.  APC 8ack-UPS Pro 280 PnP.  APC 8ack-UPS Pro 420 PnP.  APC Personal Surge Arrest 7 Dutlet  APC Personal Surge Arrest 7 Dutlet w/Phone.  APC Professional Surge Arrest 7 Dutlet w/Phone.  APC | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$240.98<br>, \$247.98<br>, \$143.98<br>, \$247.98<br>, \$16.98<br>, \$29.98<br>, \$33.98<br>, \$69.98<br>, \$33.98<br>, \$69.98<br>, \$287.98<br>, \$29.98<br>, \$33.98  |   |
|   | 27134<br>211924<br>21439<br>23151<br>33614<br>33613<br>32151<br>33614<br>33613<br>24359<br>94359<br>94364<br>11651<br>26812<br>27098<br>24396<br>34394<br>34394<br>34394<br>34394<br>34395<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394<br>34394 | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5PK Formatted. Verbatim DC2120 DIC-80 5PK Formatted. Verbatim DC2120 DIC-80 5PK Formatted. Verbatim DC2120 NLD-80 Format 2Pk Verbatim DC2120 NLD-81 Extra Verbatim DIC 3020 TR-3 Extra Verbatim DIC-80 TR-1 Extra  **SGE / POW/ER PFOTEC **American Power*  APC 8ack-UPS 200.  APC 8ack-UPS 400.  APC 8ack-UPS 600  APC 8ack-UPS 600  APC 8ack-UPS 600 PnP.  APC 8ack-UPS Pro 280 PnP.  APC 8ack-UPS Pro 420 PnP.  APC Personal Surge Arrest 7 Dutlet  APC Personal Surge Arrest 7 Dutlet w/Phone.  APC Professional Surge Arrest 7 D | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$15.98<br>, \$28.98<br>. \$140.98<br>, \$140.98<br>, \$236.98<br>, \$247.98<br>, \$143.98<br>, \$143.98<br>, \$16.98<br>, \$19.98<br>, \$29.98<br>, \$33.98<br>. \$69.98<br>, \$138.98<br>, \$228.98<br>. \$228.98   |   |
|   | 27134<br>27134<br>211924<br>213151<br>33614<br>33613<br>33614<br>33613<br>329364<br>41359<br>34396<br>34396<br>34395<br>34394<br>44393<br>25887<br>25888<br>25889<br>25889<br>25889<br>25889<br>25889  | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5PK Formatted Verbatim DC2120 DIC-80 5PK Formatted Verbatim DC2120 DIC-80 5PK Formatted Verbatim DC2120 NLD-80 Format 2PK Verbatim DIC 3020 TR-3 Extra Verbatim DIC 3020 TR-3 Extra Verbatim DIC-80 TR-1 Extra  RGE / POWER PROTEC  American Power APC 8ack-UPS 400.  APC 8ack-UPS 600  APC 8ack-UPS 600  APC 8ack-UPS 600 PnP.  APC 8ack-UPS 650 PnP.  APC 8ack-UPS 650 PnP.  APC Personal Surge Arrest 7 Dutlet APC Personal Surge Arrest 7 Dutlet w/Phone. APC Professional Surge Arrest 7 Dutlet w/Phone. APC P | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$240.98<br>, \$240.98<br>, \$143.98<br>, \$240.98<br>, \$19.98<br>, \$240.98<br>, \$33.98<br>, \$69.98<br>, \$88.98<br>, \$138.98<br>, \$28.98<br>, \$29.98<br>, \$28.98<br>, \$29.98<br>, \$29.98<br>, \$28.98<br>, \$28.98<br>, \$33.98<br>, \$3 |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br>33614<br>33613<br>327097<br>24359<br>24359<br>25887<br>25888<br>25889<br>25889<br>25890<br>25890<br>2680<br>2680<br>2680<br>2790<br>2790<br>2790<br>2790<br>2790<br>2790<br>2790<br>279  | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5PK Formatted Verbatim DC2120 DIC-80 5PK Formatted Verbatim DC2120 DIC-80 5PK Formatted Verbatim DC2120 NLD-80 Format 2Pk Verbatim DC2120 NLD-80 Format 2Pk Verbatim DIC 3020 TR-3 Extra Verbatim DIC-80 TR-1 Extra  RGE / POWER PROTEC  American Power  APC 8ack-UPS 200  APC 8ack-UPS 600  APC 8ack-UPS 600  APC 8ack-UPS 600 PnP  APC 8ack-UPS 650 PnP  APC 8ack-UPS Pro 280 PnP  APC 8ack-UPS Pro 420 PnP  APC Personal Surge Arrest 7 Dutlet  APC Professional Surge Arrest 7 Dutlet w/Phone  APC Professional | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$236.98<br>, \$240.98<br>, \$143.98<br>, \$240.98<br>, \$143.98<br>, \$19.98<br>, \$19.98<br>, \$29.98<br>, \$138.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$29.98<br>, \$29.98<br>, \$29.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$33.98   |   |
|   | 27134<br>21924<br>21351<br>33614<br>33613<br>33613<br>33614<br>33613<br>32729<br>34359<br>34359<br>34394<br>34395<br>34394<br>34395<br>34394<br>34395<br>34394<br>34395<br>34394<br>34395<br>34395<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396<br>34396  | Verbatim DC2120 Extra OIC-80 Format  Verbatim DC2120 DIC-80 5PK Formatted.  Verbatim DC2120 DIC-80 5PK Formatted.  Verbatim DC2120 DIC-80 5PK Formatted.  Verbatim DC2120 NLD-80 Format 2Pk  Verbatim DIC 3020 TR-3 Extra  Verbatim DIC-80 TR-1 Extra  **CE / POWER PROTEC  **American Power  APC 8ack-UPS 400.  APC 8ack-UPS 400.  APC 8ack-UPS 660 PnP.  APC 8ack-UPS 660 PnP.  APC 8ack-UPS Pro 280 PnP.  APC 8ack-UPS Pro 420 PnP.  APC Professional Surge Arrest 7 Dutlet w/Phone.  APC P | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$240.98<br>, \$140.98<br>, \$236.98<br>, \$240.98<br>, \$19.98<br>, \$29.98<br>, \$33.98<br>, \$69.98<br>, \$88.98<br>, \$18.98<br>, \$28.98<br>, \$28.98<br>, \$28.98<br>, \$38.98<br>, \$28.98<br>, \$38.98<br>, \$38.98<br>, \$38.98<br>, \$38.98<br>, \$38.98<br>, \$38.98<br>, \$38.98<br>, \$38.98<br>, \$138.98<br>, \$138.98<br>, \$138.98<br>, \$138.98   |   |
|   | 27134<br>21924<br>21439<br>23151<br>33614<br>33613<br>33614<br>33613<br>327097<br>24359<br>24359<br>25887<br>25888<br>25889<br>25889<br>25890<br>25890<br>2680<br>2680<br>2680<br>2790<br>2790<br>2790<br>2790<br>2790<br>2790<br>2790<br>279  | Verbatim DC2120 Extra OIC-80 Format Verbatim DC2120 DIC-80 5PK Formatted Verbatim DC2120 DIC-80 5PK Formatted Verbatim DC2120 DIC-80 5PK Formatted Verbatim DC2120 NLD-80 Format 2Pk Verbatim DC2120 NLD-80 Format 2Pk Verbatim DIC 3020 TR-3 Extra Verbatim DIC-80 TR-1 Extra  RGE / POWER PROTEC  American Power  APC 8ack-UPS 200  APC 8ack-UPS 600  APC 8ack-UPS 600  APC 8ack-UPS 600 PnP  APC 8ack-UPS 650 PnP  APC 8ack-UPS Pro 280 PnP  APC 8ack-UPS Pro 420 PnP  APC Personal Surge Arrest 7 Dutlet  APC Professional Surge Arrest 7 Dutlet w/Phone  APC Professional | . \$24.98<br>, \$59.98<br>, \$26.98<br>, \$15.98<br>, \$32.98<br>, \$28.98<br>, \$140.98<br>, \$140.98<br>, \$236.98<br>, \$236.98<br>, \$247.98<br>, \$143.98<br>, \$16.98<br>, \$19.98<br>, \$29.98<br>, \$33.98<br>, \$69.98<br>, \$33.98<br>, \$228.98<br>, \$228.98<br>, \$228.98<br>, \$291.98<br>, \$291.98<br>, \$291.98<br>, \$291.98<br>, \$33.98<br>, \$33.98  |   |

26473 Lotus SmartSuite 96 Full Version CD .......\$389.98

|              |  | _                |
|--------------|--|------------------|
| 4740         | Symantec   | 0.44.0           |
| 1743         | Norton NT Tools 1.0  | \$44.9           |
| 4064         | Notion Antivirus 3.0 TD CAMin  | £49.0            |
| 7153         | Norton AntiVirus 3.0 DDS/Win   | \$40.5           |
| 7803         | Norton AntiVirus 3.0 Upgr DOS/Win  | 328.9            |
| 3947         | Norton AntiVirus 2.0 for Win95 ,   | , \$00.9         |
| 2565         | Norton DiskLock 3.5 Dos/Win  | \$00.5           |
| 3919         | Norton Navigator f/Win95 TradeUp   | \$39.9           |
| 3925         | Norton Navigator for Win95   | \$90.9           |
| 7380         | Norton Utilities 8.0   | \$112.5<br>640.0 |
| 7800<br>5496 | Norton Utilities 8.0 Upgrade   | 340.5            |
| 4657         | Norton Utilities for Win95 TradeUp   | #EC 0            |
| 3946         | Norton Utilities for Win95   | ¢114.0           |
| 7322         | CommSuite 7.0 For Win 95   | e400.0           |
| 7310         | CommSuite 7.0 For Win 95 CD  |                  |
| 7318         | Cyberjack 7.0 For Win 95 CD  | \$40.0           |
| 7306         | Cyberjack 7.0 For Win 95 3.5"  | \$40.0           |
| 2551         | pcANYWHERE 2.0 for Windows Host/Remote   | \$110 C          |
| 7653         | pcANYWHERE 5.0 for DOS Host/Remote   | ¢112.0           |
| 7304         | pcANYWHERE32 7.5 For Win95 & WinNT   | ¢1/// 0          |
| 1729         | pcANYWHERE32 7.5 Win 95/NT Upgrade   |                  |
| 7317         | WinFax Pro 7.0 Win 95  | \$78.0           |
| 1101         | Adobe  | 410.5            |
| 6527         | Adobe FrameMaker 5.1 CD & 3.5"   | esno n           |
| 6528         |  |                  |
| 8821         | Adobe FrameMaker 5.1 Upgrade CD & 3.5", , Adobe Illustrator 4.1 Upgrade For Windows. | £40 C            |
| 0791         | Adobe Illustrator 4.1 W/ Streamline 3.0  | £220 f           |
| 7610         | Adobe PageMaker 6.5 Upgrade  |                  |
| 7611         | Adobe PageMaker 6.5 Comp Upgrade Win   | £400 f           |
| 7609         | Adobe PageMaker 6.5 Windows  | \$540.0          |
| 1903         | Adobe Photoshop 3.0.5 Windows,,  | ¢549.0           |
| 7245         | Adobe Photoshop 3.0.5 Upgrade  | \$174.0          |
| 2955         | Adobe PhotoShop 3.0.5 /Gallery Effects 123   | \$558.0          |
| 3033         | Adobe PhotoShop 3.0.5 /Ill 4.1/Gallery Effects                                       |                  |
| 3013         | Adobe Premiere 4.2 for Windows   | \$494 0          |
| 7319         | Adobe Type Manager Deluxe 4.0 Windows  | \$48 0           |
| 1010         | Corel  | ф-ча             |
| 5498         | CorelDRAW 6 Upgrade CD f/DRAW 3/4  | \$358.0          |
| 9958         | Corel GALLERY 2.   |                  |
| 1717         | Corel Graphic's Pack   | \$08.0           |
| 2906         | Corel Presentations 6.1 for Win 3.1x   |                  |
| 3353         | Corel Visual CADD Upgrade Win 95/NT  | \$146.9          |
| 1010         | CorelDRAW 4 for Win CD   | \$64.0           |
| 6037         | CorelDRAW 5 CD-RDM   | \$428.9          |
| 3931         | CorelDraw 6 CD ROM   | \$198.9          |
| 3932         | CorelDraw 6 CD Upgrade for DRAW 5  | \$198.9          |
| 2988         | Corel Office Professional 7 Win 95   | \$448.9          |
| 2950         | Corel Office Professional 6.1 for Win 3.1x   | \$448.9          |
| 2951         | Corel Office Professional 6.1 Trade Up/Upgrade                                       | \$219.9          |
| 2991         | Corel Presentations 7 WIN 95 CD  | \$64.9           |
| 2906         | Corel Presentations f/Win 3.1x   | \$64.9           |
|              | Microsoft  |                  |
| 7404         | MS WDRD 6.0 for Win Ver/Comp Upgrade   | \$118.9          |
| 7947         | MS Project 4.0 Ver Upgr for Windows  | \$134.9          |
| 2410         | MS Access 2.0 Ver/Comp Upgr for Win  | . \$114.9        |
| 5406         | MS Excel 5.0 for Win Comp/Version Upgrd  | \$108.9          |
| 4095         | MS PowerPoint for Win 95 Upgr - 3.5*   | \$89.9           |
| 4102         | MS Project for Windows 95 Upgr - 3.5"  | . \$129.9        |
| 4117         | MS Word for Windows 95 Upgrade - 3,5"  | \$54.9           |
| 2153         | MS Office 4.2 for Win Ver/Comp Upgr  | \$268.9          |
| 6352         | MS Dffice 4.2 for Win Upgr on CD RDM   | \$268.9          |
| 7831         | MS Office 4.3 Pro Ver / Comp Upgrd   | . \$348.9        |
| 0763         | MS Office Pro v4.3 and 8ookshelf Upgr  | \$348.9          |
| 4077         | MS Office Standard for Win 95 Upgr - 3.5"  |                  |
| 4079         | MS Office Standard for Win 95 Upgr CD-RDM  |                  |
| 4085         | MS Office Pro for Windows 95 Upgr - 3.5"   | \$268.9          |
| 4087         | MS Office Pro w/ Bkshlf Win 95 Upgr CD   |                  |
| 2226         | MS DDS 6.22 Upgrade  |                  |
| 4115         | MS Plus for Windows 95 CD-RDM  | ,\$39.9          |
| 7752         | MS Windows 3.11  | \$88.9           |
| 4051         | MS Windows 95 - 3.5"   | . \$179.9        |
| 4050         | MS Windows 95 Upgrade - 3.5*   |                  |
| 4052         | MS Windows 95 Upgrade CD-RDM   |                  |
|              | * After \$40 mfr mail in rebate (expires 12/31/9                                     | v)               |
|              |  |                  |

## **Nobotics**

The Intelligent Choice in Information Access

#### Sportster WinModem 28.8 Internal

• True V.34 data transmissions

\$**99**98 at 28.8 Kbps

 Plug and Play



# *Microsoft®*



\$129<sup>98</sup> Order #35480

Microsoft Windows NT Workstation 4.0 Upgrade

- Same easy-to-use interface as Windows 95
- The highest level of DS performance and reliability available!



Memory

\$49<sup>98</sup> Order #28337

- 100% guaranteed compatibility
- Lifetime warranty
- Toll-free tech support



32069 Ditto 850M8 Tri-Pack. .



MEDIA

lomega 

 Ditto 250 Tri-Pack
 \$39.95

 Ditto 420M8 Tri-Pack
 \$55.98

**NO SURCHARGE ON CREDIT CARDS** 

PLEASE USE THIS CODE TO RECEIVE THESE SPECIAL PW611

\$89.98

Corporate, Education and Government bids welcome! Fax to 1-800-417-1993

Circle 161 on reader service card

# GET MORE



# MORE

MORE READERS

MORE SOFTWARE

MORE

## MORE REVIEWS

MORE INTERACTIVITY

> MORE ANSWERS

PC WORLD

omline

# PC WORLD ONLINE DELIVERS!

Now that you're racking up hours on the Net, where can you go to get the most up-to-date information on today's best PC products? The same source you've always trusted — PC World magazine — online!

PC World Online is the leading online resource for PC buyers and users. We provide you with

more of the information you need to make fast and effective decisions. PC World Online offers daily news reports, analysis and commentary; productivity-oriented messaging and conferencing; product reviews, interactive buyers guides; RealAudio files; downloadable demos and reports from the PC World Test Center; naturallanguage article searches; databases of tips, FAQ's and technical support resources; and real-time expert assistance and advice.

PC World Online Spotlights for November 1996:

- PC World News Radio Rides the Net Waves
- Cover Story: Upgrades!
   Memory, CPUs, Graphics
   Accelerators ...and More
- Special Section: Internet! Publish on the Web; Tools
- PC World Online Annex: Community Setting for the Lighter-Side of Computing
- Interactive Buyers Guide: Build the Dream Machine that Meets Your Criteria
- Sign Up for 15 FREE Daily "Tip-a-Day" Newsletters http://www.pcworld.com/tips

Got a hot tip, a biting critique, a technical question? Post it on one of our message boards, and get a quick response from one of our savvy editors or other readers. PC World Online does more than just bring articles to readers; we bring the experience of editors, industry experts, and hardware and software specialists.

You can't miss PC World Online because we're everywhere. Explore our sites on America Online, CompuServe, Prodigy, The Microsoft Network and the Web.

PC World Online delivers it all: hundreds of thousands of online readers, thousands of downloadable software files, thousands of pages to view, daily updates, and hundreds of online-exclusive features. If you need the latest on the best, then get everything you want and more.

PC World Online! Just point and click!

• America Online: keyword poworld

CompuServe: go pcworld

• Prodigy: jump poworld

• The Microsoft Network: go poworld
Circle 172 on reader service card

Web: http://www.pcworld.co



# **Video Training for Windows Applications**

KeyStone Learning Systems Corporation

SOLUTION PROVIDER

## **KeyStone, Your Windows Training Specialists**



Alison Balter

Microsoft Certified Trainer & Access Instructor



**Robert MacHale** 

**Professional Trainer** & Internet Instructor

\$49.95

\$49.95

\$49.95

\$129.95

\$249.95

Netscape Nav. 2.x

Exploring the Net 1

Exploring the Net 2

Special-All Three

Special-All Three



Dawn Bjork

Microsoft Certified Trainer & Word Instructor

Word 95 or 6.0\*

Desktop Publishing \$49.95

Special-Any Three \$129.95

(ea) \$49.95

\$49.95

\$49.95

\$239.95

#### Access 95 or 2.0\* NEW Internet User/Dvlpm

Beg/Int/Adv (ea) \$49.95 Special-All Three \$129.95

Developer Lev. 1-3(ea) \$89.95 Developer Lev. 4-6(ea)\$89.95 **Developers Toolkit** \$89.95 Special-All Seven \$495.95 Special-All Ten \$595.95

#### Visual Basic 4.0

Visual C++ 4.x

(ea) \$89.95

(ea) \$89.95

(ea) \$89.95 Level 1/2/3 (ea) \$89.95 Level 4/5/6 Special-All Six \$449.95

Level 1/2/3

Level 4/5/6

Special-All Six

#### KeyNom Excel 95 or 5.0\*

HTML Lev 1/2/3 (ea) \$89.95

Beg/Int/Adv (ea) \$49.95 \$49.95 **Special Features** \$159.95 Special-All Four VBA Lev 1/2/3 (ea) \$49.95 Special-All Seven \$279.95

#### Windows 95 or 3.1\*

Special-All Six

Beg/Int/Adv

Mail Merge

Forms

(ea) \$49.95 Beg/Int/Adv Special-All Three \$129.95 Networking \$49.95 Installation \$49.95 \$49.95 **Special Features** Special-All Six \$239.95

#### PowerPoint 95 Km

Beg/Int/Adv (ea) \$49.95 Special-All Three \$129.95

### Project 95 or 4.0\*

Level 1/2/3/4 (ea) \$89.95 **All Four Videos** 

### Other Video Courses

#### Microsoft Training Videos Microsoft Office 95 or 4.x Combinations . . Call

Microsoft Office Integration ......\$49.95 Excel 95 or 5.0 - Beg/Int/Adv ....(set) \$129.95 Exchange Server 4.x - SysAdmin Level 1/2/3 User ......(set) \$299.95 SMS Server 1.1 - Level 1/2/3 ...(set) \$249.95 SNA Server 2.x ...(set) \$169.95 SQL Server 6.x or 4.x- Level 1/2/3 (set) \$249.95 VBA for Excel 95 Level 1/2/3 . . . . (set) \$129.95 Visual FoxPro 3.D - Level 1-6 . . . . . (set \$449.95 \text{Windows 3.1 - Beg/Int/Adv \ ...\set) \$129.95 \\
\text{Windows 1.1 - Beg/Int/Adv \ ...\set) \$129.95 \\
\text{Windows for Workgroups 3.x \ ...\s59.95 \\
\text{Windows NT 3.5x- 4 videos \ ...\set) \$299.95 \\
\text{Works 95 or 3.0 - 2 videos \ ...\set) \$89.95

#### Lotus Training Videos

| Lotus Smart Suite Combinations Call              |
|--|
| AmiPro 3.0 - Beg/Int/Adv(set) \$129.95           |
| Approach 96 or 3.0 - Beg/Int/Adv .(set) \$129.95 |
| cc:Mail - Svs Admin Lev 1/2/ User (set) \$199.95 |

Freelance 96 or 2.0, Beg/Int/Adv ..(set) \$129.95 Lotus 123-5 - Beg/Int/Adv .........\$129.95 Notes 4 or 3 - App Dev Lev 1-2 & Sys Admin Lev 1-2 & User . . . . . . (set) \$379.95 Drganizer 2.0 or 1.1 .......\$49.95 WordPro 96 - Beg/Int/Adv .....(set) \$129.95

**Corel Training Videos** Corel WordPerfect Combinations . . . . CorelDRAWI 6 or 5 - Beg/Int/Adv .(set) \$129.95 Envoy 1.0 ......\$49.95 

#### Ask About! Windows NT 4.0

Domestic Shipping 2-3 Days: \$5.00 for the first two videos: plus \$1.50 for each addition-

al video tape. International Orders: Shipping

All Videos Available in PAL (European Format)

\*Prices and course may vary

cost will vary, call for details.

