New 630 Series Media Macs

Edit Movies
Play CD-ROMs
Tune In TV

PLUS

Connect Your Mac to the Internet

New System 7.5: What's in It for You?

Power Mac Apps: How Many? How Fast?
New Microsoft Office 4.2
for Macintosh and Power
Macintosh includes new
versions of Microsoft Excel,
Word, PowerPoint and a
Mail workstation license.

WOULD YOU SETTLE FOR

Granted, every­
thing in your life
may not always
come together.

But on your Macintosh, it's an­
other story. Because now there's
a family of leading, full-featured
programs for the Mac that truly
work together like one.

New Microsoft Office 4.2.

It's never been this easy to
move data between programs.
All you do is drag and drop.

Think of Office as programs
that look alike. Programs that
act alike. Programs with links be­
tween them. And finally, think
of Office as programs that work
so closely together, you'll feel
like you're using just one.

But experience is the best
teacher. So prepare a monthly re­
port to your boss. You'll begin,
of course, with Microsoft Word,
our intuitive word processor.

And if you make a common
typo along the way, don't worry.
Word can fix it automatically,
thanks to IntelliSense™ technolo­
gy. It senses what you want to
do, then helps you do it. Making
everyday tasks automatic and
complex jobs a lot easier.

Back to your report. Let's
say you're making a point about
sales growth. Why not add a
sales chart from Microsoft Excel?
Simply drag the chart into Word
and let go. It's that easy.

You can even make changes
to the chart, right where you are.
Click on the chart and instantly
all your spreadsheet tools appear.
Without leaving Word.

Talk about being connected.

But wait, you forgot you
have a big presentation to­mor­
row morning. No problem. You're

Teh→The

Now you see it. Now you
don't. Set AutoCorrect to instantly
fix your common typos.

at one with your Mac. Just click
a button in Word and automatic­
ally turn your document
into a persuasive presentation
in PowerPoint.

The fact is, the walls are
down. Gone. You're now free to

*Support for the Microsoft Office is on charge; however, normal telephone company charges apply. Microsoft support services are subject to Microsoft's three current prices, terms, and conditions, and are subject to charge without notice. © 1994

separately. For information only in the United States, call (800) 765-9997. Dept. 194. In Canada, call (800) 563-9048. Outside the U.S. and Canada, call your local Microsoft subsidiary or (206) 936-8661. Customers who are deaf or hard of hearing
Microsoft Corporation. Macintosh and Mac are registered trademarks and PowerTalk, AppleScript, Power Macintosh and System 7 are trademarks of Apple Computer, Inc.
PERFECT HARMONY IN YOUR MAC?

combine words, numbers and pictures with ease, without leaving your document. Letting you focus on your work. Instead of the programs you’re using.

Better yet, no matter what you’re working on, you’re always working smart. Because as we just pointed out, IntelliSense technology lends you a hand. Whether you need a quick tip in Microsoft Excel. Step-by-step assistance as you build a newsletter in Word. Or help putting together a PowerPoint presentation.

Another smart thing about Microsoft Excel, Word and PowerPoint is how much they resemble each other.

All menus and dialog boxes are virtually identical. Even toolbars look alike. So learn one program and you’re on your way to learning them all.

Our spirit of consistency even extends beyond your Mac. Because you can easily share Office files between Macintosh and Microsoft Office 4.2 for Windows. Without having to convert them.

And since Microsoft Office supports System 7™ technologies, including PowerTalk™ and AppleScript™, you’re free to commune with all the latest Macintosh innovations.

There’s even more support built into Office. Or behind it, to be exact. Our unlimited product support is available to you at no service charge. So whenever you have a question or need help, just call.

But first, call (800) 709-3787, Department YP4, to locate the retailer nearest you. They’ll help you learn all about the new Microsoft Office Standard 4.2 in versions for both Macintosh and Power Macintosh.

So give us a ring.