Other Training Videos

ACT! 2.x Beg/Int/Adv .....(set) \$129.95 AutoCAD 13 - Level 1-4 . . . . . (set) \$329.95 DataCAD 5.02 - Beg/Int/Adv .....(set) \$199.95 dBase 5.D - Beg/Int/Adv .....(set) \$129.95 Delphi 2.0 - Level 1-6 ......(set) \$449.95 GroupWise 4.1 - User Level 1-2 . . . (set) \$89.95 Admin - Level 1-2 (set) \$159.95 Exploring the Net # 1-2 .....(set) \$89.95 Java - Level 1-6 . . . . . . . (set) \$449.95 JavaScript - Level 1-3 . . . . . . . (set) \$249.95 Netscape Navigator ......\$49.95 Netware 4.1 - Level 1-7 ......(set) \$495.95 PageMaker 6 - Beg/Int/Adv .....(set) \$129.95 Paradox 7 or 5.0 - Beg/Int/Adv ...(set) \$129.95 Peachtree 3.0 - Beg/Int/Adv .... (set) \$129.95 Photoshop 3.x Beg/Int/Adv/ Color Correct/Special Apps (set) \$199.95

PowerBuilder - 5.0 - Level 1-6 . . . (set) \$449.95 QuarkXPress 3.3x - Beg/Int/Adv . .(set) \$129.95 Orucken 4.0 or 3.0 - Basics/Pwr Tools (set) \$89.95 QuickBooks 4.0 or 3.0 - Beg/Int/Adv (set) \$129.95



Average: 2 hours of training per video

#### Special MS Office 95 or 4.x **Video Combinations**

Microsoft Office Standard 95 or 4.x

3 Word, 3 Excel, 3 PowerPoint (Beg/Int/Adv)

9 videos with over 17 hours of training

#### Microsoft Office Pro 95 or 4.x... MS Office 4.x

 3 Word, 3 Excel, 3 Access (Beg/Int/Adv) 3 PowerPoint, (1 Schedule+ or 1 Mail)

 13 videos with over 24 hours of training \$19.95

Integration

Video

purchase

#### with any Combo Microsoft Office Plus 95 or 4.x

3 Word, 3 Excel, 3 Access (Beg/Int/Adv)

• 3 PowerPoint, 3 Windows, (1 Schedule+ or

• 16 videos with over 29 hours of training

\$1,149.95

\$349.95

#### Developer Pack **Video Combinations**

Developer Power Pack Standard ...

Developer Power Pack Pro ...... Anv 12 videos (Sava \$283.00).

#### Developer Power Pack Plus.

Any 18 videos (Save \$470.00)

Visual Basic • SQL Server • Access 95 Develope Visual C++ \* Visual FoxPro \* Delphi \* PowerBuilder Java • HTML • JavaScript

**Special** Corel Office Video Combinations

**Corel WordPerfect Suite Standard** 

3 WordPerfect, 3 Quattro Pro, 3 Presenta

• 9 videos with over 17 hours of training

Corel WordPerfect Suite Professional

3 WordPerfect, 3 Quattro Pro, 3 Presentations

1 Envoy, 3 Windows

13 videos with over 24 hours of training

Corel Office Professional .....

• 3 WordPerfect, 3 Quattre Pro. 3 Presentations

• 3 Paradox, 1 Netscape Nav., 1 Envoy, 2 Groupwise

• 16 videos with over 29 hours of training

## 3 Easy Ways to Order:

CALL >1 -800-748-4838

FAX >1-801-373-6872



KeyStone Learning Systems Corp. 2241 Larsen Parkway Provo. UT 84606

http://www.keylearnsys.com/ AD# PW116

We accept C.O.D., Company P.O. or check + VISA.









# MORE PROFIT! MORE SALES! MORE CUSTOMERS



Save Time, Reduce Theft, Speed Checkout with

**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 \$395, 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.



HARDWARE SOLUTIONS



## Flexible Enough

for Any Business apparel/clothing/shoe appliance art gallery automotive/tire beauty salon/supply bicycle/motorcycle book bridal and tuxedo card shop/gift shop computer convenience/fast food dry cleaner eyeglass florist furniture gas station sporting goods/golf/gun grocery/bakery hardware/locksmith health/fitness center janitorial supply lawn and garden jewelry liquor mail order marine supply music/record and tape

nail salon

pharmacy

photography

pet

office supply/stationery

plumbing & heating specialty stores toy /hobby

sports cards/uniform

...and 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.

Take a

FREE 30-day

General Store

Test Drive

(call now for

details)

✓ 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

✓ 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)

Reduced Theft-cash register reconciliation, salesperson tracking, password protection, pole display sale verification, accurate inventory tracking

Cost Reductionsreal 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)

Better Business Decisionsdetailed 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

■ Better Customer Servicecustomer purchase history, complete layaway, mail list management, instant customer lookup, multiple price level support by category of customer

✓ 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

## PC AMERICA PRICE LIST

PC America



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).....\$1,295.00 The General Store Network

Edition (multisite ready) ..... \$1,995.00 The General Store Starter Kit

(abridged version)..... \$395.00 Cash Drawer ...... \$199.00\* Star/Citizen Receipt Printers

\$299.95 Pole Display ..... \$299.00° CCD Bar Code Reader \$399.00\*

Laser Bar Code Scanner ..... \$4<del>29</del>.00\*

\* Call for Competitive Prices

# DO-PC-AM

Call Toll Free 1-800-722-6374

Phone: 914-267-3500 Circle 195 on reader service card

60 N. Harrison Ave.

Congers, NY 10920 Fax: 914-267-35



# YOUR MEMORY CENTER! THE LOWEST PRICING IN THE INDUSTRY



CALL TODAY FOR OUR FREE CATALOG! 100's of Memory Modules Available.

**Featuring** 

# SOUTHLAN

Ruality · Strength · Speed

 All Products Backed By A Lifetime Warranty
 Highly Competitive Pricing
 Modules Are 100% Tested Prior To Shipment • Most Stringent Quality Control In The Industry • Consistently First To Market With New Products • Built To Original Equipment Manufacturer (OEM) Specifications

# SIMM

#### FREE FedEX Shipping

| 1MB X 32 - 60NS SIMMS     | 33  |
|---------------------------|-----|
| 1MB X 32 - 70NS SIMMS     |     |
| 1MB X 32 - 60NS EDO SIMMS | 36  |
| 1MB X 32 - 70NS EDO SIMMS | 38  |
| 2MB X 32 - 60NS SIMMS     | 70  |
| 2MB X 32 - 70NS SIMMS     | 73  |
| 2MB X 32 - 60NS EDO SIMMS | 73  |
| 2MB X 32 - 70NS EDO SIMMS |     |
| 4MB X 32 - 60NS SIMMS     | 109 |
| 4MB X 32 - 70NS SIMMS     | 111 |
| 4MB X 32 - 60NS EDO SIMMS |     |
| 4MB X 32 - 70NS EDO SIMMS |     |
| BMB X 32 - 60NS SIMMS     |     |
| BMB X 32 - 70NS SIMMS     |     |
| BMB X 32 - 60NS EDO SIMMS |     |
| BMB X 32 - 70NS EDO SIMMS | 235 |

| 1MB X 36 - 60NS SIMMS | 47  |
|-----------------------|-----|
| 1MB X 36 - 70NS SIMMS | 4B  |
| 2MB X 36 - 60NS SIMMS | 79  |
| 2MB X 36 - 70NS SIMMS | B1  |
| 4MB X 36 - 60NS SIMMS | 132 |
| 4MB X 36 - 70NS SIMMS | 134 |
| BMB X 36 - 60NS SIMMS | 225 |

| 1MB X 9 - | 60NS        | SIMMS | 26 |
|-----------|-------------|-------|----|
|           |             |       | 26 |
| 4MB X 9 - | <b>60NS</b> | SIMMS | 51 |
| 4MB X 9 - | <b>70NS</b> | SIMMS | 51 |

#### REE FedEX Shipping Canon

|               | <b>OKIDATA</b> |
|---------------|----------------|
| LBP-8II 2-4MB | ************   |
|               | **********     |
|               | ************** |

| •                    |
|----------------------|
| OL400E, 410E 1-4MB8  |
| OL400E, 410E 2-4MB13 |
| OL400E, 410E 4MB27   |
| OL410, 810 1-4MB     |
| OL410, 810 2-4MB15   |
|                      |
| OL800, 820 1-4MB10   |
| OL 800, 820 2-4MB    |

#### **Panasonic**

| Ų | KX-4410, 4430 1-4MB   | 95  |
|---|---|-----|
| 1 | KX-4410, 4430 2-4MB   | 130 |
| 1 | KX-4410, 4430 3-4MB   | 220 |
| 1 | KX-4420, 4450i 1-4MB  | 62  |
|   | KX-4410, 4430 1-4MB<br>KX-4410, 4430 2-4MB<br>KX-4410, 4430 3-4MB<br>KX-4420, 4450i 1-4MB<br>KX-4420, 4450i 2-4MB | 116 |
|   |   |     |

## AST.

|   | Bravo LC Series, Mini-Towers, 4MB39   |
|---|---------------------------------------|
|   | Bravo LC Series, Mini-Towers, 8MB61   |
| Ì | Bravo LC Series, Mini-Towers, 16MB118 |
|   | Premmia LX Series, Desktops, 8MB61    |
| ļ | Premmia LX Series, Desktops, 16MB116  |
| ł | Premmia I X Series Desktons 32MB238   |

### COMPAQ

| Deskpro/Prolinea P75/90, 8MB          | 58  |
|---------------------------------------|-----|
| Deskpro/Prolinea P75/90, 16MB         | 118 |
| Deskpro/Prolinea P75/90, 32MB         | 228 |
| Deskpro XL Series, Desktops, 8MB .    | 88  |
| Deskpro XL Series, Desktops, 16MB     | 197 |
| Deskpro XL Series, Desktops, 32MB     | 312 |
| Deskpro XL6/50, Desktops, 16MB        | 273 |
| Deskpro XL6/50, Desktops, 32MB        | 333 |
| Proliant 1500/1500R/133 Servers, 16MB | 190 |
| Proliant 1500/1500R/133 Servers, 32MB | 318 |
| Presario Series, Desktops, 8MB        | 58  |
| Presario Series, Desktops, 16MB       | 118 |
| Presario Series, Desktops, 32MB       | 228 |
| Prosignia Series, Servers, 8MB        | 88  |
| Prosignia Series, Servers, 16MB       | 197 |
| Densignia Corion Conjura 20MD         | 210 |

#### PACKARD

| Vectra VL3 Series, Desktops, 8MB57     |
|--|
| Vectra VL3 Series, Desktops, 16MB120   |
| Vectra VL3 Series, Desktops, 32MB228   |
| Vectra VL4 Series, Desktops, 8MB65     |
| Vectra VL4 Series, Desktops, 16MB111   |
| Vectra VL4 Series, Desktops, 32MB388   |
| Vectra XU/VT 6150, MT, 16MB273         |
| Vectra XU/VT 6150, MT, 32MB338         |
| Vectra Net server LC, Servers, BMB81   |
| Vectra Net server LC, Servers, 16MB148 |
| Vectra Net server LC, Servers, 32MB261 |

#### IBM

| Aptiva M40/M41 Desktops, 8MB        | 60  |
|-------------------------------------|-----|
| Aptiva M40/M41 Desktops, 16MB       | 120 |
| Aptiva M40/M41 Desktops, 32MB       | 231 |
| PS/1 Value Point, Desktops, 4MB     | 43  |
| PS/1 Value Point, Desktops, 16MB    | 152 |
| PC 300/700, Desktops/MT, 8MB        | 95  |
| PC 300/700, Desktops/MT, 16MB       |     |
| PC 300/700, Desktops/MT, 32MB       | 267 |
| PC Server 310 Series, Servers, 8MB  | 93  |
| PC Server 310 Series, Servers, 16MB | 156 |
|                                     |     |

# NOTEROOK

#### AST.

| í | Ascentia J Senes, 8MB/16MB/32MB/U/152/ |
|---|--|
| Ì | Ascentia P Series, 8MB                 |
| ļ | Ascentia 800N Series, 4MB / 8MB90/     |
|   | Ascentia 800N Series, 16MB             |
|   | Ascentia 900N Series, 4MB / 8MB78      |
|   | Ascentia 900N Series, 16MB             |
|   | Ascentia 950 Series, 8MB/16MB86/       |
| Į | Addellia oud delles, ditib/ foltib     |

#### COMPAQ

| Amada 1120, 11201, 8MB / 16MB/9/148         |
|---|
| Armada 4100 Series, 8MB / 16MBCALL          |
| Armada 4100 Series, 32MB CALL               |
| LTE 5000 Series, 8MB / 16MB77/149           |
| LTE 5000 Series, 32 MB263                   |
| LTE Elite Series, 4MB / 8MB47/98            |
| Contura 400CX Series, 4MB / 8MB70/93        |
| Contura 400CX Series, 16MB143               |
| Contura 486 Series, 4MB/8MB /16MB 49/86/230 |
| Concerto Series, 4MB/8MB85/136              |
| W/T HEWLETT                                 |

#### PACK ARD

| HP Omnibook 300, 425, 433, 4MB  | 1     |
|---|-------|
| HP Omnibook 300, 425, 433, 4MB<br>  HP Omnibook 530, 600, 4MB/8MB<br>  HP Omnibook 4000 Series, 4MB | 116/2 |
| HP Omnibook 4000 Series, 4MB  |       |
| HP Omnibook 4000 Series, 16MB .   | 1     |
| IDM   |       |
|   |       |
| Thinkpad 265C Corion AMD /16MB  | 201/1 |

| San Lange Las T and              |        |
|----------------------------------|--------|
| Thinkpad 365C Series, 4MB /16MB  | 381/16 |
| Thinkpad 701C Series, 4MB /8MB   | 41/9   |
| Thinkpad 701C Series, 16MB       |        |
| Thinkpad 750 Series, 16MB / 32MB | 160/53 |
| Thinkpad 755 Series, 8MB /16MB   |        |
| Thinkpad 755 Series, 32MB        |        |
| Thinkpad 760 Series, 8MB /16MB   |        |
| ThinkDay 700E 200V 500 PMD/40MD  |        |

#### ThinkPad 760E, 365X, 560 BMB/ ThinkPad 760E, 365X, 560 32MB NEC

#### **TEXAS INSTRUMENTS**

## s, 8MB / 16MB / 32MB..71/

| 12100 Series, bivid / folvid       | 39/14   |
|------------------------------------|---------|
| T400/410 Series, 8MB /16MB         | 88/156  |
| T400/410 Series, 32MB              |         |
| Satellite Pro 420CDS, 420CDT, 8MB  | 7       |
| Satellite Pro 420CDS, 420CDT, 16MB | 135     |
| Satellite Pro 420CDS, 420CDT, 32MB | ,CALI   |
| T610 Series, 8MB/16MB              | 88/150  |
| T610 Series, 32MB                  | 29      |
| Portege 650CT, 8MB/16MB            | .75/113 |
| Portege 650CT, 32MB/64MB           | CALI    |
| Tecra T700 Series, 8MB/16MB        | 97/26   |
| Tecra 1700 Series, 32MB            | 76      |
| Tecra T720 Series, 16MB/32MB       | .156/29 |
| Tecra 500CS, 500CDT, 16MB / 32MB   | .134/39 |
| Tecra 500CS, 500CDT, 48MB/128MB.4  | 53/CALI |

## ZENITH , 4MB / 8MB...

## COMPAQ

## HEWLETT PACKARD

| K | LaserJet | 4, 451, DJ 1200, 1MB    |
|---|----------|-------------------------|
| į | LaserJet | 4, 4SI, DJ1200, 2MB     |
| Į | LaserJet | 4, DJ1200, DJ600, 4MB   |
| į | LaserJet | 4, DJ1200, DJ600, 8MB   |
| ŀ | LaserJet | 4, DJ1200, DJ600, 16MB  |
| į | LaserJet | 4, DJ1200, DJ600, 32MB  |
| į | LaserJet | 4P, 4+, 4V, DJ650C, 4MB |
|   |          | 4P, 4+, 4V, DJ650C, 8MB |
|   |          | 4SI, 4SIMX, 4MB         |
|   |          | 4SI, 4SIMX, 8MB         |
|   |          | 5L Laser Printer 4MB    |
|   | LaserJet | 5L Laser Printer 8MB    |
|   |          | 5SI/5SIMX 2MB           |
|   |          | 5SI/5SIMX 4MB           |

## LEXMARK

| ı |                                 |
|---|---------------------------------|
|   | IBM Lexmark 4029/4037/4047 2MB  |
|   | IBM Lexmark 4029/4037/4047 4MB6 |
| ı | IBM Lexmark 4039/4079 4MB       |
| ı | IDM 1 4000/4070 DMD             |

## **OKIDATA**

# OVERNIGHT















#### NO HIDDEN SURCHARGES!!



Please refer to this KEY CODE MD11/6



Vernon Hills, IL 60061

- Overnight Shipping
- ✓ COD's Welcome
- Technical Support
- P.O.'s Accepted Restrictions may apply.