Then give your Macintosh something most people spend a lifetime searching for.
MANY PEOPLE STRIVE FOR PERFECT HARMONY IN THEIR LIVES.
NEW ON THE MENU

Microsoft Finally! New versions of your favorite apps. / PowerBook 150 Apple's most affordable notebook. / QuickTime VR Creating virtual worlds. / Power Mac Native-app countdown. / ZMac Utility of the Month Script-a-File. / Plus Macintosh price index. / 29

COLUMNS

Maggie Canon Multimedia muscle. / 17
Andy Ihnatko Andy makes your day. / 21
Michael Swaine The Macintosh market-share scare. / 25
John C. Dvorak Apple and the Universal PowerPC. / 232
Letters / 11
Product Index / 195
Advertiser Index / 198
Marketplace / 202

On the cover / Apple's new media Macs — the 630 series.
Cover photo / Steven Underwood
Screen Image / David Madison

REVIEWS & QUICK CLICKS

In Focus PanelBook 530LS and Proxima Desktop Projector 2800 Two slick presentation products let you take your show on the road. / 39

TextBridge Xerox's bargain-priced OCR package competes with the best. / 44

Smartcom II 4.0 Version 4.0 of this telecom software offers an improved interface as well as support for Apple events and the PowerTalk Mailer. / 45

Tektronix Phaser 220i impressive speed and top-notch color output set this 600-x-300-dpi thermal-wax printer apart from the competition. / 46

Face to Face Collaborate on an electronic document from two locations with this innovative package from Crosswise. / 47

Canon IX-401S This color slide scanner teams speed with good image quality. / 48

Spyglass Plot Featuring an intuitive interface and a capacity for large data sets, this data-visualization tool earns high marks. / 49

PixelPaint Pro3 The latest version of this veteran paint program offers more breadth than depth. / 50

Dabbler Fractal's easy-to-use paint program features realistic natural-media tools for instant artistry. / 52

RunWay Software for the Macintosh An indispensable utility that moves files over networks with blazing-fast speed. / 54

Kodak Arrange-It and Kodak Create-It Create Photo CD-based presentations with this pair of multimedia software tools from Kodak. / 56

TimeSquare and DateView Two new calendar programs offer some innovations but face stiff competition. / 59

StrataVision 3D 3.0 Strata's integrated 3-D-modeling program features new tools, better textures, and more-sophisticated animation capabilities. / 65

Gryphon Dynamic Effects, Volume I This set of Adobe Premiere plug-ins includes 20 special effects, ranging from the attractive to the bizarre. / 65

Summagraphics SummaSketch FX ADB Tablet Despite a unique pen design, this graphics tablet misses its mark. / 65

Disc-To-Disk Software enables direct digital capture of CD-quality sound to your Mac. / 66

Super 7 Utilities 2.0 These System 7 utilities may just be what you're looking for. / 66

PGA Tour Golf II Experience the thrill of victory and the agony of defeat from the comfort of home. / 66

DiskTop 4.5 The popular file-management utility features a new interface and jump-to submenus. / 67

MusicTime 2.0 Quick and colorful, this notation program is best suited for amateur musicians. / 67

VideoDirector 1.5 Edit your home videos with a low-cost software/cable combo. / 67

Icon Mania! Change your desktop's image. / 67

DECK II and DigiTrax Two digital recording products face off. / 68

Astro Chase 3D This nifty shoot-'em-up arcade game brings you both fun and frustration. / 69

Freak Show A thoroughly modern band successfully merges music and media in this freaky CD-ROM. / 69
VERSATILE VALUES
Apple's newest 68040 Macs offer AV, CD, and even TV.

MacUser Labs Macs feature a modular board design and a host of easy-to-install add-ons that can turn any 630 into a multimedia machine, a TV set, or even a Power Mac. Besides being versatile and affordable, the new Macs are fast: MacUser Labs' 630-series benchmark tests reveal speeds as fast as a Quadra 800's.

HANDS ON

FEATURES
Apple's New System 7.5
FINALLY, A MAJOR SYSTEM UPGRADE. No, it's not System 8, but Apple's new System 7.5 does incorporate several nice new and nearly new technologies, including AppleScript, PowerTalk, QuickDraw GX, Macintosh Drag and Drop, plus the latest in help systems — Apple Guide.