FAX 1-847-367-8540 **Customer Service 1-847-367-7583**  TOLL-FREE CST 8AM-7PM

# -800-786-1154

## The Drive Authority since 1987

### MICROPOLIS. Western #1 source for MicropolisDr ivestAskabout ourlo wpriceguar antee.

| Adaptec PCI only \$239<br>Adaptec Wide PCI only \$289<br>with Micropolis drive purchase! |
|--|
|  |

| _ | A/V | \$450 | with Micropolis | drive purchase! |
|---|-----|-------|-----------------|-----------------|
| 2 | Gig | 7200  | RPM             | \$539           |
| ı |     | AV    |                 | \$600           |
|   |     | Wide  |                 | \$630           |
| 1 |     | Wide  | A/V             | \$689           |
| 4 | Gig | 7200  | RPM             | \$799           |
|   |     | AV    |                 | \$889           |
| 1 |     | Wide  |                 | \$889           |
| 1 |     | Wide  | A/V             | \$979           |
| 9 | Gig | 5400  | RPM             | \$1579          |
| 1 |     | AV    |                 | \$1699          |
| ı |     | Wide  |                 | \$1679          |
| ı |     | Wide  | A/V             | \$1799          |
| 9 | Gig | 7200  | RPM             | \$1799          |
|   |     |       |                 |                 |

| •      | Drives include 1 FREE cartridge. |       |
|--------|----------------------------------|-------|
|        | 100MB Zip                        | \$195 |
|        | 1Gig Jaz internal                | \$379 |
| iomega | 1Gig Jaz external                | \$439 |
| 1Gig J | az external (lomega case)        |       |
|        | Zip disks 2-4 \$20 5-9 \$1       |       |
|        | disks 2-4 \$99 5-9 \$95          |       |

# Turn a Hard Drive Into a Removable

NEW 3 1/2" Wide

Converts any 3 1/2" hard drive into a removable drive. Great for transportability, data interchange, or security needs. Extremely

\$1899

high quality construction. Metal cartridge and frame, cooling fan. Unit has SCSI ID select on the cartridge. Qty discounts available.

|               | System      | Extra Cartridge      | Extra Frame       |
|---------------|-------------|----------------------|-------------------|
| IDE           | \$79        | \$39                 | \$49              |
| SCSI          | \$85        | \$40                 | \$54              |
| WIDE SCSI     | \$129       | \$64                 | \$75              |
| Weather resis | tant case t | o store and transpor | rt cartridge \$55 |

### · OPTICALS ·

| All Optical | Drive prices below include 1 FREE cartridg | ze.    |
|-------------|--|--------|
| 230MB       | Fujitsu IDE                                | \$339  |
| 230MB       | Smart Storage Solutions SCSI               | \$339  |
| 640MB       | Smart Storage Solutions SCSI               | \$539  |
| 640MB       | Fujitsu (230MB backwards compatible)       | \$555  |
| 650MB       | PD ROM combination optical & 4XCD          | \$469  |
| 1.3Gig      | Maxoptix                                   | \$1039 |
| 2.6Gig      | Smart Storage Solutions                    | \$1649 |
| 2.6Gig      | Maxoptix                                   | \$1789 |
| 2.6Gig      | Hewlett Packard                            | \$2219 |
| 52Gig       | Maxoptix (does not include free disks)     | \$4549 |

## REMOVABLES

New 540MB MCD drive is backwards compatible with SyQuest 270MB media.

\$295 \$355 external



800MB

1GB

1.7GB

3.2GB

4.4GB

800MB

1Gig

2-4Gig

4-BGig

External for Pr

Internal IDE

\$319

## SyQuest

SyQuest drives include 1 FREE cartridge.

135MB external \$139 200MB int/ext \$399/\$459 230MB external \$299 270MB int/ext \$179/\$239

#### CD RECORDERS

| BARE DRIVES                    |                  |        |
|--------------------------------|------------------|--------|
| Smart Storage Solutions        | 2X Write 4X Read | \$540  |
| Yamaha                         | 2X Write 4X Read | \$550  |
| Yamaha                         | 4X Write 4X Read | \$949  |
| COMPLETE KITS                  |                  |        |
| <b>Smart Storage Solutions</b> | 2X Write 4X Read | \$619  |
| HP Ask about \$200 Rebate      | 2X Write 4X Read | \$829  |
| Pinnacle Micro                 | 2X Write 4X Read | \$Call |
| Smart & Friendly               | 2X Write 4X Read | \$Call |
| Smart Storage Solutions        | 4X Write 4X Read | \$1059 |
|                                |                  |        |

### CD ROM DRIVES .

|                | 1    |               |       |       |         |
|----------------|------|---------------|-------|-------|---------|
| SCSI           |      |               |       |       |         |
| Brand          | Spin | Model         | Speed | Int   | Ext     |
| NEC            | 4X   | <b>CDR222</b> | 200ms | \$99  | \$189   |
| <b>Plextor</b> | 4.5X | PX43CE        | 130ms | \$230 | \$320   |
| Teac           | 6X   | CD56S         | 160ms | \$155 | \$245   |
| Plextor        | 6X   | PX63CS        | 145ms | \$269 | \$359   |
| Philips        | 8X   | PC80S         | 195ms | \$225 | \$315   |
| NEC            | 8X   | CDR1410       | 145ms | \$219 | \$309   |
| Plextor        | 8X   | PX83CS        | 115ms | \$339 | \$429   |
| Pioneer        | 10X  | DRA10X        | 140ms | \$239 | \$329   |
| ATAPI II       | DE   |               |       | Int   | Int kit |
| OEM            | 4X   | IDECD4X       | 200ms | \$65  | \$80    |
| NEC            | 6X   | CDR1300       | 145ms | \$79  | \$94    |
| Acer           | 8X   | AC885A        | 190ms | \$99  | \$114   |
| Mitsumi        | 8X   | CRMCFXB00     | 150ms | \$120 | \$135   |
| Teac           | 8X   | CD58E         | 110ms | \$115 | \$130   |
| Toshiba        | 8X   | XM5602B       | 145ms | \$115 | \$130   |
| NEC            | 8X   | CDR1400       | 140ms | \$150 | \$165   |
| Pioneer        | 10X  | DRA10X        | 140ms | \$199 | \$214   |
| CD ROM         | CHA  | NGERS         |       |       |         |
| Internal       | IDE  |               |       |       |         |
| Torisan        | 4X   | CDR3X4        | 3Disk | 230ms | \$89    |
| NEC            | 4X   | CDR4X4        |       | 250ms | \$99    |
| Internal       | SCSI |               |       |       | •       |

**External SCSI** 

Nakamichi 8X MJ48S

Capacity Brand & Model

Pioneer 4.4X DRM-624X 6 Disk 190ms \$359 CD ROM TOWERS NEW! 16 Disk \$2899 28 Disk \$4899 **NEW 10X Towers coming soon!** 

150ms \$549 External \$599

Price

## TAPE DRIVES •

|          | · SCSI ·                           |        |
|----------|------------------------------------|--------|
| 2-4GB    | Seagate TSM4000                    | \$309  |
| 4-BGB    | Seagate TSTB000                    | \$399  |
|          | • 4mm DAT DRIVES •                 |        |
| 2GB      | Hewlett Packard C1534              | \$609  |
| 2-4GB    | Seagate C4324RP                    | \$679  |
| 2-4GB    | Hewlett Packard C1536              | \$699  |
| 4-BGB    | Sony SDT5000                       | \$B09  |
| 4-BGB    | Seagate C4326NP (DDS2)             | \$B59  |
| 4-BGB    | Hewlett Packard C1533A             | \$999  |
| 4-BGB    | Sony SDT7000 TURBO SPEED!          | \$909  |
| 24-4BGB  | HP External 6 tape loader C1553AX  | \$2299 |
| 32-64GB  | Sony TSL7000 8 tape autoloader     | \$2199 |
| 4B-96GB  | Seagate C4586NP 12 tape autoloader | \$2399 |
|          | • 8mm DAT DRIVES •                 |        |
| 3.5-7GB  | ExaByte EXBB205XL                  | \$1269 |
| 7-14GB   | ExaByte EXBB505XL                  | \$1BB9 |
| 7-14GB   | ExaByte EXBB700LT                  | \$1149 |
| 20-40GB  | ExaByte EXBB900                    | \$5499 |
| 70-140GB | ExaByte EXB10H 10 tape autoloader  | \$5439 |
|          | • DLT DRIVES •                     |        |
| 15-30GB  | Quantum DLT2000                    | \$2499 |
|          | • QIC •                            |        |

| \$141       | and the same of th |
|-------------|--|
| \$159       | <b>Seagate</b>   |
| \$219       | W Scagate  |
| \$249       | Price includes Windows   |
| \$259       | backup software and  |
| rinter Port | 1 Free Tape.   |
| \$259       | Bundle Speciall  |
| \$269       | Bundle Speciall Buy any tape drive with  |
|             | any hard drive and take  |

#### IDE HARD DRIVES •

|        |              | 114         |                 |           |     |        |
|--------|--------------|-------------|-----------------|-----------|-----|--------|
| IDE    | <b>Speed</b> | RPM         | Brand           | Model     | Wty | Price  |
| 540MB  | 14ms         | 3600        | Seagate         | ST3541A   | 3   | \$151  |
| 540MB  | 14ms         | 44B0        | Maxtor          | M7541A    | 3   | \$159  |
| 639MB  | 10ms         | 4500        | Western Digital | AC2635    | 3   | \$160  |
| B50MB  | 10ms         | 4500        | Western Digital | AC2B50    | 3   | \$165  |
| B50MB  | 14ms         | 3600        | Seagate         | ST3B51A   | 3   | \$171  |
| 1080MB | 11ms         | 4500        | Fujitsu         | M1614T    | 3   | \$165  |
| 10B4MB | 14ms         | 4480        | Maxtor          | M710B4A   | 2   | \$1B5  |
| 1250MB | 15ms         | 3600        | Quantum         | BF1250A   | 3   | \$175  |
| 1270MB | 10.5ms       | 5400        | Seagate         | ST51270A  | 3   | \$1B7  |
| 12B0MB | 12ms         | 5400        | Quantum         | FB12B0A   | 3   | \$19B  |
| 12B1MB | 11ms         | 5200        | Western Digital | AC21200A  | 3   | \$192  |
| 1336MB | 11ms         | 44B0        | Maxtor          | M71336A   | 3   | \$190  |
| 1620MB | 14ms         | 3600        | Seagate         | ST31621A  | 3   | \$212  |
| 1624MB | 10ms         | 5200        | Western Digital | AC31600   | 3   | \$225  |
| 1625MB | 10.5ms       | 5400        | Seagate         | ST31640A  | 3   | \$22B  |
| 1626MB | 11ms         | <b>44B0</b> | Maxtor          | M71626AP  | 3   | \$220  |
| 1700MB | 11ms         | 4500        | Quantum         | SR31700A  | 3   | \$21B  |
| 2004MB | 11ms         | 44B0        | Maxtor          | M72004A   | 3   | \$265  |
| 2100MB | 11ms         | 5200        | Western Digital | AC32100   | 3   | \$2B5  |
| 2167MB | 10.5ms       |             | Seagate         | ST32140A  | 3   | \$262  |
| 216BMB | 10.5ms       |             | Quantum         | TM32160A  | 3   | \$270  |
| 2500MB | 9ms          | 5400        | Fujitsu         | M163BT    | 3   | \$295  |
| 2550MB | 15ms         | 3600        | Quantum         | BF2500A   | 3   | \$259  |
| 2550MB | 11ms         | 4500        | Quantum         | SR32550A  | 3   | \$299  |
| 2559MB | 1 1ms        | 5200        | Western Digital | AC32500   | 3   | \$319  |
| 3166MB | 12ms         | 5200        | Western Digital | AC33100   | 3   | \$409  |
| 3254MB | 10.5ms       |             | Quantum         | TM33200A  | 3   | \$345  |
| 4250MB | 10.5ms       | 5400        | Seagate         | ST34250A  | 3   | \$Call |
| 2 1/2" |              |             |                 |           |     |        |
| 540MB  | 13ms         | 4200        | Toshiba         | MK1924FC  | 1   | \$229  |
| BIOMB  | 13ms         | 4200        | Toshiba         | MK1926FC  | 1   | \$329  |
| 1350MB | 13ms         | 4200        | Toshiba         | MK2720FC  | 1   | \$519  |
| 2100MB | 13ms         | 4200        | Toshiba         | MK2101MAN | 1   | \$699  |
| - 64   | 196          | 1           | BB              | BBH       |     |        |

## • SCSI HARD DRIVES • SCSI Speed RPM Brand Model

| LOZUMB  | yms     | 5400    | Seagate    | 2121022N   | 3 | \$559  | <b>3399</b> |  |
|---------|---------|---------|------------|------------|---|--------|-------------|--|
| 1080MB  | 12.5 ms | 5400    | Seagate    | ST51080N   | 3 | \$259  | \$319       |  |
| 2147M8  | 9ms     | 5400    | Seagate    | ST32155N   | 5 | \$499  | \$559       |  |
| 2147MB  | 8ms     | 7200    | Seagate    | ST32550N   | 5 | \$729  | \$789       |  |
| 2150MB  | 8.5ms   | 7200    | Quantum    | XP32150    | 5 | \$639  | \$699       |  |
| 4290M8  | 8ms     | 7200    | Seagate    | ST15230N   | 5 | \$889  | \$949       |  |
| 4290MB  | 8ms     | 7200    | Seagate    | ST15150N   | 5 | \$Call | \$Call      |  |
| 4300M8  | 8.6ms   | 7200    | Quantum    | XP34300    | 5 | \$900  | \$960       |  |
| 9080MB  | 11ms    | 5400    | Seagate    | ST410800N  | 5 | \$1749 | \$1849      |  |
| WIDE SC | SI      |         |            |            |   |        |             |  |
| 1070M8  | 8ms     | 7200    | Quantum    | XP31070W   | 5 | \$299  | \$429       |  |
| 2147MB  | 8ms     | 7200    | Seagate    | ST32550W   | 5 | \$789  | \$919       |  |
| 2150MB  | 9ms     | 5400    | Seagate    | ST32155W   | 5 | \$559  | \$689       |  |
| 2150M8  | 8.5 ms  | 7200    | Quantum    | XP32150W   | 5 | \$649  | \$779       |  |
| 4294MB  | 8ms     | 7200    | Seagate    | ST15150W   | 5 | \$Call | \$Call      |  |
| 4300MB  | 8.6ms   | 7200    | Quantum    | XP34300W   | 5 | \$919  | \$1049      |  |
| 9100MB  | 11ms    | 5400    | Seagate    | ST410800W  | 5 | \$2029 | \$2219      |  |
| WIDE DI | FERENT  | TAL SCS | 1          |            |   |        |             |  |
| 4290MB  | 8ms     | 7200    | Seagate    | ST15150WD  | 5 | \$1279 | \$1409      |  |
| 4294MB  | 8ms     | 7200    | Micropolis | MC3243WD   | 5 | \$899  | \$1029      |  |
| 9091MB  | 8.5ms   | 7200    | Micropolis | MC3391WD   | 5 | \$1899 | \$2029      |  |
| 9100M8  | 11ms    | 5400    | Seagate    | ST410800WD | 5 | \$2129 | \$2319      |  |
|         |         |         |            |            |   |        |             |  |

## RAID SOLUTIONS

MegaHaus stocks a wide variety of hardware and software RAID solutions from top manufacturers; Adaptec, DPT, Raidtec, Stream Logic (formerly Micropolis Radion), Remus, and Tekram. Call for a quote on products or custom configurations.

> Look for us on the Internet at: http://www.megahaus.com









#### MegaHaus

2201 Pine Drive, Dickinson, Texas 77539 (713)534-3919 FAX (713)534-6580

s & specifications subject to change without notice. Shipping charges are nonrefundable, ns must be in new condition and in original packaging. Defaced items may not be able. No refunds on software or special orders (tems not listed in ad.) All refunds subject for estocking the All trademarks are registered trademarks of their respective companies, and checks held for clearance. We reserve the right to refuse any sale for any reason ersonal checks held for clearance. We reserve the right to refus undle price good only if sold at ad price. ©1996 MegaHaus Inc.

11/96 PC World

\$10 off the total price.



SHOWCASE - TECH TOOLS

#### **KEEP YOUR PCs UP AND RUNNING** WITH THE 100% ACCURATE FIX

Micro-Scope is a universal PC diagnostic that runs a proprietary O/S which eliminates DOS limitations and inaccuracies. Ver. 6.15 adds 25 enhancements and includes: IDE low-level format, accurate IRQ conflict display, cache memory test, 64 meg video memory test, data recovery capabilities, virus capabilities and super fast hard drive testing.

Post-Probe is a universal P.O.S.T. reader card for the non-bootable PC. Post-Probe includes: MCA adapter, tri-state logic probe, 13 LED pre-post test, 7 segment post code display, and a manual with a full explanation of the manufacturer post codes down to the device or chip failure.

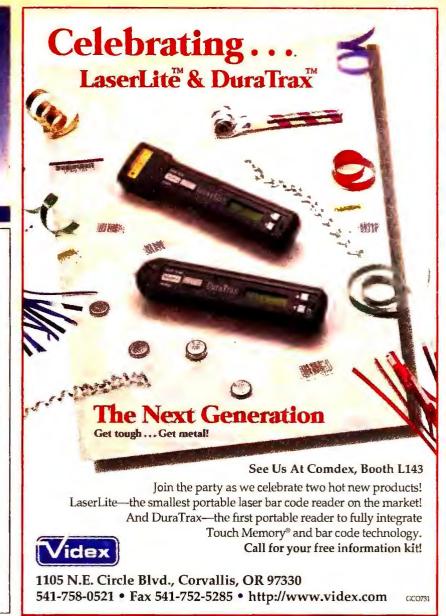


#### Micro 2000

1100 E. Broadway #301 Glendale, CA 91205

TEL: (800) 864-8008 FAX: (818) 547-0397

CIRCLE 457 ON READER SERVICE CARD



CIRCLE 480 ON READER SERVICE CARD



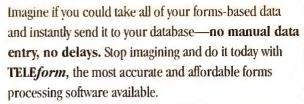
CIRCLE 474 ON READER SERVICE CARD



CIRCLE 444 ON READER SERVICE CARD



CIRCLE 455 ON READER SERVICE CARD



TELEform has the power, speed and accuracy you need to automatically collect data from scanned or faxedin forms. Using familiar communications—paper and pen, fax machines and modems—TELEform reads

hand-printed, typed and filled-in data.

See Us At: Comdex Fall Sands M232

READS MACHINE PRINT TEXT (OCR)

READS HAND PRINT-TEXT (ICR)

READS OPTICAL MARK RECOGNITION ENTRIES (OMR)

READS BARCODES





PHONE: 619-752-5200 FAX: 619-752-5222

## **AUTOMATED** DATA ENTRY.

## **ACCURACY** FROM A TO Z.

Eliminating data entry means your staff will be free for more productive activities. Having data entered in seconds means increased productivity—you'll work smarter, capture more data, faster and with less effort.

Thousands of companies use TELEform to make their businesses more efficient. Join them by calling 800-659-8755 today.

For more information, visit Cardiff Software's Web site: http:www.cardiffsw.com.



CIRCLE 440 ON READER SERVICE CARD



## Access any PC attached to the AutoBoot Commander 4xP or 1xP via telephone lines!

- Works with any IBM PC/AT or 100% compatible computer
- Built-in support for both text and VGA graphics viewing modes
- Full remote keyboard control allows you to control any attached PC as if you were actually there
- Won't interfere with running applications or network software
- Perfect for offsite troubleshooting change the CMOS setup, reboot, even cold-boot any attached PC
- Upload or download files to any attached PC; transfer files or upgrade the software on any computer

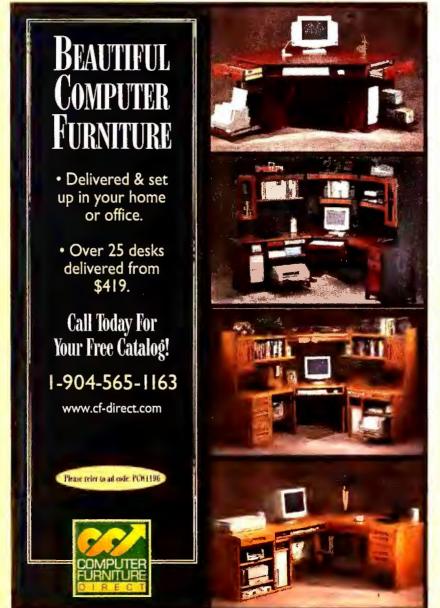
**Key**→View<sup>™</sup>

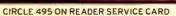
Cybex is a registered trademark of Cybex Computer Products Corporation. Commander, AutoBoot, 4xP, and 1xP are trademarks of Cybex Computer Products Corporation. IBM, PC, and PC/AT are registered trademarks of International Business Machines Corporation. Key-View is a trademark of Fox Network Systems, Inc. The Inc. 500 logo is a registered trademark of Goldhirsh Group, Inc.

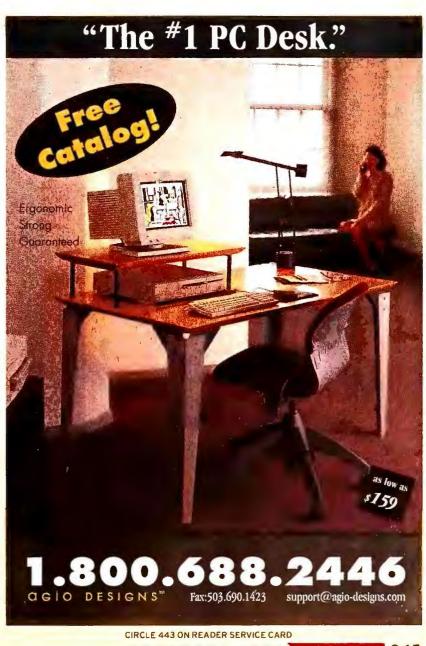
**Cybex Computer Products Corporation** 4912 Research Drive Huntsville, AL 35805 USA (800) 932-9239 (205) 430-4030 fax http://www.cybex.com/



CIRCLE 516 ON READER SERVICE CARD







# CAD Suite Advantages

by Tom King.

Want to design your dream home, edit an existing house plan, or hash out a few creative changes on a CAD drawing? Can't afford the expensive software, or would like to start your own design/drafting business? Want dependable software and tools that really work together? Hint: think suite.

The advantages of suites hinges on the extra utilities or other features that make the main programs more productive. A single purchase provides this, plus the ability to correspond with a single software company if support is needed.

Caution! Creating with CAD will strip the very threads of your wallet ... unless you shop around.

The trend moving away from pricey, cumbersome programs, like AutoCAD, has apparently caught on. Take, for instance, a recent CAD suite from ViaGrafix: DesignCAD Office. This suite offers a full featured CAD system

for under a thousand dollars. Say what???

Here's what they give you: DesignCAD 2D and DesignCAD 3D for Windows 95 software (two completely separate programs), cost estimation software, a scanning

package, two video tutorials, and thousands of ready-to-use 2D and 3D professional symbols.

Anything helping to save time and boost productivity must be a good deal, right? Be careful, even though there are several combo-packages available, it might be advisable to get references or read the testimonials of actual users.

So, besides my own testimonial, try this one on for size. "I use DesignCAD for my drafting students because it's much easier to learn than AutoCAD," said Bill Stone, technology instructor at Junction City High, Junction City, KS.

The extra tools in DesignCAD



Office 95 include: Professional 2D and 3D symbol libraries (with thousands of premade symbols), a cost estimation program (Instant Estimator), a program used to con-

vert scanned files into CAD drawings (ScanPro), and two complete video tutorials for DesignCAD 2D and 3D. Yes, they even give you manuals and user guides and free technical support. Try it, you'll like it.

ViaGrafix can be reached on the web at viagrafix.com or give them a call at 800/233-3223.

Digitally yours, tom@computalk.com

Tom King hosts the syndicated "CompuTalk - The World's Source For Geek-Free Computer Radio" heard nationwide. Tom is also a computer reporter for CBS's KHOU-TV in Houston, Texas.



Also available for Windows 3.1 Ask about our competitive upgrade.

Includes Boolean operations,

smooth rendering, animation,

plus 3D text

& dimensions!

Call, Fax, or Mail your order to:

SOFTWARE DIVISION

One American Way, Pryor, OK 74361

fax: 918/825-6359 www.viagrafix.com

H-111-6

CIRCLE 515 ON READER SERVICE CARD

arrays, unsurpassed geometric

construction, and much more,

DesignCAD 2D is a

tremendous value.

# Can Your Desktop Face The Music?

The Edirol Buyer's Guide has everything you need to unleash the musical genius in you and your PC or Mac.

Transform your computer into a music studio, complete with sound cards, speaker systems, keyboards, MIDI synthesizers, and the latest software for helping you create and print your own music.

Discover music solutions for school and home education. Plus, choose from a library of thousands of MIDI songs on disk.

And it's yours for less than a song - it's FREE!

**New Software Releases. Full Upgrade Kits** Available.

Competitive Pricing. **Direct Shipping & 30 Day** Money Back Guarantee.

FOR FREE BUYER'S GUIDE CALL: 1-800-380-2580

-€DIRO±

http://www.edirol.com

CIRCLE 489 ON READER SERVICE CARD



HALL RESEARCH **TECHNOLOGIES** 800-959-6439

714-641-6607 fax: -6698 1506 Brookhollow Dr., Santa Ana, CA 92705

Celebrating Our 12th year!

Toll-Free Support One Year Warranty Quantity Discounts

- Display your PC's screen on many monitors simultaneously
- Perfect for demos, training and remote monitoring
- Proven wideband amplifier assures bright and crisp image GUARANTEED!
- Automatically access one PC from two keyboards with ease
- Quality monitor and keyboard extension cables available to 500 feet
- Exclusive video switches, multiplexers and other unique products

CIRCLE 459 ON READER SERVICE CARD



SCSIVue Active Terminator

- Improves SCSI Bus Performance
   Less Errors, More Reliable Data Transfer \$59 Diagnoses Problems
   Analyzes Signal Quality
- Active Regulation Fast 50 & Fast Wide 68

SCSI Vue

2-1 Active SCSI Switch

Share Devices Between 2 Computers Up to 14 Devices to 1 Computer Features: 2-1 Active Digital Switch/Repeater

SCSIVue Gold Diagnostic Cables

- No Loss Of Important Data
  - Test Cable Integrity
- agnostic Indicators Large Ferrite Filters
- Triple Shielding (Unique Design)
   Double Gold 20u" Plated Connectors • Extra Heavy 26 Gauge Wire • 40 Styles in Stock

**SCSIVue**™ Custom Tef Benefits: Internal Capies
Less Errors, Ultimate Performance

Silver Wire Improves Signal Quality

 Perfect 90 Ohm Impedance Match • Custom in 1 Day Triple Pronged Connector With Gold contacts Silver Wire

Granite The SCSI Solution Company Ph. 510-471-6442 Fax 510-471-6267 • 2-1 Active Digital Switch/Repeater

DeloGoloToAci

Ph. 510-471-6442 Fax 510-471-6267

Regenerates SCSI Signal for Long Runs http://www.scsipro.com// 3101 Whipple Rd. Union City, CA. 94587

CIRCLE 454 ON READER SERVICE CARD

## TTENTION INTERNET USERS

# Call Global. Pay Local. International Calling from 10¢ a minute.\*

(and save up to 95% to any country in the world)

- FREE software from our website
- FREE trial to any toll-free 800 or 888#
- The first service which allows you to call any phone in the world from your PC
- No setup charges
   Cellular Quality

Visit our website for complete details and free software

http://www.net2phone.com Call us free using Net2Phone at 1-800-438-8879

E-mail us at: info@net2phone.com



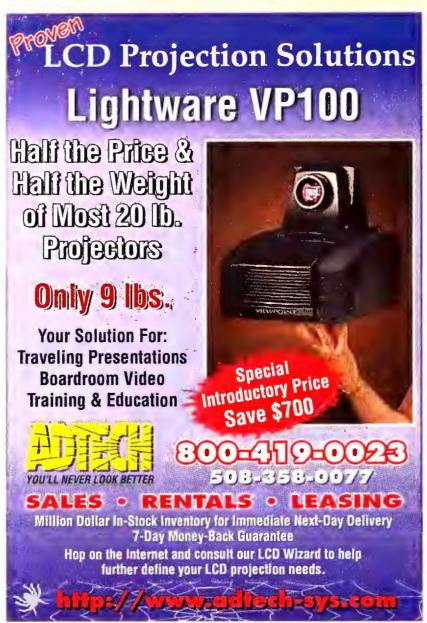
Putting global calling within everyone's reach. Net2Phone requires caller only to have multimedia PC with any PPP Internet connection Receiving party gets call on regular phone. \*15¢ peak, 10¢ off peak. Rates to the U.S.

CIRCLE 430 ON READER SERVICE CARD

NETZPHONE IS A TRADEMARK OF 10T CORPORATION

RATES FROM THE U.S. TO CANADA 13¢ **SWEDEN** 17€ U.K. 18¢ **AUSTRALIA** 20¢ **GERMANY** 26¢ SINGAPORE 26¢ **JAPAN** 29¢





CIRCLE 442 ON READER SERVICE CARD





You can depend on Jameco for...

**PRODUCT** Over 5,000 items from silicon rectifiers to CD-ROMs. Hundreds of exciting new products! **AVAILABILITY** Our 99.7% product availability ratio virtually eliminates backorders!

**DELIVERY** Same-day shipping!

VALUE Everyday low prices!

**CONVENIENCE** Toll-free phone, fax, e-mail, WWW, BBS, standard mail and will-call ordering options. RELIABILITY 30-day money-back guarantee and 23 years of experience assure confidence.



http://www.jameco.com - e-mail: info@jameco.com

CIRCLE 420 ON READER SERVICE CARD

STOP COMPUTER THEFT!

IN THE OFFICE — ON THE ROAD

- Secure computer or notebook to desk, table, etc.
- Protect data
- Lifetime warranty

Kāblit II - List \$34.95

Kāblit™ T-Lock - List \$39.95



**Quick And Easy To Install** Available For Macintosh Too Padlock Security Provided by Master' Lock

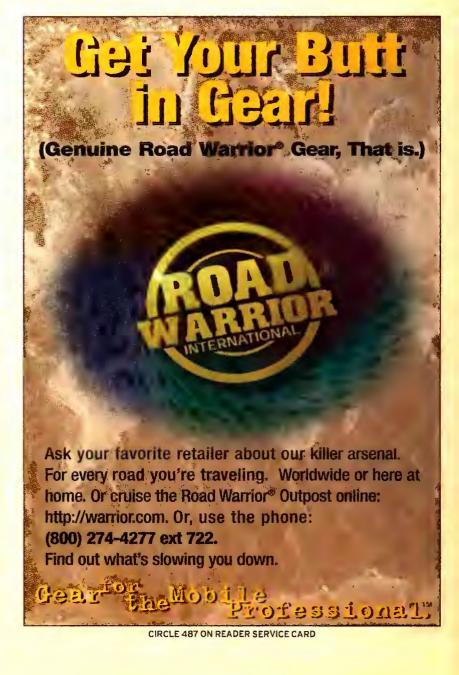


Order now — Call 800 - 451-7592...

18 Maple Caurt, East Langmeadaw, MA 01028, USA phone 413-525-7039 EMAIL: secure-it@owls.com INTERNET: http://owls.com/secure-it/index.html

The particular Master® Lack Trademarks used are trademarks af the Master® Lack Campany and are used by Secure-It, Inc. under license

CIRCLE 433 ON READER SERVICE CARD



## GO DIRECTLY TO THE SOURCE FOR THE LOWEST PRICES AND THE BEST SERVICE.

Boxlight is the leader in electronic presentation equipment. Boxlight has more than 50 models available when you call, and our presentation experts will help you choose the right one. Plus, we offer a 30-day money-back guarantee and free lifetime tech support.



### PROCOLOR 3080+

\$ 6499 Business Lease\*

350 lumens

16.9 lbs.

640 x 480 (800 x 600 COMPRESSED)



Presenting A Better Way.™

# Your Direct Connection To Successful Presentations



\$ 6499 Business Lease\*

500 lumens

₫₫ 28 lbs.

640 x 480

800 • 736 • 6954

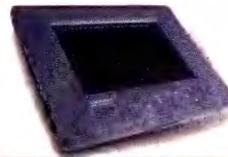


Business Lease\* \$149/Month

250 lumens

**50** 16 lbs.

640x480 (800x600 COMPRESSED)



## PROCOLOR 1820

Business Lease\* \$79/Month

LCD 10.4" diagonal

□ 5.5 lbs.

**○** 640 x 480



REVOLUTION

Business Lease\* \$199/Month

280 lumens

☑ 13.8 lbs.

True 800 x 600

Government: (800) 497-4009 Resellers: (800) 736-6956 International: (360) 779-7901 Rental: (800) 736-6954 Fax: (360) 779-3299

Education: (800) 689-6676 http://www.boxlight.com



ing tiel and last month's payments at











Monday - Friday, 8am - 5pm PST. Purchase orders accepted. Prices subject to change. Quantities may be limited to stock on hand.

# udent - Teacher & School Discount



DuarkXPress 3.32 CALL



WordPerfect 7.0 Suite \$99



4th Dimension 3.5 ..... \$449 ARCHICAD 5.0 STUDENT ...... \$475 ASTOUND 2.1 ..... \$99 Animator Studio 1.1 ..... \$169 Authorware Pro 3.5 ...... \$975 Autocad LT 2.0 ..... \$199 Autocad LT 95 ..... \$329 BORLAND C++ 5.0 DEV STE .. \$199 BORLAND C++ 5.0 ..... \$149 Backstage Desktop Studio ..... \$299 CANVAS 5.0 ...... \$179 CODA FINALE 3.7 ..... \$249 COREL OFFICE PRO 7.0 ...... \$179 ColorDrive 1.5 ...... \$99 Conversions+ 3.5 ...... \$99 DELPHI DESKTOP 2 ......\$99
DIRECTOR TOOLBOX PRO.....\$99 Director 5.0 ...... \$569 Director Studio 2.0 ..... \$899 DragSlate II 12X12 ..... \$215 Elastic Reality 1.0.1 ..... \$219 EndNote Plus 2.1 ..... \$165 Extreme 3D ..... \$199 FILEMAKER PRO 3.0 ..... \$129

SAME DAY SHIPPING ON MOST ITEMS.

\*IBM & MAC PRODUCTS AVAILABLE.

\*SCHOOL PURCHASE ORDERS WELCOME.
\*NO SURCHARGE ON CREDIT CARDS.

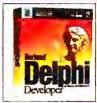
STUDENTS, TEACHERS AND SCHOOLS.

3D Studio R2.01a ...... \$195 FRACTAL DESIGN POSER 1.0 ...... \$99 FastTrack Schedule 4.0 ...... \$129 Final Draft 4.0 ..... \$125 Form Z 2.8 ..... CALL HIJACK 1.0 ...... \$45 KPT Convolver 1.0 ...... \$85 KPT Power Photos Vol 1,2,3,4...... \$85 Kai's Power Goo 1.0 ...... \$49 Kai's Power Tools 3.0...... \$85 LIGHTWAVE 3D 5.0..... \$799 MAC TRANSFER 1.0 ..... \$49 MATHCAD 6.0+ ..... \$149 MESHPAINT 3D 1.0 ...... \$299 MediaForge 2.0 ......\$469 MediaPaint 1.1 ...... \$199 WACOM ART Z II 6X8 ...... \$285 MIniCad +6.0 ...... \$319 ZIP-IT ..... Place any order & receive a chance to win \$100 Software

Multimedia Toolbook 4.0..... \$479 OKIJET 2010 FULL-COLOR .... \$299 ORGANIZER 97 .....OmniPage PRO 7.0 ..... ..... \$59 PORTRAIT PIVOT 1700 .28DP \$889 QEMM 8.0 ..... \$49 FRACTAL STUDIO 4.1.... \$219 SMARTSUITE 96 ...... \$169 SONY Multiscan 17SF II MNTR \$829 SOUND FORGE 4.0 ..... \$249 STUDYWARE SAT ..... \$39 ScreenCam 2.1 ..... \$49 Soft F/X ..... \$149 TRUE SPACE 2.0 ..... \$349 The Black Box 2.0b..... Timeline 6.5 ...... \$29 TriSpectives Pro 1.0 ...... \$149 Vellum 3D 3.0 ..... \$495 VirusScan 2.5 ...... \$45 VisualCad 2.0 ..... \$129



Lotus 1-2-3 5.0 \$95



Delphi Develope 2.0 \$149



Corel Draw 6.0 \$195

Source gift certificate. PHONE

(800) 289-3275 ADOBE, SYMANTEC & MICROSOFT PRODUCTS AVAILABLE TO QUALIFIED

The

#### WE WILL BEAT ANY ADVERTISED PRICE!

**SOFTWARE** 

THE SOFTWARE SOURCE CO, INC. 1750 Brielle Ave, Unit A-2, Ocean NJ 07712 Phone (908) 695-2100 Fax (908) 695-9371



800-238-4453



CIRCLE 473 ON READER SERVICE CARD

## HARD DRIVE WAREHOUSE

Seagate 51080N

\$199 \$189 \$189

um 31700SRA

\$519 nner 2107S \$569 \$369 \$359 SCSI \$539 n 32150S

Seagate 32550N SCSI \$529 Seagate 32140A IDE \$239 Seagate 12550N SCSI \$509 Seagate 32151N SCSI \$519 Seagate 32155N SCSI \$539 2.5 GB

\$329 WD AC32500 IDE 3.0 GB Seagate 43400N SCSI \$399

4.0 GB

9.0 GB IBM 39100 SCSI SCSI SCSI SCSI

2940 PCI 2940 PCI U-Wide 2940 PCI Ultra Sunjak (w/kit)

CD-ROM Drive 4x IDE | SCS| \$59 | \$139 6x IDE | SCS| \$79 | \$259

2.0GB

Always the Low Price Leader! Super High-Capacity Experts!

#### 2.5" Notebook Drives

\$219

CATALOG!! (800) 289-3275 INCLUDES COMPLETE PRICE LIST & FREE

CALL FOR FREE

PRODUCT LITERATURE

# BASON MEMORY WAREHOUSE

Call us! Or visit our Web Page for everyday new low prices!

http://www.basoncomputer.com

Standard 30-Pin SIMM 4MB 4x3/4x9 \$31/\$41

Standard 72-Pin SIMM 4MB 1x32/36 8MB 2x32/36

16MB 32MB 8x32/36

EDO 72-Pin SIMM

4MB 8MB 1x32 2x32

72-Pin DIMM for Notebook









30 day money back guarantee
Same day shipping on most orders
No surcharge for credit cards
Please add \$59 for external drives
Prices are subject to change without notice

Call: (818)727-9054 • Fax: (818)727-9066 Email: basonwm@basoncomputer.com http://www.basoncomputer.com

# THE FINEST PC CIRCUIT BOARDS!!!



the nation's largest full-line PC circuit board specific manufacturer and distributor caters to individuals and businesses interested in only the finest hardware and service at the best price,

provided by a long term, financially stable company. For nearly a decade, we at HSB have earned our standing as the most reputable circuit board manufacturer and distributor in the industry. Don't make the mistake of buying 'Throw-Away' circuit boards from a company without any long term com-

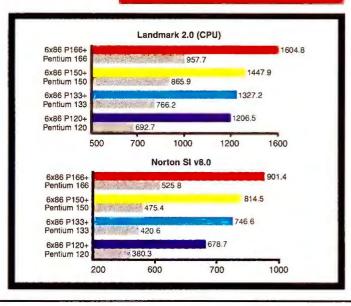
mitment to your satisfaction. If we sound like what you are looking for, please give us a call at...



## A Powerful Choice

The Cyrix 6x86<sup>™</sup> microprocessor achieves the best-in-class performance for today's most demanding applications.





#### CUSTOMER SERVICE...

- ✓ A full 72 hour burn in procedure. We will not ship any board that does not perform flawlessly.
- A full 3 year warranty on all HSB made circuit boards. This warranty covers 100% of parts and labor.
- A limited lifetime warranty is included on all 45ns 'Turbo' SIMM modules and all PGA CPU's.
- 🗸 A 60-day money-back guarantee, ensuring that you can't find a better board value anywhere.
- Positively no high pressure sales people. Just straight talking noncommissioned circuit board associates, who are the most knowledgeable in the industry.
- We know you can buy circuit boards for a bit less or a lot more than what you'll pay with us. What you can't find is faster performance, greater feature lists, or better quality for your money...