Plug In to the Internet
HITCH A RIDE on the information superhighway with this step-by-step guide to that network of networks: the Internet.

Powerful Printing Partners
MACUSER LABS ROUNDED UP 21 rugged networkable PostScript 8-ppm printers and put them through a battery of office torture tests.

NETWORKING
Network Help How to foil rogue routers, build a network-address book, and maintain Ethernet collision detection among buildings.

MAC TO PC MacUser Labs checks out the many Mac Windows options.

POWER TOOLS
Techniques How to analyze and solve your printing problems.

HELP FOLDER
Hot tips, plus answers to all of your questions.
ENDLESS DRIVE

Take a drive with
Pinnacle's sporty new 3.5" 230 MB rewritable optical storage system. No roadblocks to slow you down because the capacities and applications are endless.

The Tahoe-230™ is the most versatile storage system available. It is as fast as most hard disk drives. And the Tahoe can be used as your primary drive, secondary drive, or for data backup. It's perfect for both desktop and notebook computing. To expand your data just add another disk.

Take it on the road with an optional travel case and battery pack. It gets great mileage due to its small size [8.16 x 4.84 x 1.45 in.] and light weight [1.8 lbs.].

All this in a small, compact storage system from Pinnacle that will take you wherever you need to go. The possibilities are endless. To order or for a local reseller call: 800.553.7070

Pinnacle Micro
The Optical Storage Company

International Tel. 714-727-3300  U.S. Fax 714-727-1913
CIRCLE 34 ON READER SERVICE CARD
We didn’t become the world’s best selling trackball on good looks alone.

**TrackMan**, a unique combination of beauty and brains.

Do away with double-clicking forever. Just use TrackMan’s MouseKey software to assign repeated tasks to any of the three buttons. You’ll cut the time it takes to execute routine commands by as much as 50%. And its unique ergonomic design makes TrackMan one of the most comfortable ways to fly.

**Kiss your old mouse goodbye...for free.**

We’re so confident you’ll love TrackMan, we want you to try it for free. Use TrackMan for 60 days, and if you’re fully satisfied, we’ll bill you just $89*. If not, simply return it, no questions asked.

*Price includes shipping and handling. CA and MA residents must pay applicable sales tax. Offer expires 10/31/94. Allow 2 to 3 weeks for delivery.®/™ Trademarks belong to their registered owners.

Order today, call 1-800-889-0072.

Ask for offer 99.

**TrackMan**

The Senseware Company

Circle 148 on Reader Service Card
The PowerBook 500 Series. In depth.

Welcome to the next generation of PowerBook. Four new Apple® PowerBook computers that redefine, once again, what a notebook computer can be.

One look tells you these are very new indeed. The flowing shape. The sleek lines. The futuristic curves. But the new appearance is only your first clue to the dramatic changes, refinements and improvements we've engineered inside.

More power. The PowerBook 500 series is designed around the Motorola 68LC040 processor—a chip that offers far more power than the chips that powered previous PowerBook models.

In benchmark tests, the new PowerBook 540c running at 66/33 MHz was 80% faster than the fastest previous PowerBook. (Its gray-scale counterpart, the 540, is equally fast.) And with the same chip running at 50/25 MHz, the 520 and 520c aren't far behind.

We've supported that processing power with 80% more memory capacity (up to 36MB), 56% more internal storage capacity (up to 320MB) and built-in high-performance Ethernet networking (as well as LocalTalk). This makes the PowerBook 500 series powerful enough not only for word-processing long documents or Fortune 500-sized spreadsheets, but also for doing fieldwork with programs like Adobe Photoshop and other high-end, graphics-intensive programs.

Add SoftPC software from Insignia Solutions Inc., and you've got the ability to run MS-DOS programs as well.

The 500 series offers the possibility of even more power later, because you can upgrade to PowerPC™ technology when it's available for PowerBook. (Contrast this with 486 notebooks that aren't upgradable to Pentium technology.)

More precision. Kindly direct your attention to the revolutionary new Apple trackpad pointing device that replaces the trackball and is centered on the comfortable palm rest. The trackpad brings a new level of precision to PowerBook computing.

The trackpad's ultrasensitive surface senses the touch of your finger, tracks it across the pad and moves the cursor across the screen accordingly.

This intuitive method of moving the cursor, combined with the new dual-scan and active-matrix screens, gives you much more precise control over the location of the cursor and makes extremely detailed work...
possible (it's actually precise enough for photo retouching) wherever you happen to be.

The PowerBook 540c has what may well be the finest screen ever to grace a notebook computer: an active-matrix, 95-inch display capable of showing thousands of colors at the same time. Combined with QuickTime® video and built-in stereo sound, these screens make for truly spectacular presentations in the most spectacular locations: on a crowded plane, in a noisy diner, wherever.

More expandability. The new PowerBook 500 series includes a lot of things that aren't standard on ordinary notebook computers. Things like built-in file sharing and networking. Stereo sound and video-out. Macintosh PC Exchange™ software, eWorld™ and PowerBook File Assistant file-synchronizing software. And we've even included Apple Remote Access software that allows any modem-equipped PowerBook to work with the Macintosh computer on your desk, and with your network, as if you were sitting in your office. Even during those times when your office happens to be thousands of miles away.

Still, there's a lot of room to grow. These are the first PowerBook computers to come with a built-in Processor Direct Slot (PDS) for third-party expansion modules. And they're also the first ones to offer the optional plug-in PowerBook PCMCIA Expansion Module, so you can use two Type II or one Type III PCMCIA card for even more flexibility.

You can even install an optional 19,200-baud internal modem to send and receive information quickly, and when it becomes available, a third-party cellular interface for convenient wireless access to your office network.

More battery life. Even the batteries have been thoughtfully redesigned. The PowerBook 500 series can use two PowerBook Intelligent Batteries. These high-powered NiMH batteries use special processors within each pack to monitor battery power and the new PowerBook Control Strip — power management software that tells you exactly how much time you have before you need to recharge the batteries.

The result is 40% more battery life than before — up to seven hours per charge — when using both batteries.

They recharge faster, too — in as little as two hours for both batteries when the PowerBook is asleep or shut down. And the batteries even recharge while you're using the PowerBook.

More information. While this has been an abundance of information, by any standard, it can't serve as a substitute for a personal demonstration. Something that can be easily arranged at your authorized Apple reseller. To find the one nearest you, simply call 800-732-3131, ext. 100. (In Canada, call 800-665-2775, ext. 910.)

And soon discover more of the power you buy a PowerBook for. The power to be your best.

Introducing the PowerBook 500 Series. The next generation of PowerBook.

---

*figures and specs are approximate*
Accelerate the way you work today and be prepared for tomorrow. Whether you own a Mac® today or are planning to invest in Power Macintosh® tomorrow, SuperMac has products that will speed your work and let you see the big picture – with brilliant displays, eye-catching color, and outstanding resolution.

Now SuperMac makes it even easier to own the best solutions for design, publishing and prepress. Until August 31, 1994, you can receive up to $300 back when you purchase one of the qualifying graphics card and display pairs*. For your nearest Authorized Reseller, call (800) 334-3005. For information via fax, dial (800) 541-7680.

Spectrum® Power 1152 accelerates QuickDraw® functions up to 41 times and takes the waiting out of design, layout, and illustration jobs. Pair it with any 20” or 21” SuperMatch® color display and receive a $150 rebate. $150 Rebate

Thunder/24® boosts QuickDraw performance up to 43 times, so no more waiting to scroll, zoom, pan, or redraw. The free Thunder® daughter card uses our industry-leading technology to speed Adobe Photoshop® by up to 10 times. Match them with any 20” or 21” SuperMatch® color display and receive a $200 rebate. $200 Rebate