#### HSB 64-Bit ATX MainBoard

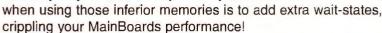
Our MainBoards are the finest Main-Boards on the market, designed from the ground up to compete head-to-head with the most expensive and sophisticated designs available. Even our owner's manuals are the best you'll find anywhere. Remember to ask about the

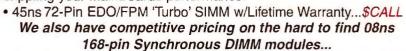
outstanding price to performance ratio of our 64-Bit MainBoards when matched with any of the Cyrix® 6x86 CPU's.

- HSB Pentium® Processor Based PCI MainBoard, On-Board EIDE, 512KCC, AMI 'Plug & Play' Flash WinBIOS...............\$CALL
- HSB 6x86 Processor Based PCI ATX MainBoard, On-Board EIDE, 256KCC, DIMM socket AMI PnP Flash WinBIOS....\$CALL • 08ns 168-Pin SDRAM 'Turbo' DIMM w/Lifetime Warranty....\$CALL

#### HSB 45ns SIMM's

Our SIMM's are tested down to 45ns for the utmost in compatibility, stability and speed. We wonder why some of our customers choose to buy a competitors cheap, unreliable 'Bargain Basement' SIMM's for their new high horsepower MainBoards. The only way to achieve any stability







### FREE SHIPPING...

If you fax your order directly to our distribution center, we will gladly ship your items FREE, via Federal Express Economy service anywhere in the contiguous 48 states. Shipments to Alaska or Hawaii will be assessed a minimal handling fee.



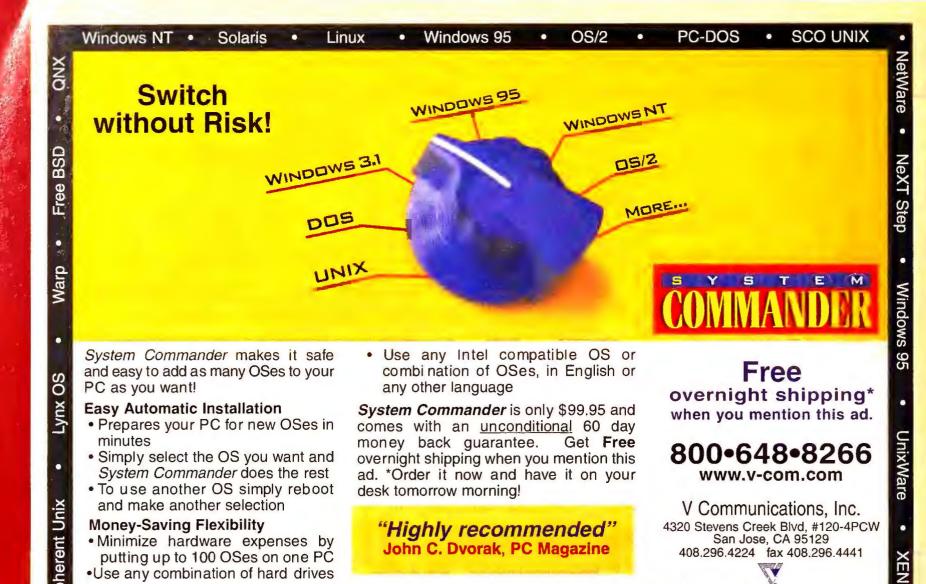
You may receive one of our service request forms by simply calling our 24-Hour automated service line at (800) 497-0401.



MANUFACTURERS • DISTRIBUTORS • WHOLESALERS

HSB Corporation - 34208 Aurora Road #297, Cleveland, Ohio 44139 (800) 497-0401[Automated Service] (216) 498-1374[Fax-Data]

Cyrix and the Cyrix 6x86 logos are trademarks of Cyrix Corporation. @ 1996 Cyrix Corporation. All rights reserved. Pentium and Pentium Pro are registered trademarks of Intel Corporation.



\* When ordered before noon PST. No Saturday delivery Standard shipping outside US. CA res. add \$7.25 sales tax. Offer subject to change without notice. All logos and product names are trademarks of their respective companies. VISA/MC/Arnex @1996

CIRCLE 468 ON READER SERVICE CARD

Windows 95J • Warp

The Next Generation in Label Design Software

DOS/V

# LABELVOR



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.

Windows v3.x

- 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

IIII AMERICAN MICROSYSTEMS, LTD. = 111 2190 Regal Parkway, Euless, TX 76040

(800) 648-4452 (817) 571-9015 FAX (817) 685-6232

# **IMPORT DATA FROM ANY COMPUTER REPORT INTO:**

MS-DOS •

Linux



Go beyond the limitations of import wizards and parsers. Get TOTAL CONTROL of your data! With DataImport you can selectively import data from columnar and non-columnar text-based reports, dynamically clean-up reports, create data files in 37 output formats or add data to existing files. DataImport does it all. Call today!

\$189 single user

\$495 5-user LAN



(770) 449-0594 Fax: (770) 449-0052

email: di-pcw@spaldingsoft.com http://www.spaldingsoft.com CIS: GO SPALDING, Lib 2, diwtd.zip

Access Excel dBase 1-2-3 **Paradox FoxPro Approach** Quattro Clarion

FREE OR CALL

CIRCLE 434 ON READER SERVICE CARD



PC WORLD delivers the buyers you need to reach.

81% determine the need for products & their features.

Call for Details (203) 857-5101 or (203) 857-5102

#### BUSINESS APPLICATIONS





#### Church Partner

7 modules • Used by 39 denominations for 10 years



#### **School Partner**

6 modules • Perfect for schools and daycares, private or church-related



#### **Accounting Partner** Great new features

General Ledger, Accounts Payable, Payroll

**VISIT US ON THE INTERNET!** http://www.intraweb.com/summit.htm

#### IMIT SYSTEMS. INC

16 Berry Hill Rd., #121 Columbia, SC 29210-6433

WINDOWS OF DOS Demo available 1-800-228-5857

CIRCLE 478 ON READER SERVICE CARD

#### BUSINESS 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

#### SERVICES/SUPPLIES

# MIRROR IMAGES

**DISKETTE DUPLICATION** Superior duplication . . .

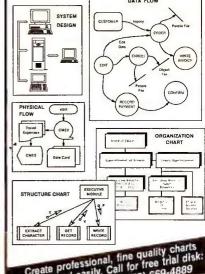
Your reputation depends on it. Our reputation assures you of it.

- ALL DISK FORMATS
- FAST 24 HOUR TURNAROUND
- EXCEPTIONAL PRICING AND SERVICE

Call for more information and quotation

800-322-0577 OHIO - NEW JERSEY

Professional Flowcharting



#### 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 Multiuser 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

## Be a PC repair expert!

EDUCATION

CAREER-LEVEL HOME STUDY

Learn PC repair, upgrading, installation, and troubleshooting. Open your own business, or increase your value on the job. Our profes-sional-level home study program lets you learnand then earn– without a costly workshop or hightech instruments. Send or call 24 hours a day for your free literature.

Call 800-223-4542

| Name         |         |   |     |  |
|--------------|---------|---|-----|--|
| Address      |         |   |     |  |
| City/State _ |         |   | Zip |  |
| Age          | Phone ( | ) |     |  |

The School of PC Repair PCDI, 6065 Roswell Road Dept. JJM684, Atlanta, GA 30328

CIRCLE 451 ON READER SERVICE CARD

#### UPGRADES/MEMORY

**UPGRADES** 

#### Hard Cards for 1000's

21meg \$169 210meg \$249 42meg \$229 540meg \$299

#### 1000 EX & HX Hard Drives 21meg \$239 \$210meg \$349

**Upgrade Motherboards** 

80486DX/4-100 \$449 Pentium-100

We sell New and Used Hard Drives, Floppy Drives, Ram Memory, Motherboards, VGA & CGA monitors/Cards, Keyboards, CD-ROM drives, and much more for MOST Tandy models. Call or write for our FREE catalog.

DCS Industries 5265 Hebbardsville Rd. Athens, OH 45701 800-537-3539 U.S. & Canada

Foreign 614-594-4180 614-592-1527

CIRCLE 493 ON READER SERVICE CARD

#### SERVICES/SUPPLIES





228 page guide to computer furniture, supplies & accessories

## COMPUTER SUPPLIES

11 Harbor Park Dr. Dept. 94 PCW Port Washington, NY 11050

CIRCLE 508 ON READER SERVICE CARD

## We can save it!



800 440-1904

All storage devices • All platforms Since 1985

www.grivesavers.com

400 Bel Marin Keys Bl., Novato, CA 94949 Fax: 415 883-0780 Phone: 415 382-2000-

CIRCLE 431 ON READER SERVICE CARD



"I conquered software piracy!"

## It's easy with the NEW SentinelWizard GUI

If you sell software without protection, you're losing sales and revenue to piracy. The illegal distribution and use of software is the greatest threat to your company's success.

> Fight back! Conquer piracy and ensure your revenue with Sentinel®, the world's #1 software protection.

> > Visit our web site www.rnbo.com

The most advanced protection is now the easiest to implement. Sentinel features the new SentinelWizard™ GUI to guide you quickly through the implementation process.

Now it's easy to conquer piracy! Call and order your Sentinel Developer's Kit today!

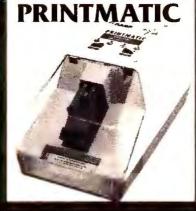
1-800-852-8569



FRAINBOW 50 Technology Drive, Irvine, CA 92618 Tel (714) 450-7300 Fax: (714) 450-7450 Distributors worldwide ©1996 Rainbow Technologies, Inc. Sentinel and SentinelWizard are trademarks of Rainbow Technologies. All other product names are property of their respective owners.

CIRCLE 411 ON READER SERVICE CARD

#### SERVICES/SUPPLIES



MasseCard To order call: VISA

800-780-2679 fax 800-330-2679

- Refills HP 500/600 Inklet Printheads in 80 secs.
- Economical Reduces printhead costs by at least 50%.
- Fully Automatic; Compact.
- Manufactured by BASF.
- Safe, Clean, No messy ink.
- 100% Money Back guarantee.
- Includes 3 free refills \$75 value.

# WE'LL PAY *you* for your old memor

1x9, 4x9, 30 Pin, 1x32, 2x32, 4x32, 1x36, 2x36, 4x36, 8x36, 72 Pin

TRADE-IN

\$ ANY SIMMS \$



NOTEBOOK, LAPTOP, SUBNOTE, CREDIT CARD (IC DRAM) MODULES ALL MEMORY HAS VALUE

WE NOW BUY & SELL CPU's





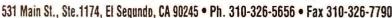


# THE MEMORY LIQUID

"The company that buys memory back"



354 PC WORLD NOVEMBER 1996



CIRCLE 520 ON READER SERVICE CARD

## MANAGERS READ ONLY PC WORLD.

Well, 684,000 of them read only PC WORLD. You can't reach them through any other computer magazine. No kidding. Your ad hits them right between the eyes.

Call for Details (203) 857-5101 or -5102

#### BUSINESS DIRECTORY

#### **USED SOFTWARE**

- Used IBM Compatible Software
- · Most Popular Titles Available
- · Save up to 50% on Current Versions
- Huge Savings on Prior Versions
- Includes Original Manuals & Disks
- Guaranteed Complete & Virus Free • 30 Day Money Back Guarantee
- Amex, Discover, MC & VISA
- · Call 7am-4pm PST M-F for Free Price List Recycled Software, Inc.

PO Box 33999

Las Vegas, NV 89133-3999 800-851-2425 ¥ Fax 702-655-5662

CIRCLE 441 ON READER SERVICE CARD

#### **Insures Your Computer**

The Computerowners<sup>sм</sup> insurance policy repairs or replaces hardware, media and purchased software. \$49 a year covers up to \$2,000 of equipment against theft, fire, accidents, power surge, natural disasters and more! \$50 deductible. Call for immediate coverage or information.

#### 1-800-800-1492/1-800-SAFEWARE SAFEWARE

The Insurance Agency Inc. 5760 N. High Street, PO Box 656 Columbus, Ohio 43085

CIRCLE 421 ON READER SERVICE CARD

#### INVENTORY MANAGEMENT Full Transaction Supp, Multi Locations,

Stock Status, Purchasing, Job/Dept Costing, Trans Hist Analysis, Trend Analysis, QC Reporting, Bill of Materials, MRP, Serial/Lot Tracking, Quote Prep/Track, Order Processing & Invoice.

#### **Applied Micro Business Systems**

177-F Riverside Avenue Newport Beach, CA 92663 (714) 723-0582 • Fax (714) 675-5325

CIRCLE 514 ON READER SERVICE CARD

**SELL YOUR PRODUCT** to our list of 70,000 mail order software buyers.

Details faxed to you right now by calling **800 238 7223** 

UNITED STATES OF AMERICA MARKETING CORPORATION ESTABLISHED 1986

CIRCLE 461 ON READER SERVICE CARD



- Asian & European

Live online international sliver chat Email unplugged plus game galare 100% FREE DOWNLOADS

NO Subscription/NO Credit Card



Daily Updates Instant connect by modem Simply dial -

852 1729 7918

Free CD-ROMs to giveaway Everyday!!!

Not recommended to minors. LD rates apply CIRCLE 432 ON READER SERVICE CARD

Totally Real -Time! Over The Net!!! or Just Watch Hot Live Shows .. 1 to 1 Fantasy Action... \*\*\*\*\*\*\*\* Photos! Shopping! FREE SOFTWARE EASY TO USE Not Recommended For Minors http://www.hotlove.com/d1

CIRCLE 499 ON READER SERVICE CARD

# The Ultimate BBS

· Lively Network Chat 100,000 Shareware &

GIF's, Windows, Mac and DOS files

Free Internet Accounts

UNLIMITED ACCESS

Unlimited Downloads

• Up to 28.8k on all 160 Lines

New GIF's posted daily by our photographers

STRESS OF DAILY LIFE WITH OUR

#### FANTASY DISKS

FANTASY VGA MOVIES - Over 1 MB 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 PICTURE CD-ROM - 1000+ VGA pictures, with interactive database - search by

YOUR grade, category.

FANTASY INTERACTIVE MOVIE

CD-ROM – 1full length movie spoof of Plan 9 from

Outer Space with scenes from the original - create
unlimited GIFS from movie.

FANTASY GAME CD-ROM - 2 CD-ROM set containing 1200 MB of movies plus 4 challenging

multi-level arcade games. FREE VHS VIDEO TAPE (1-2 hr) with each

CD-ROM: \$59 each or all 3 for \$149. Orders Only: 800-243-1515 Ext. 600 CA 24 HRS/7 DAYS • In PA Add Tax

-9.6" or Foreign Unders Add 52 per disk. CK/MO to: S Software, P.O. Box 220, Dept. 600CA, Hatfield, PA 19440 / ADD \$3 S/H

\$1.50 SHAREWARE SPECTACULAR FREE CATALOG - 600+ PROGRAM:

CIRCLE 405 ON READER SERVICE CARD

RECREATION

### **PC WORLD DELIVERS** THE BUYERS YOU NEED

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

TO REACH

Call now for more information

your best target market.

**PC World Marketplace** 

203-857-5101 203-857-5102

# world wide hhs (# GET EXOTIC IMAGES, SHAREWARE,

- & WINDOWS/DOS FILES -UPDATED DAILY!
- FREE UNLIMITED DOWNLOADSI
- NO SUBSCRIPTION REQUIRED!

AND NOW. LIVE VIDEO GIRLS! USE YOUR MODEM TO DIAL

MCI CALLERS: DIAL 10288 FIRST, THEN #. INTERNATIONAL LONG DISTANCE RATES APPLY NOT RECOMMENDED FOR MINORS

Thousands of truly amazing, full-color, professional photos, and software featuring beautiful Asian ladies.

#### WEBSITE

www.asian-playmates.com/pcw

**FREE BBS** 

011 852 1729 0900

Thousands of JPEGs, plus lovely Asian girls for live chat.



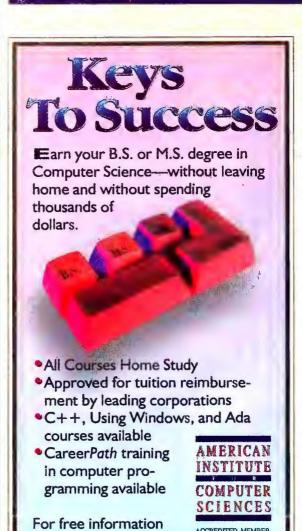
CIRCLE 488 ON READER SERVICE CARD

## PC WORLD'S PC-PROFICIENT MANAGERS ARE INVOLVED THROUGHOUT THE PURCHASE PROCESS

- 81% determine the need for products & their features
- 85% suggest, evaluate or recommend specific brand models
- 55% make the final buying decision

**Call Now for More Information** 

(203) 857-5101 or (203) 857-5102



# **GET MORE**

call I-800-767-AICS

ACCREDITED MEMBER

World Association of Universities and College

MORE PLACES

**MORE READERS** 

MORE SOFTWARE

**MORE TIPS** 

MORE REVIEWS

MORE INTERACTIVITY

MORE ANSWERS

## PC WORLD ONLINE **DELIVERS!**

Web: http://www.pcworld.com America Online: keyword pcworld Prodigy: jump peworld CompuServe: go pcworld MSN: go pcworld

# Bar Codes Direct

FROM THE MANUFACTURER

**Labeling Software** For Dot Matrix or LaserJet



- 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.
- LabelR(GHT<sup>™</sup> for Windows<sup>™</sup> \$295
- LabelRIGHT<sup>TM</sup> 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

### Radio Frequency Terminal

For IBM or Macint sh Computers



- 400 to 1000 foot Range 16 Selectable Frequencies
- 2 way RS-232 Communication
- Kybrd, Wand, Laser or CCD
- 1-16 Terminals/Base Station
- 6.3" x 3.3" x 1.25", 14 oz.
- Base Station \$840
- Complete Terminal \$1090
- With Integrated Laser \$1790

#### 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,

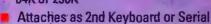
ribbon, cable, LabelRIGHT Windows or DOS software, and Datamax Allegro Printer - \$1495



#### **Portable Bar Code Readers** for PC, Mac and Serial WITH

Voice!

Battery Operated Reader 64K or 256K



- Display messages & voice messages prompt operator.
- Pick lists, tables.
- Wand, CCD or Laser Scanner
- UPC/EAN, 128, 20f5, 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 oz.
- 64K Unit Complete with Wand & Voice \$799
- 64K Unit with Integrated Laser-\$1299

#### **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 Wand only Reader \$329
- Complete Cordless Wand Scanner \$595
- Complete with Laser Scanner \$655

#### Low Cost Laser Reader

- Integrated Laser Handheld Wedge Reader with Decoder in Handle for PC or Mac
- Outstanding Price, complete only \$655

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)



Call for our ree Catalog and Bar

| FREE P<br>NAME  | ROL   | OUC  | TII  | VF.  | 0   | RI  | MA  | IT   | 10   | N   |  | PC  | W                        | OR                              |   |
|---|---|--|--|--|---|---|---|--|--|---|--|---|--------------------------|---------------------------------|---|
| TITLE   |   |  |  |  |   |   |   |  |  |   |  |   |                          |                                 |   |
| COMPANY   |   |  |  |  |   |   |   |  |  |   |  |   |                          |                                 |   |
| ADDRESS   |   |  |  |  |   |   |   |  |  |   |  |   |                          |                                 |   |
| CITY  |   |  |  |  |   |   |   | STA  | TE.  |   | ZI                                     | P   |                          |                                 |   |
| PHONE ( )   |   |  |  | `  | F   | AX (  |   | )  |  |   |  |   |                          |                                 |   |
| 41 42 4<br>61 62 6<br>81 82 8<br>101 102 10<br>121 122 11<br>141 142 14<br>161 162 10<br>181 182 10<br>201 202 20<br>221 222 22<br>241 242 24 | 3 4<br>23 24 2<br>44 4 4<br>63 68 84 8<br>03 104 10<br>23 124 12<br>43 144 14<br>63 164 16<br>83 184 18<br>03 204 20<br>224 22<br>43 244 24<br>03 404 40<br>23 424 42<br>43 444 44<br>43 444 44<br>63 464 46<br>83 484 48 | 15 86<br>15 106 1<br>15 126 1<br>5 146 1<br>5 166 1<br>15 186 1<br>15 206 2<br>5 226 2<br>5 226 2<br>5 406 4<br>15 426 4<br>15 466 4<br>15 486 4 | 7 8<br>27 28<br>47 48<br>67 68<br>87 88<br>87 108<br>127 128<br>447 148<br>167 168<br>187 188<br>107 208<br>127 228<br>247 248<br>107 408<br>127 428<br>147 448<br>167 468 | 129<br>149<br>169<br>189<br>209<br>229<br>249<br>409<br>429<br>449<br>469<br>489 | 190<br>210<br>230<br>250<br>410<br>430<br>450<br>470<br>490 | 231<br>251<br>411<br>431<br>451<br>471<br>491 | 152<br>172<br>192<br>212<br>232<br>252<br>412<br>432<br>452<br>472<br>492 | 173<br>193<br>213<br>233<br>253<br>413<br>433<br>453<br>473<br>493 | 214<br>234<br>254<br>414<br>434<br>454<br>474<br>494 | 235<br>255<br>415<br>435<br>455<br>475<br>495 | 256<br>416<br>436<br>456<br>476<br>496 | 237<br>257<br>417<br>437<br>457<br>477<br>497 | 438<br>458<br>478<br>498 | 419<br>439<br>459<br>479<br>499 | 160<br>180<br>200<br>220<br>240<br>260<br>420<br>440<br>460<br>480<br>500 |

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 (503) 684-5370.