Our new Thunder II GX family of graphics cards delivers accelerated CMYK-to-RGB display conversion, plus the fastest QuickDraw and image-processing acceleration. With support for 24-bit color at up to 1600 x 2000, you can view a full two-page layout and still have room for tools and menus. Team one with any 20” or 21” SuperMatch® color display and receive a $300 rebate. $300 Rebate

"Macintosh" CFMs sold separately. Graphics cards and displays must be purchased on the same invoice. Products must be purchased between April 15 and August 31, 1994. Send registration cards and copy of invoice to: SuperMac, Attn: Power Publishing Dept, P.O. Box 60909, Sunnyvale, CA 94088-6906; envelopes must be postmarked by September 30, 1994. Rebate offer for end users only. Good for purchase in the US, Latin America, and Canada only. Allow four to six weeks for processing and delivery. Thunder and Thunder/24 are registered trademarks and SuperMac, the SuperMac logo, the Stylied "S," Spectrum and SuperMatch are trademarks of SuperMac Technology, Inc. All other brand and product names and logos are trademarks of their respective holders.
Tales of Encrypt

I AGREE 100 percent with Maggie Canon's assessment of the Clipper encryption technology ("Yank the Clipper," June '94, page 23), but I do take exception to some of her reasoning.

Having seen the stupidity of the terrorists who bombed the World Trade Center, I disagree that terrorists would not "be dumb enough to use a phone or computer system they know the government can monitor." For heaven's sake, these guys tried to get a refund on the rental van they blew up.

The terrorism angle should not be the focus of our attacks on the Clipper — the business and privacy issues must be. The Clipper will make it next to impossible for U.S. companies to sell their products in foreign countries. Even more worrisome for most American citizens should be the issue of privacy: The National Institute of Standards and Technology and the Automated Systems Division of the Treasury Department will hold the keys to the Clipper. Since the CIA cannot seem to keep any secrets from the Russians, what makes us think these agencies are any more leakproof?

Samer Farha via the Internet

I'M WITH YOU. I say, yank that sucker. And at the risk of sounding like a fanatic, let me also say that if your readers believe that eavesdropping on telephone calls, reading of e-mail, and browsing of database files hasn't happened yet, I have some valuable swampland in Florida that will surely be of interest to them.

William M. Love Palm Bay, FL

Screen Screams

ENJOYED YOUR monitor-evaluation article "Big-Screen Bargains" (June '94, page 82). I was very disappointed that you did not include an Apple monitor in any of your tables or discussions, although you did mention the Apple Macintosh Display Card 24AC in a sidebar. Apple sets the standards in its product line, and a magazine that caters to Macophiles should include an Apple product, if one exists, in all comparison articles.

Apple's products may be overpriced or may not be technically superior, but I would like to be the one to rule them out in my considerations, if in fact I do.

Russ McCrae Los Altos, CA

/ Apple was invited to submit a unit for inclusion in the article but declined. At testing time, Apple was phasing out its 16- and 21-inch monitors and the successor 17- and 20-inch models were not yet ready for evaluation. / JSA

ALTHOUGH I COMMEND your effort to sort through the myriad of monitors a consumer may choose from, I have a bone to pick with you about the methodology and results of your testing.

If I were only to scan your mouse ratings, I would seriously consider choosing the Sony CPD-1730. The "Closer Look" table says that the CPD-1730 has a maximum resolution of 1,024 x 768 pixels, but it doesn't — at least not at the standard 75-Hz refresh rate most graphics cards use. Why don't you test monitors at various resolutions?

Nicholas Silva via ZiffNet/Mac

/ The Sony CPD-1730 cannot achieve a resolution of 1,024 x 768 pixels at 75 Hz, the Macintosh standard, but it can at 72 Hz, which is a resolution supported by the Power Macs and the Macintosh Quadra 840AV. We have tested monitors at more than one resolution.

OPEN FOLDER

Exposing social decay isn't just the purview of Dan Quayle, we've found. Doron E. Hutton, of La Mesa, California, protests two tiny items in the screen dump that accompanied our review of DayMaker Organizer 3.0 (May '94, page 52): "File divorce papers" and "Stop check on 2/94 mortgage payment." Fumes the eagle-eyed Hutton: "The social fabric of America is already in chaos, stemming directly from the disintegration of the family. I am astounded and discomfited by the arrogance of whoever is responsible." Blame it on Murphy Brown reruns.

Television's terrible power has caused 13-year-old Jose Nino, of Miami, Florida, to actually agree with John Dvorak, backing up our gadfly columnist's June assertion that an 80-MHz hard drive is a joke. Jose says the drive in his Performa 405 is "more pathetic than the Barney show I have to put up with when I baby-sit my little brother!" Yes, but at least your dinosaur isn't purple and doesn't sing or make appearances at shopping malls.

Beaming down with a note about Star Trek IV: The Voyage Home was Allen Albertson, of New Tripoli, Pennsylvania. Allen finds it highly illogical that the Mac Plus used in the 1986 vintage opus responded to Scotty's keystrokes "at a blistering pace. Even with maximum RAM, this kind of response was not possible. Was this just Hollywood animation magic? It's conceivable that unit was decked out with a prototype Matter/Anti-matter accelerator card and Klingon SIMMs, but consider: Scotty could rewrite the entire Enterprise between commercial breaks. If anyone could make a Mac Plus run at warp speed, he could.

Speaking of warp factors, the quest for ever-faster PowerPC chips raises this question from Douglas D. Fox, via the Internet: "Did I miss something? There are the 601, the 603, and now the 604 PowerPC chips. What happened to the 602?" Like Type 2 fonts and the 68050 processor, it's entered the Twilight Zone.
THANKS FOR such an exhaustive report. Unlike other computer purchases, buying a large monitor can be a nightmare. Your authors suggest some tire kicking, but this is nearly impossible with 20- and 21-inch monitors. Few vendors have any monitors larger than 17 inches on display. It would seem I'm expected to write a big check and cross my fingers. Your advice to seek dealers with good return policies cannot be overstressed. The last time I bought a monitor, I sent two back before I got one I liked.

Michael Carr
via ZiffNet/Mac

Served Up

APPLE COMPUTER does not believe that the results published in the article “Choosing the Right Server” (May ’94, page 102) are a true and accurate representation of the performance of our Apple Workgroup Server 95, which includes AppleShare Pro. As a result, we have been discussing with MacUser Labs the test methodology, tools, and analyses used, in an effort to verify the accuracy of the performance information in that article.

Variable performance results, unfortunately, are a fact of life for file-server tests. Unlike database programs, file-server software has no standard benchmark tests and performance-testing methodologies.

Apple feels that MacUser readers need to be made aware that the results cited in the article may not be wholly valid. We will continue to work with MacUser and other publications to ensure that file-server performance can be equitably measured across platforms and products. We are confident that given the level of cooperation we have received from MacUser, we will achieve our mutual aim of providing customers with accurate information on which to base purchasing decisions.

Doug McLean, Director, LAN Systems Marketing
Apple Computer, Cupertino, CA

Although MacUser is, indeed, working closely with Apple to verify the results of our file-server tests, we would like to emphasize the word verify. MacUser stands by the validity of its tests and the accuracy of the results printed in our May issue. / HB

Color Me Unimpressed

I'M GLAD I bought my HP DeskWriter 550C before I read "A Printer on Every Desk," in your May ’94 edition (page 112). Those guys slammed HP inkjet printers so much that I'm starting to call my printer a door.

My 550C is not as fast as a laser printer that is three times or even twice the price. I never expected it to be. That doesn't mean it isn't worth what I paid for it. The print quality my inkjet printer produces is noticeably better than the output of several laser printers I've seen.

Carl E. Dotson
Poway, CA

IN YOUR LAB TEST of personal printers, our Sharp JX-9405PS received a lower ranking than we expected. This is the result of a problem this printer had with EPS images in PageMaker 5.0.

The results you saw were not an issue of print quality but of an AppleTalk communication problem for which we have a fix. It is unfortunate that this one factor so influenced the overall results, since your article acknowledges that the "quality of the 600-dpi text output and gray-scale images it produced received high praise."