#### PRODUCTS FEATURED IN EDITORIAL

601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900

#### PRODUCT CATEGORY INFORMATION

11/96

S1

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 Notebook computers 953 Windows 95 software 954 Monitors and video boards

956 Graphics software 957 Network/sharing products 958 Printers

955 Accounting software

959 Multimedia products 960 Utilities

November 1996

This card expires March 18, 1997

961 Mail order companies 962 Storage devices

NO POSTAGE NECESSARY IF MAILED IN THE **UNITED STATES** 

FREE UCT ION PROPERTION INFORMATION

For quicker response, fax to (503)684-5370



FIRST-CLASS MAIL

PERMIT NO. 848

**PORTLAND OR** 

POSTAGE WILL BE PAID BY ADDRESSEE



READER SERVICE DEPARTMENT 12950 SW PACIFIC HWY STE 7 TIGARD OR 97223-9750

| • | <br> |
|---|------|
|   |      |
|   |      |
|   |      |
|   |      |
|   |      |
|   |      |
|   |      |
|   |      |
|   |      |

| NAME    |            |      |     |      | 0   | , ,  |    |    | U  | NI   | VI /- |     |    |    |    | 76 | AA | Un   | LV  |
|---------|------------|------|-----|------|-----|------|----|----|----|------|-------|-----|----|----|----|----|----|------|-----|
| TITLE   |            |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
| COMPANY |            |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
| ADDRESS |            |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
| СПҮ     |            |      |     |      |     |      |    |    |    |      |       | STA | TE |    | ZI | Р  |    |      |     |
| PHONE ( |            | )    |     |      |     |      |    |    | 1  | AX ( |       | )   |    |    |    |    |    |      |     |
| INFORM  | ATIC       | )N F | RON | / AD | VER | TISE | RS |    |    |      |       |     |    |    |    |    |    |      |     |
| 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     |            |      |     |      |     |      |    |    |    |      | 112   |     |    |    |    |    |    |      |     |
|         | 122        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 142        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 162        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 182        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 202        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 222<br>242 |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 402        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 422        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 442        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 462        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 482        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         | 502        |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    |      |     |
|         |            |      |     |      |     |      |    |    |    |      |       |     |    |    |    |    |    | 9.97 |     |

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 (503) 684-5370.

#### PRODUCTS FEATURED IN EDITORIAL

Մոհոկահոհոհոհոհինի հուրի հետև

601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 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 952 Notebook computers Windows 95 software Monitors and video boards

955 Accounting software 956 Graphics software 957 Network/sharing products

959 Multimedia products 960 Utilities 961 Mail order companies 962 Storage devices

November 1996

This card expires March 18, 1997

PRODUCT ION INFORMATION



For quicker response, fax to (503)684-5370

FIRST-CLASS MAIL

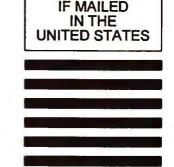
PERMIT NO. 848

PORTLAND OR

POSTAGE WILL BE PAID BY ADDRESSEE



ADER SERVICE DEPARTMENT 12950 SW PACIFIC HWY STE 7 TIGARD OR 97223-9750



**NO POSTAGE** NECESSARY

| REE | PR | ODL | JCT | INFO | RMA | TI | ON | PC W |
|-----|----|-----|-----|------|-----|----|----|------|
|-----|----|-----|-----|------|-----|----|----|------|

TITLE COMPANY ADDRESS STATE CITY ZIP PHONE ( FAX ( INFORMATION FROM ADVERTISERS 21 41 61 81 101 121 141 161 181 201 221 241

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 (503) 684-5370. PRODUCTS FEATURED IN EDITORIAL

## 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840

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.

958 Printers

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 952 Notebook computers Windows 95 software 954 Monitors and video boards

955 Accounting software 956 Graphics software 957 Network/sharing products 959 Multimedia products 960 Utilities

961 Mail order companies 962 Storage devices

This card expires March 18, 1997

S2

11/96

FREE UCT ION PROPERTION INFORMATION

For quicker response, fax to (503)684-5370



FIRST-CLASS MAIL

PERMIT NO. 848

PORTLAND OR

POSTAGE WILL BE PAID BY ADDRESSEE



READER SERVICE DEPARTMENT 12950 SW PACIFIC HWY STE 7 TIGARD OR 97223-9750

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



PRESIDENT AND COO Richard J. Marino Assistant to the President and COO Colette Cornish

#### ADVERTISING SALES

**VICE PRESIDENT, ASSOCIATE PUBLISHER Ieff Edman** 

**BUSINESS MANAGER** Patricia Owen

DIRECTOR OF ADVERTISING **Bob Carrigan** 

**DIRECTOR OF NATIONAL ACCOUNTS** Sandy Schackman (214/233-3491)

**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 Michael Carroll, Senior Account

Manager (508/820-0440) Judy Sutter, Senior Account

Manager (770/394-0758)

MIDWEST/TEXAS

MIDWEST ADVERTISING DIRECTOR Harvey Diamond (214/233-3492)

ADMINISTRATIVE ASSISTANT Janine Goble

Midwest Kathy McKay, Account Manager (847/827-4477)

WEST

San Francisco Bay Area (area code 415 and 510) Corinne Cox, Senior Account Manager (415/243-0500)

Mid-S. F. Peninsula/Oregon/ Washington

Don Reis, Senior Account Manager (415/243-0500)

Fremont, CA/South Bay (area code 408) Kevin Normandeau, Account

Manager (415/243-0500) West

Duane Hampson, Account Representative (415/243-0500)

Los Angeles/Orange County/ Montana/Wyoming/Western Canada Bill Hanck, Southwest Advertising Director (310/312-8008)

**ADMINISTRATIVE ASSISTANT** Joyce Clarke

Southern California (San Diego), Colorado/Idaho/Nevada/ Utah/New Mexico/Arizona Lisa Zimmerer, Senior Account

Manager (714/250-8081)

**CONSUMER ADVERTISING SALES** 

Eastern U.S. Edman & Company (212/551-1121)

Michigan/Pennsylvania/Ohio Hartle & Heth (810/642-7273)

Western U.S. James G. Elliott Co. (213/624-0900 X1224)

PC WORLD ONLINE SALES DIRECTOR OF MARKET DEVELOPMENT Stephen Shore (415/267-4595) ACCOUNT EXECUTIVE Tom Friesch

SALES REPRESENTATIVE Melissa Gruber (415/974-7373)

PC WORLD MARKETPLACE PC WORLD ACTION CARDS

DIRECTOR Pat Fales (203/857-5115) EASTERN ACCOUNT MANAGER Katherine Noto (203/857-5101) WESTERN ACCOUNT MANAGER Renick Morris (203/857-5102)

PC WORLD REPRINTS Kyle Mork (612/582-3810)

PC WORLD MARKETING DIRECTOR OF MARKETING Alan Abrams PUBLIC RELATIONS MANAGER Lee Doyle MARKETING MANAGER Sandy Wong **ADMINISTRATIVE ASSISTANT FOR** MARKETING AND RESEARCH Kecia Nordgren

#### CIRCULATION

VICE PRESIDENT, CIRCULATION Shawne Burke Pecar ASSISTANT TO THE VICE PRESIDENT Ann Dempsey SENIOR PROMOTION MANAGER Ellen DiMatteo CIRCULATION BUSINESS MANAGER David Cobb SINGLE COPY SALES MANAGER Cheryl Stephenson **BILLING AND RENEWAL MANAGER** Lisa Radler **PROMOTION MANAGERS** Richard McCarthy, Shira Weisbach

PUBLISHER J. Samuel Huey Assistant to the Publisher Alexis Meagher

> CIRCULATION ASSISTANT Jennifer Carson CUSTOMER SERVICE SPECIALIST Daniella Zucker

#### RESEARCH

VICE PRESIDENT, RESEARCH Cheryl Brink RESEARCH MANAGER Jocelyn Ritchie SENIOR RESEARCH ANALYST Jon Friesch RESEARCH ANALYST Sandra O'Boyle

#### 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** Anne Merkelson

ADVERTISING INFORMATION ASSISTANT Dan Gordon

#### ADMINISTRATION

OFFICE OF THE CEO ASSISTANT TO THE CEO Nancy L. Jacobs MANAGEMENT ASSOCIATES Benjamin Jones, Angela Weber

**HUMAN RESOURCES AND** INFORMATION SYSTEMS VICE PRESIDENT Richard Willoughby MANAGER Thalia Ohara

REPRESENTATIVE Christine Selfridge VICE PRESIDENT, CIO Henri Froissart **DIRECTOR NETWORK SYSTEMS** 

Norman Noble SENIOR MEMBER, TECHNICAL STAFF Rodney Barnes

MEMBERS, TECHNICAL STAFF Pearl Chan, Stan Erhart

SENIOR VICE PRESIDENT, CFO Vicki Peilen

ACCOUNTING/OPERATIONS MANAGER Pat Murphy ACCOUNTING/FACILITIES MANAGER

Michelle Reyes DIRECTOR OF FINANCIAL OPERATIONS Madeleine Buckingham

#### Advertiser Index A-Z

Get more information-circle the appropriate number on the reader service card.

| service<br>number |                          | Page   |
|-------------------|--------------------------|--------|
| <b>-</b> .        | Acer                     | 58-59  |
|                   | Adaptec                  |        |
| 3 .               | ADI Systems              | 231    |
| 14                | AEC                      | 289    |
|                   | ALR                      |        |
|                   | American Greetings       |        |
|                   | Anthro Corporation       |        |
| -                 | APC 20                   |        |
|                   | APC                      |        |
|                   | Artisoft                 |        |
|                   | Astound, Inc             |        |
|                   | ATI Technologies 20      |        |
|                   | ATI Technologies         |        |
|                   | Aura Systems, Inc        |        |
|                   | Austin Micro-Solutions . |        |
|                   | Austin/IPC 1             | _      |
|                   | Avery                    |        |
|                   | Banner Blue              |        |
|                   | Caere                    |        |
|                   | Caliber Computer         | 269    |
|                   | Canon Computer Systems   |        |
|                   | Casio, Inc.              |        |
|                   | Claris                   |        |
|                   | Compaq Computer          | 2))    |
| ٠.                | Corporation              | 38-30  |
|                   | Compaq Computer          | , ,,   |
|                   | Corporation19            | 94-195 |
|                   | Compaq Computer          |        |
|                   | Corporation 29           |        |
|                   | Compulink                | 283    |
|                   | Computer Discount        |        |
|                   | Warehouse3               |        |
|                   | Connectix                |        |
|                   | Connectix Software       |        |
|                   | Corel Corporation        |        |
|                   | Cybermax                 |        |
|                   | Dell                     |        |
|                   | Dell16                   | -      |
|                   | Dell                     |        |
|                   | DeLorme                  |        |
|                   | Delta Products           |        |
|                   | Diamond Multimedia       | -/40   |
|                   | Systems                  | 203    |
| 79                | Diamond Supra            | 303    |
| 84                | DTK Computer Inc         | 251    |
|                   | _                        | -      |

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 19D 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 Desterreich, PC Test; BRAZIL's Computerworld, 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 Danmark, Lotus World, Macintosh Produktkatalog, Macworld Danmark, PC World Produktguide, Windows World; ECUADDR's PC World; EGYPT's Computer World (CW) Middle East, PC World Middle East; FINLAND's MikroPC, Tietoverkko, Tietov Computerwoche Extra, Computerwoche Focus, Computerwoche Karriere, Information Management, Macwelt, Netzwelt, PC Woche, Publish, Unit, HUNGARY's Alaplap, Computerworld SZT, PC World, INDIA's Computers & Computerworld SZT, PC World, INDIA's Computers & Computerworld SZT, PC World, INDIA's Computerworld SZT, ISRAEL's Computerworld Israel, PC World African Computer News; KOREA'S Computerworld Korea, Macworld Korea, Mexico Scomputerworld Korea, Macworld Korea, Macworld Korea, Mexico Scomputerworld Mexico, Macworld, Mundo Unix, PC World, Windows; THE NETHERLANDS' Computer Totaal, LAN Magazine, MacWorld; NEW ZEALAND'S Computer Listings, Computer Listings, Computer Response, Lotusworld Norge, Macworld Norge, Networld, 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 Informatico/Computerworld, MacIn; RDMANIA's PC World; RUSSIA's Computerworld Moscow, Mir-PC, Sety, SLDVENIA'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 KINGDDM's Lotus Magazine, Macworld, Sunworld, UNITED STATES' AmigaWorld, Cable in the Classroom, CD Review, CID, Computerworld, Desktop Video World, DDS 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, Sumeria, SunWorld, SWATPro, Video Event; VENEZUELA's Computerworld Venezuela, MicroComputerworld Venezuela, VIETNAM's PC World Vielnam

| Reader<br>service<br>numbe | Page .                                    | Reader<br>service<br>number | Page  | Reader<br>service<br>number | Page   | Reader<br>service<br>number | Page                              |
|----------------------------|---|-----------------------------|---|-----------------------------|--|-----------------------------|-----------------------------------|
| -                          | Epson America, Inc 204-205                |                             | PC America340                                       | 1                           | Aura Systems, Inc 297                                      | 235                         | Texas Instruments 8:              |
| 107                        | Everex161                                 |                             | PC Connection 316-317                               |                             | Kingston Technology  | 220                         | Texas Instruments 122-123         |
| 92                         | EXABYTE/Eagle                             | ľ                           | PC World Online 274                                 | 1                           | Corp   | 244                         | Texas Instruments 166-167         |
|                            | Division                                  |                             | PC World Online 274D                                | 1                           | Matrox Graphics, Inc 86-87                                 | 240                         | Twinhead369                       |
| 89                         | Fujitsu                                   |                             | PC World Online338                                  |                             | STB Systems         266           Trinity Works         26 | 254                         | WinBook16-17                      |
| 103<br>94                  | Fujitsu                                   |                             | PC Zone   | 230                         |  |                             | Monitors/Display                  |
| _                          | Gateway 2000 65-77                        |                             | Peachtree Software230                               |                             | Communications/Fax/  |                             | ADI Systems                       |
| _                          | Global Village144-145                     |                             | PKWARE309   |                             | Modems   | 71                          | Delta Products 2740               |
| 72                         | Group 3289B                               |                             | Plextor   |                             | Diamond Supra303   | 102                         | HANSOL MULTITECH, INC37           |
| 102                        | HANSOL MULTITECH,                         |                             | PointCast133  | -                           | U.S. Robotics 255  | 110                         | Hyundai Electronics               |
|                            | INC                                       |                             | Princeton Graphic                                   |                             | Computers  |                             | America239                        |
| -                          | Hewlett Packard-Colorado 14               |                             | Systems18-19  |                             | Acer58-59  | 108                         | Iiyama13                          |
| -                          | Hewlett-Packard 117, 119                  |                             | Prodigy57   |                             | ALR257   |                             | KDS115                            |
| -                          | Hewlett-Packard121                        |                             | Prodigy181  |                             | Austin/IPC129-131 Caliber Computer269                      | 96                          | LG Electronics                    |
|                            | Hewlett-Packard PC 198-199                |                             | Prodigy 259   | j .                         | Compaq Computer 209  |                             | U.S.A., Inc 219                   |
| 109                        | HITACHI102-103<br>Huntington Bank 178-179 |                             | ProGen Systems23                                    |                             | Corporation290-291   |                             | MAG InnoVision 270                |
| 97<br>110                  | Hyundai Electronics                       |                             | Psion   |                             | Compulink  | 166                         | PANASONIC 250                     |
| 110                        | America239                                | 1                           | Quantex105-110                                      |                             | Cybermax91A-B  | 151                         | Princeton Graphic<br>Systems18-19 |
| _                          | IBM Corporation 203, 307                  |                             | Quark, Inc 174-175                                  | 1                           | Dell   | _                           | Samsung Electronics               |
| 108                        | Iiyama13                                  |                             | Quarterdeck Office                                  |                             | Dell168-169  |                             | America146-147                    |
| _                          | Imation                                   |                             | Systems97   |                             | Dell   | 206                         | SMILE In'l 279                    |
| 106                        | Intergraph Software                       |                             | Quarterdeck Office                                  |                             | DTK Computer Inc 251                                       |                             | ViewSonic24-2                     |
|                            | Systems 197                               | }                           | Systems99   |                             | Gateway 2000 65-77   |                             | Multimedia                        |
| -                          | Iomega Corporation 61                     |                             | Quarterdeck Office                                  |                             | Hewlett-Packard PC 198-199                                 | _                           | Casio, Inc31                      |
| 170                        | KDS115                                    |                             | Systems101  |                             | Magitronic240  |                             | Diamond Multimedia                |
| 123                        | KeyStone Learning                         |                             | Samsung Electronics                                 |                             | Micron Electronics   |                             | Systems29                         |
| 128                        | Systems                                   |                             | America136-137 Samsung Electronics                  |                             | Micron Electronics 8-9                                     | 175                         | Plextor 280                       |
| 120                        | Corp319                                   |                             | America   |                             | Micron Electronics189                                      |                             | Other                             |
| 127                        | Kyocera Electronics, Inc 281              |                             | Seagate277  |                             | ProGen Systems   | 16                          | American Greetings 90             |
| _                          | LA TRADE326                               |                             | Seiko Instruments 274A                              | 6                           | Quantex105-110   |                             | Casio, Inc 313                    |
| 132                        | Lexmark 216-217                           | 206                         | SMILE In'l279                                       | 1                           | Sony Electronics, Inc 30-31                                |                             | Peripheral/Sharing Devices        |
| 96                         | LG Electronics U.S.A.,                    | -                           | Sony Electronics, Inc 30-31                         | l .                         | Swan Technologies 153-156                                  | -                           | Adaptec177                        |
|                            | Inc                                       |                             | SPSS 298-300  |                             | TOSHIBA139-142   |                             | TRAVELING SW23                    |
| -                          | Logitech                                  |                             | STB Systems   | 240                         | Twinhead365  |                             | TRAVELING SW 237                  |
| 138                        | Lotus 40                                  |                             | Swan Technologies 153-156                           |                             | Zenith Data Systems 153-156                                |                             | Power/Protection                  |
| 135                        | Lycos                                     |                             | Tektronix   | -                           | Micron Electronics 182-188                                 | 17                          | APC13                             |
| 139                        | Macromedia                                |                             | Texas Instruments 63                                |                             | Desktop Publishing   |                             | APC 260A-F                        |
| 144<br>140                 | Magitronic240                             |                             | Texas Instruments 81                                | 35                          | Compaq Computer  |                             |                                   |
| 143                        | Matrox Graphics, Inc 86-87                |                             | Texas Instruments 122-123 Texas Instruments 166-167 |                             | Corporation194-195   | _                           | Printers/Plotters Canon Computer  |
| 147                        | Mega Haus Hard Drives 342                 |                             | Top Hook, Inc                                       | 194                         | Quark, Inc 174-175   |                             | Systems2-                         |
| -                          | Micrografx27                              |                             | TOSHIBA139-142                                      |                             | Input Devices  | _                           | Epson America, Inc 204-20         |
| -                          | Micrografx363                             |                             | TRAVELING SW235                                     | -                           | Connectix89A   | 89                          | Fujitsu                           |
| 149                        | Micron Electronics 7                      |                             | TRAVELING SW 237                                    |                             | Connectix Software 296                                     | 127                         | Kyocera Electronics, Inc 28       |
| 149                        | Micron Electronics 8-9                    |                             | Trinity Works                                       |                             | Laptop/Notebook  | 132                         | Lexmark 216-217                   |
| 149                        | Micron Electronics 10-11                  | 240                         | Twinhead365   | 22                          | Austin Micro-Solutions 258                                 | -                           | Okidata31                         |
| -                          | Micron Electronics 182-188                | -                           | U.S. Robotics255                                    |                             | Austin/IPC 129-131   | 124                         | Tektronix                         |
| 160                        | Micron Electronics 189                    |                             | Umax 221  |                             | Compaq Computer Corpora-                                   |                             | Scanners/Digitizers               |
| -                          | Microsoft                                 |                             | USA FLEX336-337                                     |                             | tion 38-39   | -                           | Logitech                          |
| -                          | Microsoft32                               |                             | ViewSonic24-25                                      |                             | Compulink283   | 250                         | Umax 22                           |
| -                          | Microsoft                                 |                             | VISIO249  |                             | Dell   | 187                         | Visioneer20                       |
| _                          | Microsoft                                 |                             | Visioneer   | •                           | Everex161  |                             | Storage/Backup Devices            |
| 169                        | Midwest Computer                          |                             | WinBook 16-17                                       |                             | Fujitsu  | 92                          | EXABYTE/Eagle                     |
| 103                        | Works324-325                              | 214                         | Zenith Data Systems 153-156                         |                             | Fujitsu  |                             | Division 274I                     |
| 169                        | Midwest Computer                          |                             |   |                             | Gateway 2000 65-77<br>HITACHI                              | -                           | Hewlett Packard-Colorado 12       |
|                            | Works341                                  | Ac                          | lvertiser Index by                                  | 109<br>97                   | Huntington Bank 178-179                                    | -                           | Imation                           |
| 180                        | NEC 28-29                                 | _                           |   | 1                           | IBM Corporation203   | -                           | Iomega Corporation6               |
| 203                        | NEC Laptop 222-223                        |                             | roduct Category                                     |                             | Magitronic240  | 147                         | Mega Haus Hard Drives 342         |
| 126                        | NETCOM311                                 |                             | et more information-circle the                      |                             | Micron Electronics 182-188                                 | 209                         | Seagate277                        |
| 174                        | Netmanage91                               | apı                         | propriate number on the reader                      | 149                         | Micron Electronics 10-11                                   |                             | Systems                           |
| 158                        | NewSoft44                                 |                             | service card.                                       | 203                         | NEC Laptop 222-223   | 180                         | NEC 28-29                         |
| -                          | Okidata315                                | 1                           | HARDWARE  | 162                         | Olivetti232-233  |                             |                                   |
| 162                        | Olivetti                                  | !                           |   | 173                         | Palm Computing93   |                             | SOFTWARE                          |
| 171<br>173                 | Palm Computing93                          |                             | Boards/Cards/Chips                                  | -                           | Samsung Electronics  |                             | Accounting/Financial              |
| 166                        | PANASONIC250                              | P.                          | ATI Technologies206-207 ATI Technologies208         |                             | America  | 223                         | Peachtree Software230             |
| .55                        |   | 25                          | ATT TECHNOLOGIES 208                                | 242                         | Texas Instruments 63                                       |                             |                                   |