Andrew Bernstein, Printer Product Manager
Sharp Electronics, Mahwah, NJ

OutFoxed

MY USE OF FOXPRO 2.5 in projects has led me to startlingly different conclusions from those of your review (June ’94, page 47). I agree that this version of FoxPro has some nice features for browsing through tables and doing ad hoc queries, but I think your review will mislead people into thinking it's ready for prime time when it comes to application building.

It has some gaping holes, among them:

• No security. If I have my own copy of FoxPro, I can view and edit your tables without even leaving an audit trail.
• FoxPro's best feature, the RQBE (query) function, cannot be embedded and controlled in an application.
• Record looking and other low-level database controls must be written by the programmer.
• When I used a Wizard to create a report on a five-record, three-field database, FoxPro kept bombing because of memory errors until I allotted 8 MB to it.
HERE'S WHY GETTING IN CONTROL™ BEATS JUST GETTING ORGANIZED.

No other calendar program compares to getting the all new IN CONTROL. That's because IN CONTROL 3.0 is no ordinary calendar. No way!

It combines the ease of the flexible, multi-column Action Outliner™ with bigtime database power. It simply helps you plan smarter. And only IN CONTROL works with FileMaker® Pro. (Look it up!)

If you're just keeping track of your time, check out this chart. Right now.

In Control 3.0 - the calendar to plan on!

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>IN CONTROL</th>
<th>DATEBOOK® PRO</th>
<th>NOW UP-TO-DATE ™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-featured calendar</td>
<td>YES</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Multi-column Action Outliner</td>
<td>YES</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>FileMaker® Pro lookup</td>
<td>YES</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Lookup contacts from Touchbase® Pro, Now Contact™ and Dynodex™</td>
<td>YES</td>
<td>Only Touchbase Pro</td>
<td>Only Now Contact</td>
</tr>
<tr>
<td>Unlimited number of outline columns</td>
<td>YES</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

No wonder IN CONTROL was cited in MacWEEK as the "best single-user calendar on the market now!"

The choice is yours. Use just an ordinary calendar or get yourself IN CONTROL.

Special Competitive $59.95!
Upgrade Price
Or purchase IN CONTROL 3.0 for MacConnection's regular low price of $85.

MacConnection®
1-800-800-6827
Item Ps. Comp Upgrade: 11972 Reg. 8465

For information on site licensing and volume discounts, call 1-800-925-5616 or (617) 776-1110. To upgrade, call 1-800-784-7388, ext. 201

©1994 Attain Corporation.
All products are trademarks or registered trademarks of their respective holders.
I would happily use FoxPro as a personal productivity tool to manage some of my own data in an ad hoc manner, but when it comes to using it to develop a robust Mac application, I’d have an easier time batting blindfolded against Nolan Ryan.

Chuck Hinkle
via ZiffNet/Mac

Price Fishing

AS USUAL, Mr. Dvorak’s back-page commentary (“Skating on Thin Price,” June ’94, page 216) conveyed a meaningful message. But, as usual, our friend John stretched the slingshot of reality so far that it snapped back in his face.

Case in point: He says, “The 80-megabyte hard drive is a joke . . . ” You can barely get by with 340 megabytes nowadays.” Come on, John. The entire Microsoft Office can fit in 80 megs, with room left over for thousands of documents.

As for Windows competition, your glorified Multimedia Complete System falls short. It ships with only 4 MB of RAM. It has no FPU. It is slower than the Quadra 610. Whatever monitor it comes with cannot be as crisp and clear as the monitors Apple makes. And, of course, the Macintosh operating system crushes this clone’s OS.

Ned Vizzini
Brooklyn, NY

ALTHOUGH A VAST majority of MacUser readers seem to despise the thoughts of John C. Dvorak, I found his column “You’ll Do Windows” (May ’94, page 230) an accurate description of the current state of the computing world. I have three computers for home use: an Amiga for video work (and games), a Mac for writing, and a 486 Windows-OS/2 PC for practically everything else. Although I hope to purchase a Power Mac system sometime this year, I will continue to use more than one computer platform. It’s just a more efficient and effective way to work.