| Reader<br>service<br>number | Page                                 | Reader<br>service<br>number | Page   | Reader<br>service<br>number | Page   | Reader<br>service<br>number | Page 5  |
|-----------------------------|--------------------------------------|-----------------------------|--|-----------------------------|--|-----------------------------|---|
|                             | CAD/CAM                              |                             | Quarterdeck Office                           |                             | Contact Manager  | 634                         | Quantex QP5-120 M3,                                 |
| 106                         | Intergraph Software Systems197       |                             | Systems101                                   | 760                         | Maximizer Enterprise 3.0,<br>Maximizer Technologies 88 | 623                         | Quantex Microsystems 226<br>Quantex QP5/200 SM-2,   |
|                             | Communications/Fax/                  | 123                         | KeyStone Learning                            |                             | Desktop Computer                                       | 624                         | Quantex Microsystems212<br>Quantex QP6/200 SM-2,    |
|                             | Modems                               |                             | Systems                                      |                             | Acma zPower 166V,<br>Acma Computers226                 | 624                         | Quantex Microsystems212                             |
| 126                         | Global Village144-145<br>NETCOM311   |                             | Windows AEC289                               |                             | AST Advantage 9312                                     | 644                         | Robotech Cobra XLT P-133,<br>Robotech               |
|                             | Database Management                  | 106                         | Intergraph Software                          |                             | Communicator PC,<br>AST Computer                       | 645                         | Royal Computer P133                                 |
| -                           | Claris                               |                             | Systems                                      | 649                         | Austin PowerPlus 133,                                  |                             | Triton II,<br>Royal Computer226                     |
| 138                         | Lotus40                              |                             | PKWARE309                                    |                             | Austin Computer 226<br>Compaq Deskpro-2000             |                             | Tangent MediaGem,                                   |
| 37                          | Desktop Mapping DeLorme              |                             | Word Processing                              |                             | Model 5200/1080,                                       |                             | Tangent Computer 212<br>USA Flex Family Special,    |
|                             | Desktop Publishing                   | 70                          | Corel Corporation85                          |                             | Compaq Computer212 Compaq Presario 3000,               |                             | USA Flex226   |
| 194                         | Quark, Inc 174-175                   | ,                           | MISCELLANEOUS                                |                             | Compaq Computer56                                      | 640                         | Vektron Multimedia<br>P-100, Vektron                |
|                             | Electronic Mail                      |                             |  | 620                         | Cyrix 6x86 P200+, Cyrix212                             | 1                           | International226                                    |
| 174                         | Netmanage91                          |                             | Mail Order Austin Micro-Solutions 258        |                             | Dell Dimension P200v,                                  |                             | Xi Computer Pro-200<br>MTower SP,                   |
| 171                         | Entertainment Optek Music Systems241 | 68                          | Computer Discount                            |                             | Dell Computer  |                             | Xi Computer 212                                     |
| 219                         | Top Hook, Inc 92                     |                             | Warehouse 327-333<br>LA TRADE 326            |                             | P200s, Dell Computer 212                               |                             | Xi Computer Xi<br>P133MTower SP,                    |
|                             | Graphics                             | 147                         | Mega Haus Hard Drives 342                    |                             | Dell Dimension XPS<br>Pro200n, Dell                    |                             | Xi Computer226                                      |
| 139                         | Macromedia                           |                             | Midwest Computer Works324-325                |                             | Computer212  | 622                         | ZDS Z-Station GT 500,<br>Zenith Data Systems 212    |
| -                           | VISIO249                             | 169                         | Midwest Computer                             |                             | Dell OptiPlex GXM 5100,<br>Dell Computer 226           |                             | Compaq Presario 4712,                               |
|                             | Local Area Network                   |                             | Works341 PC Connection316-317                | 614                         | Dell OptiPlex GXMT 5200,                               |                             | Compaq Computer 278 Gateway P5-166 FPC,             |
| -                           | Artisoft295                          |                             | PC Zone                                      |                             | Dell Computer  |                             | Gateway 2000 278                                    |
| 105                         | Management PC America340             |                             | PCs Compleat 320-323                         |                             | Dell Computer 212                                      |                             | Hewlett Packard Pavillion 7130P, Hewlett-Packard278 |
| 193                         | Music                                |                             | USA FLEX                                     |                             | Diamond DT-100,<br>Diamond Technologies 226            | 710                         | Micron Home MPC,                                    |
| 171                         | Optek Music Systems 241              |                             | Online Services PC World Online 274          | 638                         | Digital Venturis 575,                                  |                             | Micron Electronics 278 Nexar 9000, Nexar            |
|                             | Operating Systems                    | -                           | PC World Online274D                          |                             | Digital Equipment Corporation226                       |                             | Technologies  |
|                             | Astound, Inc                         |                             | PC World Online338 PointCast                 | 635                         | Gateway 2000 P5-133,                                   |                             | Digital Camera                                      |
| -                           | IBM Corporation307                   |                             | Prodigy57                                    |                             | Gateway 2000   |                             | Epson PhotoPlus & PhotoPC, Epson                    |
|                             | Optical Character Recognition        |                             | Prodigy181                                   |                             | Gateway 2000 1 3-200, Gateway 2000                     | 789                         | Kodak, Eastman Kodak116                             |
| 91                          | Caere159                             |                             | Prodigy                                      |                             | Hewlett-Packard Vectra<br>500 Model 515MCx 5/166,      | 790                         | Polaroid PhotoPad, Polaroid116                      |
| 158                         | NewSoft44                            |                             | Anthro Corporation36                         |                             | Hewlett Packard 212                                    |                             | Display   |
| 16                          | Other American Greetings 90          |                             | Micrografx                                   |                             | Hewlett-Packard Vectra VL4 5/200MT,                    | 702                         | ArtMedia TN-2185T,                                  |
| 36                          | Banner Blue22                        |                             | Seiko Instruments 274A                       |                             | Hewlett Packard 212                                    | 1                           | ArtMedia267<br>Compaq QV210,                        |
| -                           | Microsoft32                          |                             | Service/Support Lycos42-43                   |                             | HP Vectra Series 4 5/120,<br>Hewlett-Packard226        |                             | Compaq Computer 267                                 |
| _                           | Microsoft 94-95<br>Microsoft         |                             | Supplies                                     |                             | IBM PC 350, IBM 212                                    |                             | Cornerstone 21/88,<br>Cornerstone Imaging 267       |
|                             | Presentation Graphics                |                             | Avery  |                             | Micro Express MicroFlex-<br>686/P120+,                 | 705                         | Cornerstone Color 21/75 fp,                         |
| 72                          | Group 3289B                          |                             | Hewlett-Packard117 Hewlett-Packard119        |                             | Micro Express226                                       |                             | Cornerstone Imaging 267<br>CTX MultiSync 2085,      |
|                             | Project Management                   |                             | Hewlett-Packard121                           |                             | Micron P133 Millennia,<br>Micron Electronics226        |                             | CTX267  |
| -                           | Microsoft246-247                     |                             | Training                                     | 617                         | Micron P166 Millennia                                  |                             | MAG InnoVision MX21F,<br>Mag InnoVision 267         |
| 202                         | <b>Statistics</b> SPSS               |                             | KeyStone Learning Systems                    |                             | Plus, Micron Electronics 212<br>Micron P200 Millennia, | 707                         | Mitsubishi Diamond                                  |
|                             | Software Suites                      |                             | Top Hook, Inc92                              |                             | Micron Electronics 212                                 | 1                           | Pro 21TX, Mitsubishi 267<br>Mitsubishi Diamond Scan |
| 70                          | Corel Corporation85                  |                             |  |                             | Multiwave Ultra Power, Multiwave                       |                             | 20H, Mitsubishi267                                  |
| -                           | Microsoft                            | P                           | roducts Featured                             | 636                         | National Microcomputers                                |                             | Samsung SyncMaster 20GLsi, Samsung 267              |
| 14                          | Utilitles AEC289                     |                             | in Editorial                                 |                             | NMC-PCW P100, National MicroComputers 226              | 738                         | USB monitors, Philips                               |
| -                           | CyberMedia34                         |                             | et more information—circle the               | 627                         | NEC PowerMate P166,                                    |                             | Consumer Electronics 52<br>Viewsonic PT-810M2,      |
| 158                         | CyberMedia                           | app                         | propriate number on the reader service card. |                             | NEC Technologies 212 NEC PowerMate V100,               |                             | ViewSonic   |
| 212                         | PKWARE309                            |                             |  |                             | NEC Technologies 226                                   | 1                           | E-Mail  |
|                             | Qualcomm, Inc 124                    |                             | Animation Software Egor Animator 2.0,        |                             | Netis N5133DPS,  |                             | cc:Mail Release 7.0, Lotus Development Corp 80      |
| 190                         | Quarterdeck Office<br>Systems97      |                             | Anawave Software118                          | 629                         | Netis Technology                                       |                             | Entertainment/Game                                  |
| 185                         | Quarterdeck Office                   |                             | Communication                                |                             | Netis Technology212                                    | 733                         | Picture Perfect Golf,                               |
|                             | Systems99                            | 739                         | Phone/Modem, Mitel52                         |                             | Progen Discover MPEG II<br>P150, Progen226             |                             | Enteractive Media 275                               |



#### THE 1996 MICROGRAFX CHILI FOR CHILDREN COOK-OFF TUESDAY, NOVEMBER 19, 1996 • 6 PM — 11 PM • THOMAS & MACK CENTER (UNLV)

Let yourself go at this year's Micrografx Chili for Children Cook-Off—COMDEX/Fall's premier charity event.

It's a zesty mix of fun, fun, fun—with chili judging and armadillo races, all topped off with a sizzling concert by BTO and the VILLAGE PEOPLE.

Your ticket to the Chili Cook-Off and concert is only \$50—or \$25 for the concert alone. And most important, it all goes to support the vital work of the National Center for Missing and Exploited Children (NCMEC).

For ticket information, call the Chili Hot Line today at 1-800-357-7255. Or visit our red-hot Chili Web Page

at http://www.micrografx.com/chili.html or drop into the Micrografx Chili for Children Booths at LVCC and Sands Expo Lobby at COMDEX/Fall. What's more, mention this ad and you'll get \$5 off the concert admission only.

So come on out and dance the night away. You'll have a great time, and you'll help us all go a long way towards helping missing children.







1996 CATTLE BARON SPONSORS













# New FreeHand Graphics Studio 7 with Shockwave.



> Soon-to-be-famous designer Usok S. Choe on the FreeHand Graphics Studio 7: "Here's how I did it. I created the type in FreeHand, 💥 rotating

Finally, graphics as powerful as your imagination. A call vas that stretche fair as the Internet. That's the Studio 7 with Shorkwave. An amazing graphic design solution engineered with the future of print and Internet publishing in mind. You get all the tools you need to crank out killer designs like this one-serious

text around an arc. Then I used a cool 3D rotating tool, distorting it and giving it a new twist. The fonts I used were created in Fontographer; 😤 I picked them ug from the Font Bureau. I saved time by using FreeHand's Union Punch/Intersect feature for the

upgrades of FreeHand, Extreme 3D, Macromedia xRes, as well as Fontographer 4.1. Of course, it wouldn't be this laternet publishing without new extentions for Shockwave, which give you the power to change the face of the World Wide Web In fact, our integrated Studio is so loaded with new stuff, we had to give it a special spot on the Web. That's where you can view

this illustration in full Web glory and get the whole story on the new features that made it all possible. treetland braphics studio 1. Just think of it as smock therapy for your imagination.

Call 1.800.406.1538 for a FREE Showcase CD' and the name of a reseller near you.

## **MACROMEDIA**°

Tools to Power Your Ideas.

call -44 (D) 344 58600 Macromedia, the Macromedia Logo, and Footographer are registered trademarks and FreeHan FreeHand, Extreme 10, Macromedia intex, Shockware, Showcase, and Tools To Power Your Ideas are trademarks of Macro brand or product names are the property of their respective owners. o 1996 Macromedia, Inc. All rights reserved.

Circle 139 on reader service card

#### YOU CAN NEVER BE TOO



Rich

OR TOO

Thin

11.3" Super VGA dual-scan or TFT active-matrix screen with 1MB PCI graphics accelerator

100, 120 or 133MHz Intel Pentium® processor and up to 40Mb EDO memory

Integrated 1.44Mb floppy disk drive

87-key keyboard with Windows '95 keys

Twin Touch™ touchpad pointing device

So why carry a big, fat notebook when you can have the feature-rich, ultra-thin Slimnote 700?

The new, extremely thin Twinhead Slimnote 700 has everything you need to get the job done. Whether you're polishing up a spreadsheet somewhere over Colorado, or giving a multimedia presentation in Tokyo, the Slimnote 700 delivers.

Built around a revolutionary 1-in-2 design, the Slimnote 700 gives you the ultimate in flexibility. The lightweight, slimline mobile station packs all

intel inside

the high-performance features you'd expect to find in a desktop PC into a 1.4", sub 5 lb notebook with features like a fast Pentium processor, EDO system memory, up to a 1.2 Gb hard drive, 16-bit stereo

sound and a full-color display. When you're ready for multimedia features like a 6x CD-ROM drive and amplified speakers, just add the optional lightweight base station and you have a multimedia powerhouse!



Designed and manufactured by Twinhead, your True Source for notebook PCs, the Slimnote 700 delivers unsurpassed performance in an incredibly efficient

package. True value that can only be delivered by a true manufacturer. Plus, all Slimnotes are backed with our exclusive ExpressCare program, providing you with 48-hour service and toll-free support.

The optional base
station fits neatly
beneath the Slimnote
700 for maximum
portability

6X CD-ROM drive with software eject function allows you to quickly access all of your CD-ROM applications

NTSC/PAL RCA jack lets you connect to a VCR or TV monitor, giving you true multimedia flexibility

Two amplified-stereo speakers provide unsurpassed sound

32-bit PCI slot greatly increases expansion capabilities

base station

## Twinnead.

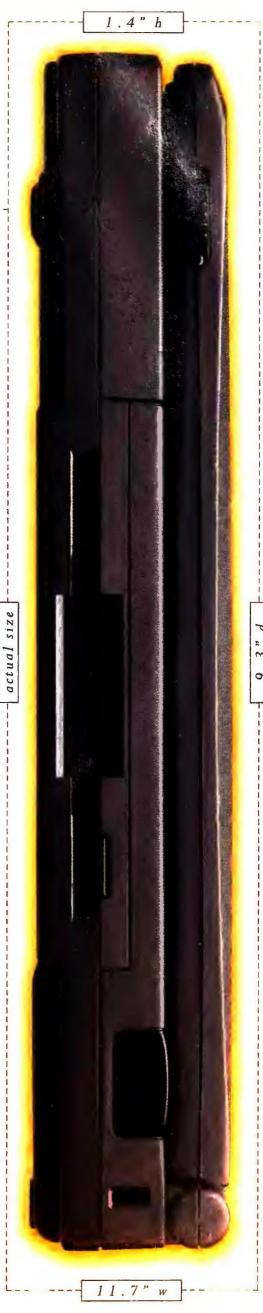
1-800-995-8946 (West)

1-800-552-8946 (East)

www.twinhead.com

Twinhead Corporation 1537 Centre Pointe Drive, Milpitas, CA 95035 Tel: 408.945.0808 Fax: 408.945.1080

Circle 240 on reader service card
©1996 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, Pentium and the Intel Inside logo are registered trademarks of Intel Corporation. All other trademarks acknowledged. Warranty terms and conditions are available from Twinhead: cell for details.



## README? Sure-Before I Buy!

IF YOU'RE IN THE MARKET for darkly fascinating computerbased information, README files are the place to look. Manuals rarely tell you much of anything anymore; it's in the READMEs that you discover the nasty little secrets manufacturers don't really want to reveal. And when subtle things go wrong, you can often find answers in the README file that you can't find anywhere else.

The README file gives you the lowdown on such things as tricky interrupt conflicts, incompatibilities, bugs you would never in a million years suspect existed, and outright caveats that never made it onto the outside of the package. Perusing a dozen README files in succession gives you a bracing dose of reality, not to mention strong evidence about which products are repeat offenders. Want to buy a new video card? Check out a bunch of multimedia programs' README files, and you'll quickly compile a mental list of which products to avoid.

Sometimes this stuff does find its way into the documentation, but most manuals nowadays are designed to emphasize the positive. Vendors seem to sense that the upbeat tone of their skinny "Get Creative With (Your Product Here)" booklets might be marred a bit if they included

lines like 'If you have a Packard Bell machine and you receive the error 'Cannot Open File Handler' while in Windows 3.1, the problem is occurring because some of the QuickTime files are hidden and the 2.0.3 QuickTime installer can't replace them'. That example comes from the README for a kids' game; the parents probably ended up using the disc for target practice.

Windows 95 or no, multimedia programs are still notorious for just that sort of problem. Without the README, how likely would you be to guess the solution to what one kids' program calls 'Win95 video problems (such as incorrect color palettes or garbage being left on the screen)'? This is precisely what I got on my machine, and the README told me precisely what to do: 'Try turning off video acceleration. Open the 'System' control panel



**README** files contain the nasty information vendors don't really want to reveal.

and choose the 'Performance' tab. Click the 'Graphics' button. Move the slider there down one step at a time until the problem goes away'. Amazingly, it worked!

Want real fun? Check out the many, many gotchas in the documentation for tape backup units and the programs that accompany them. As hardware devices become increasingly dependent on bundled software, they too provide their own README revelations. For example, Hewlett-Packard's ScanJet 4p comes with not one but two READMEs: one for its own software, and one for the bundled PaperPort software. README files have plenty of information I'd like to see before I plunk down my cash and commit time and effort to using the products.

In that light, then, a modest proposal: From now on, software and hardware makers should routinely post installation information, manuals, help files, and READMEs on their Web sites. That way, we users could sift through these essential facts before wasting a single moment buying, downloading, or installing the actual wares, hard or soft.

Plenty of product specs and advertisements are already available on the Web, as well as a few decent bug-list databases. But most vendors don't give you the real dirt. Even with software that's sold primarily online, finding out about possible problems up front is rarely easy.

Before I download that 2MB plug-in, I want to know exactly what's going to happen. How much disk space will it need, before and after I install it? Will it insist on putting its files in a particular directory, or do I get to pick? Is it likely to get indigestion from any of my hardware and software? Don't make me wait to find out

until after I install the thing.

At first, vendors probably won't want to disclose this stuff, for fear it may make them look bad. It will: As PCs permeate the mass market, these maddening glitches become increasingly inexcusable. But vendors' only alternative is to spend more money on support, and still end up with dissatisfied customers.

So let's push to liberate real information. Let a thousand READMEs bloom!

Contributing Editor Stephen Manes is a columnist for the New York Times and coauthor of Gates: How Microsoft's Mogul Reinvented an Industry (Touchstone/Simon & Schuster, 1994, 800/223-2348).

PC World TM (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 International Publications Mail Product, (Canadian Distribution) Sales postage paid at San Francisco and additional mailing offices. Canada Post International Publications Mail Product, (Canadian Distribution) Sales postage paid at San Francisco and additional mailing offices. 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 © 1996, 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. PC World Top 20 M, PC World Top 10 M, To trademarks of International Data Group, Inc., and used under license by PC World Communications, Inc. Printed in the United States.

#### **DELL LATITUDE**

Dependable Notebooks With Superior Battery Life

#### DELL<sup>®</sup> LATITUDE<sup>®</sup> LM P133ST 133MHz PENTIUM<sup>®</sup> PROCESSOR

- NEW Multimedia Notebook
- ★ 12.1" SVGA Active Matrix Color Display
- 16MB RAM/810MB Hard Drive
- 256KB L2 Cache
- Options Bay accepts 6X CD-ROM, 3.5" Floppy Drive (both included) or Optional 2nd Li-lon Battery
- ★ PCI Bus with 128-bit Graphics Accelerator

- · Integrated 16-bit Stereo Sound
- · Smart Lithium Ion Battery
- Touchpad
- IrDA 1.0 Standard Compliant
- Under 7 Pounds\*
- Extendable 1 Year Warranty<sup>†</sup>
- ★ Upgrade to 40MB RAM, add \$299.
- ★ 28.8 XJACK \Cabled Modem, add \$199.

Business Lease<sup>†</sup>: \$111/Mo.

NEW Multimedia Dell Latitude LM Notebook

**\$2999** 



Multimedia notebook meet affordable. Affordable meet multimedia notebook. We refer to the Dell\* Latitude\* LM notebook.

For a temptingly low price you receive Neo-Magic's stunning 128-bit graphics accelerator, "an industry





first." MPEG software for up to 30frames-persecond video. The vibrancy of a 12.1 inch SVGA (800 x 600) active matrix display. A 6X CD-ROM. Along with integrated 16-bit stereo sound and built-in speakers.

What's more, this system is built around Dell's famous Lithium-Ion battery technology. Which means your graphics presentations can dazzle crowds for hours and hours.

We're the first on our block to offer such a notebook. Why not be the first on your block to own one? Give us a call today.



TO ORDER

800-247-2097

http://www.dell.com

Mon-Fri 7am-9pm CT • Sat 10am-6pm CT Sun 12pm-5pm In Canada, call 800-767-2776

Keycode #03190



## HE SYSTEMS ARE GI HE PRICES ARE EVE

#### 200MHz PENTIUM® PRO PROCESSOR DELL DIMENSION™ XPS Pro200n

- 64MB EDO Parity Memory
- · 256KB Internal L2 Cache
- 3.2GB Hard Drive [9.5ms]
- 20TD Trinitron Monitor (19.1" v.i.s., .26dp, 1600 x 1200 max. res.)
- Imagine 128 Series 2 Graphics Accelerator with 4MB VRAM
- NEW 12X EIDE CD-ROM Drive
- MS® Office Professional with Bookshelf for Windows® 95
- Microsoft® Windows NT® 4.0/ 30 Days Free Support/MS Mouse
- 3 Year Limited Warranty<sup>†</sup> with 1 Year On-site<sup>A</sup> Service
- ★ Upgrade to 2GB SCSI Hard Drive (7200 RPM, 8ms), add \$460.
- ★ Upgrade to 3 Years of On-site Service,

Business Lease : \$155/Mo Order Code #500354

#### 66MHz PENTIUM PROCESSOR **DELL DIMENSION XPS P166s**

- 32MB SDRAM Memory
- 512KB Pipeline Burst Cache
- 3.2GB Hard Drive [9.5ms]
- 17HS Trinitron Monitor (15.9" v.i.s., 26dp, 1600 x 1200 max. res.)
- Matrox Millennium 4MB WRAM Video Card
- 8X EIDE CD-ROM Drive
- AWE32 Wave Table Upgrade Card
- · Altec Lansing ACS-31 Speakers
- · MS Office Professional with Bookshelf for Windows 95
- FREE Norton/Visio Express S/W Suite
- Microsoft Windows 95/MS Plus! CD/ 30 Days Free Support/MS Mouse
- 3 Year Limited Warranty with 1 Year On-site Service

Business Lease: \$107/Mo. Order Code #500350

#### 200MHz PENTIUM PRO PROCESSOR DELL DIMENSION XPS Pro2006

- 32MB EDO Memory
- 256KB Internal L2 Cache
- 3.2GB Hard Drive [9.5ms]
- 17LS Monitor (15.7" v.i.s.)
- · 2MB EDO ViRGE 3D Video Card
- NEW 12X EIDE CD-ROM Drive
- . MS Office Professional with Bookshelf for Windows 95
- Microsoft Windows NT 4.0/30 Days Free Support/MS Mouse
- 3 Year Limited Warranty with 1 Year On-site Service
- ★ Upgrade to 64MB EDO Parity Memory, add \$399.
- ★ Upgrade to a 17HS Trinitron Monitor (15.9" v.i.s., .26dp, 1600 x 1200 max. res.), add \$169.

**PICTURED ABOVE** 

Business Lease: \$100/Mo. Order Code #500353

#### 166MHz PENTIUM PROCESSOR **DELL DIMENSION XPS P166s**

- 32MB SDRAM Memory
- 512KB Pipeline Burst Cache
- 3.2GB Hard Drive [9.5ms]
- 15TX Trinitron Monitor (13.7" v.i.s.)
- · 2MB EDO ViRGE 3D Video Card
- 8X EIDE CD-ROM Drive
- AWE32 Wave Table Upgrade Card
- Altec Lansing ACS-31 Speakers
- · MS Office Professional with Bookshelf for Windows 95
- FREE Norton/Visio Express S/W Suite
- Microsoft Windows 95/MS Plus! CD/ 30 Days Free Support/MS Mouse
- 3 Year Limited Warranty with 1 Year On-site Service

Business Lease: \$89/Mo Order Code #500349

#### 200MHz PENTIUM PROCESSOR LL DIMENSION XPS P200s

- 64MB SDRAM Memory
- 512KB Pipeline Burst Cache
- 3.2GB Hard Drive [9.5ms]
- 17HS Trinitron Monitor (15.9" v.i.s., .26dp, 1600 x 1200 max. res.)
- Matrox Millennium 4MB WRAM Video Card
- NEW 12X EIDE CD-ROM Drive
- AWE32 Wave Table Upgrade Card
- Altec Lansing ACS-31 Speakers
- 33.6 US Robotics Telephony Modem
- · MS Office Professional with Bookshelf for Windows 95
- FREE Norton/Visio Express S/W Suite\*\*
- Microsoft Windows 95/MS Plus! CD/ 30 Days Free Support/MS Mouse
- 3 Year Limited Warranty with 1 Year Onsite Service

Business Lease: \$129/Mo. Order Code #500352

#### **200MHz PENTIUM PROCESSOR NEW DELL DIMENSION P200V**

- 16MB SDRAM Memory
- 256KB Pipeline Burst Cache
- NEW 2.1GB Hard Drive [10.5ms]
- 15TX Trinitron Monitor (13.7" v.i.s.)
- 64-bit PCI 2MB DRAM Video
- 8X EIDE CD-ROM Drive
- Microsoft Windows 95/MS Plus! CD/ 30 Days Free Support/Dell Mouse
- 3 Year Limited Warranty with 1 Year On-site Service
- ★ Upgrade to 32MB SDRAM, add \$199.
- ★ Upgrade to a 3.2GB Hard Drive (11ms), add \$85.
- ★ Upgrade to a 17LS Monitor (15.7" v.i.s.), add \$179.

#### Business Lease: \$74/Mo. Order Code #500348

#### FREE Norton/Visio Express Software Suite includes Norton AntiVirus, Navigator and Utilities, and Visio Express 4.0.

tPricing is not discountable. †For a complete copy of our Guarantees or Limited Warranties, please write Dell USA.L.P., 2214 W. Braker Lane, Suite D., Austin, TX 78758. Desiness leasing arranged by Leasing Group, Inc. \*\* Norton/Visio Express Software Suite is available only on Dell Dimension systems purchased with the combination of MS Diffice and Microsoft Windows 95. Visio Express 4.0 is an DEM version and a subset of Visio 4.0. Software may not include all documentation and may differ from retail version. \*System weight with floppy drive in options bay. \*\text{-40n-site service provided by BancTec Service Corporation. On-site service may not be available in certain remote locations. \*\text{-70n-site service for the Poweredge 2100 Server is provided by Digital Equipment Corporation and is available in 29 metropolitan areas. \*\text{-\*Prices and specifications valid in the U.S. only and subject to change without notice. The Intel Inside logo and Pentium are registered trademarks and the Intel LANDesk logo is a trademark of Intel Corporation. MS. Microsoft, Windows and Windows NT are registered trademarks and the Genuine Microsoft Products logo is a trademark of Microsoft Corporation. XJACK is a registered trademark of US Robotics Mobile Communications Corporation. 3Com and EtherLink are registered trademarks of 3Com Corporation. ©1996 Dell Computer Corporation. All rights reserved.

#### **200MHz PENTIUM PROCESSO** DELL DIMENSION XPS P200s

- 32MB SDRAM Memory
- 512KB Pipeline Burst Cache
- NEW 2.1GB Hard Drive [10.5m
- 15TX Trinitron Monitor (13.7" v
- Matrox Millennium 4MB WRAM
- NEW 12X EIDE CD-ROM Drive
- AWE32 Wave Table Upgrade
- Altec Lansing ACS-31 Speake · MS Office Professional with
- Bookshelf for Windows 95 FREE Norton/Visio Express S/
- Microsoft Windows 95/MS Pl 30 Days Free Support/MS Mo
- 3 Year Limited Warranty with site Service
- ★ Upgrade to the 17LS Monitor (15.7" v.i.s.), add \$179.

Business Lease: \$96/Mo Order Code #500351

#### 133MHz PENTIUM PROCESSO **NEW DELL DIMENSION P133**

- 16MB SDRAM Memory
- 256KB Pipeline Burst Cache
- NEW 2.1GB Hard Drive [10.5m.
- 15LS Monitor (13.7" v.i.s.)
- 64-bit PCI 2MB DRAM Video
- 8X EIDE CD-ROM Drive
- 3Com EtherLink<sup>®</sup> Interface Co **PCI Card**
- · Microsoft Windows 95/MS PI 30 Days Free Support/Dell Mo
- · 3 Year Limited Warranty with On-site Service
- ★ Upgrade to 32MB SDRAM, ad
- ★ Upgrade to 3 Years of On-site Service, add \$99.

Business Lease: \$67/Mo. Order Code #500347





## REAT. I BETTER.





#### 133MHz PENTIUM PROCESSOR DELL LATITUDE LM P133ST

- NEW Multimedia Notebook
- 12.1" SVGA Active Matrix Color Display
- 40MB RAM/1.3GB Hard Drive
- 256KB L2 Cache

ideo Card

rd

Suite

CD/

Year On-

е

ibo

! CD/

Year

\$199.

se

- Options Bay accepts 6X CD-ROM, 3.5" Floppy Drive (both included) or Optional 2nd Li-lon Battery
- PCI Bus with 128-bit Graphics Accelerator
- Integrated 16-bit Stereo Sound
- Smart Lithium Ion Battery
- Touchpad
- IrDA 1.0 Standard Compliant
- MS Office Pro for Windows 95
- 28.8 XJACK®/Cabled Modem
- Leather Carrying Case
- Under 7 Pounds\*
- Extendable 1 Year Warranty†

\$3999

Business Lease: \$144/Mo. Order Code #800060

#### 133MHz PENTIUM PROCESSOR DELL LATITUDE LM P133ST

- NEW Multimedia Notebook
- 12.1" SVGA Active Matrix Color Display
- 16MB RAM/810MB Hard Drive
- 256KB L2 Cache
- Options Bay accepts 6X CD-ROM, 3.5" Floppy Drive (both included) or Optional 2nd Li-lon Battery
- · PCI Bus with 128-bit Graphics Accelerator
- Integrated 16-bit Stereo Sound
- Smart Lithium Ion Battery
- Touchpad
- IrDA 1.0 Standard Compliant
- Under 7 Pounds\*
- Extendable 1 Year Warranty
- ★ Dell Latitude LM Port Replicator, add \$159.

\$2999

Business Lease: \$111/Mo. Order Code #800051



#### 100MHz PENTIUM PROCESSOR DELL LATITUDE LM P100SD

- NEW Multimedia Notebook
- 11.3" SVGA Dual Scan Color Display
- 24MB RAM/810MB Hard Drive
- 256KB L2 Cache
- Options Bay accepts 6X CD-ROM, 3.5" Floppy Drive (both included) or Optional 2nd Li-lon Battery
- PCI Bus with 128-bit Graphics Accelerator
- · Integrated 16-bit Stereo Sound
- Smart Lithium Ion Battery
- Touchpad
- IrDA 1.0 Standard Compliant
- MS Office Pro for Windows 95
- · Nylon Carrying Case
- Under 7 Pounds\*
- Extendable 1 Year Warranty

**PICTURED ABOVE** 

\$2799

Business Lease: \$104/Mo. Order Code #800059

#### 100MHz PENTIUM PROCESSOR DELL LATITUDE LM P100SD

- NEW Multimedia Notebook
- 11.3" SVGA Dual Scan Color Display
- 16MB RAM/810MB Hard Drive
- 256KB L2 Cache
- Options Bay accepts 6X CD-ROM, 3.5" Floppy Drive (both included) or Optional 2nd Li-lon Battery
- PCI Bus with 128-bit Graphics Accelerator
- Integrated 16-bit Stereo Sound
- Smart Lithium Ion Battery
- Touchpad
- IrDA 1.0 Standard Compliant
- Under 7 Pounds\*
- Extendable 1 Year Warranty
- ★ Upgrade to 24MB RAM, add \$99.
- ★ Leather Carrying Case, add \$129.

\$2399

Business Lease: \$89/Mo. Order Code #800049

#### 180MHz PENTIUM PRO PROCESSOR DELL POWEREDGE 2100 SERVER

- NEW Small Business Server
- 32MB Error Correcting Code (ECC) EDO Memory (256MB Max)
- 256KB Integrated L2 Cache
- Integrated PCI Ultra/Wide SCSI-3 Controller
- 2GB Fast/Wide SCSI-2 Hard Drive [7200RPM, 8ms] (12GB Max)
- 8X SCSI CD-ROM Drive
- 3Com 3C595 10/100 PCI Network Adapter
- Intel® LANDesk Server Manager v2.5
- 6 Expansion Slots: 3 PCI, 3 EISA
- 6 Drive Bays: 3 External 5.25"/3 Internal 3.5"
- Microsoft Windows NT Server Included
- 3 Year Warranty† with 1 Year Next-Business-Day, On-site\* Service
- 24x7 Dedicated Server Hardware Tech Support
- ★ Upgrade to 64MB ECC EDO memory, add \$649.
- ★ Upgrade to a 4GB Fast/Wide SCSI-2 hard drive, add \$450.

PICTURED ABOVE

\$3799

Business Lease: \$137/Mo. Order Code #250020

- Pentium Pro Chip-based Server
- Pentium Pro Chip-based Mini-Towers
- Pentium Chip-based Mini-Towers
- Pentium Chip-based Notebooks



TO ORDER

800-388-1790

http://www.dell.com

Mon-Fri 7am-9pm CT • Sat 10am-6pm CT Sun 12pm-5pm In Canada; call 800-767-2776

Keycode #03191

\$2599 With Free Software DELL DIMENSION™ XPS P200s 200MHz PENŢIUM® PROCESSOR

- \* 32MB SDRAM Memory
- 512KB Pipeline Burst Cache
- \* NEW 2.1GB Hard Drive [10.5ms]
- 15TX Trinitron Monitor (13.7" v.i.s.)
- ★ Matrox Millennium 4MB WRAM Video Card
- \* NEW 12X EIDE CD-ROM Drive
- AWE32 Wave Table Upgrade Card
- Altec Lansing ACS-31 Speakers

- · MS Office Professional with Bookshelf
- ★ FREE Norton/Visio Express Software Suite<sup>®</sup>
- Microsoft Windows 95/MS Plus! CD/ 30 Days Free Support/MS Mouse
- 3 Year Limited Warranty<sup>†</sup> with 1 Year On-site Service<sup>†</sup>
- ★ Upgrade to a 3.2GB hard drive (9.5ms), add \$99.
- ★ Upgrade to a 17LS monitor (15.7" v.i.s.), add \$179.

Business Lease<sup>^</sup>: \$96/Mo. Order Code #500351



Besides its formidable 200MHz Pentium processor, this Dell Dimension comes with a powerful package of business software\*\*pre-loaded. Not games. Not fluff. Serious stuff like Microsoft Office for Windows 95.





The 32-bit virus protection of Norton AntiVirus.

file management features of Norton Navigator. The data protection and recovery tools of Norton Utilities. And the many diagramming tools of Visio Express 4.0. Of course, it also comes with built-in Dell reliability, built-in Dell value, and our guaranteed next-business-day on-site<sup>A</sup> service. So pick up the phone and order today. It may be the fastest way to get ahead in business yet.

### DELL

TO ORDER

800-545-9694

http://www.dell.com

Mon-Fri 7am-9pm CT • Sat 10am-6pm CT Sun 12pm-5pm In Canada; call 800-767-2776

Keycode #03189