Cedil E. Helton, Jr.
Richmond, KY

CORRECTIONS

In “Make Your Own CD-ROMs” (June ’94, page 100), the list price of the Microboards PlayWrite 1000 with Dataware Technologies’ CD Record 2.0 was incorrect. The correct price is $3,899.

In “Big-Screen Bargains,” (June ’94, page 82), the street price of the SuperMac SuperMatch PressView 21 was incorrect. The correct street price is $3,290.
HOP ON!

IF YOU'RE NOT USING CANVAS™... YOU'RE MISSING OUT.
When the rubber hits the road, you can't afford to spin your wheels using under-powered graphics software. You need drawing tools designed for today's high-tech tasks. Tools that deliver unrivaled speed and accuracy without inhibitions. You also need them now, not years from now.

WE DELIVER.
Canvas has just the right combination of tools to help you enjoy your work and become more productive. Without sacrificing quality or compromising your creativity. Just ask our biggest fans — our competitors. They've been busy copying innovations Canvas users have enjoyed for years. Like unlimited layers, integrated drawing and painting, preview editing and object path combinations, to name just a few. Imagine what will happen when they find out what we're working on today. The choice is clear... you can use Canvas now or spend a lifetime waiting for the competition.

DON'T LISTEN TO US.
Our competitors aren't our only fans. Just listen to the 400,000+ high-tech professionals who power up Canvas every day in seven languages to produce today's top technical illustrations. Or the expert analysts from leading multinational corporations, government agencies and top educational institutions who have chosen Canvas as their graphics standard. Or the computer experts at leading industry publications. They'll all tell you Canvas is the most advanced, cost-effective multi-platform graphics solution. Period.

WE WON'T BORE YOU WITH THE DETAILS.
Needless to say, Canvas has all the drawing tools and features you'll probably ever need.
From freehand Bezier curves to 1/65,000th-inch precision and fifteen flavors of auto-dimensioning.
From slide presentations with QuickTime support to built-in color separations. From precision type handling to over a dozen industry-standard import/export tools, including EPSF, DXF and CVS (Canvas for Windows). And thanks to our unique Open Architecture Technology (OAT™), there's plenty of raw power available and even more when you need it. As proof, let us point out that every detail of this ad was created and color separated within Canvas.

DON'T MISS OUT ANY LONGER.
Stop grinding your gears with old technology. Quit wasting valuable time and energy with the wrong graphics tools. Dust off your leather jacket, put on your badass shades and make tracks to your favorite Canvas reseller today. Or call 1-800-733-6322 to order, and hop on for the ride of your life. Helmet not included.

CANVAS
THE HIGH PERFORMANCE DRAWING ENVIRONMENT

$149.95 COMPETITIVE UPGRADE

Still using some other graphics program? How we've made switching to Canvas even easier! Keep your clip-art, but trade in that sweater for some real precision drawing power. Simply show us proof of ownership of any Macintosh graphics program and drop nearly $550 off Canvas' already low $599 price!

CIRCLE 165 ON READER SERVICE CARD
Asante Ethernet Adapters. For Every PowerBook. When Apple introduced the first PowerBook in 1991, Asante was ready with a flexible, high-performance Ethernet adapter that redefined connectivity. Three generations later, we're still making the right connections.

In fact, only Asante has plug 'n play Ethernet solutions for every Mac PowerBook. From the groundbreaking 100s in 1991 to the exciting new 500 Series in 1994.

But perhaps one of our best features is what we don't have. Namely, an external power and SCSI adapter cable. Making our adapters lighter, smaller and easier to use than ever.

Asante Ethernet adapters also provide multiple media connections, full IEEE 802.3 compatibility, and support for all popular network operating systems. And each comes with free technical support, as well as one of the best warranties in the business.

So contact your favorite reseller and ask to see the Asante Ethernet adapter for your PowerBook. They'll show you the perfect solution. No matter which generation you claim as your own.

Call 1-800-662-9686, Department A100 for more information on Asante's family of PowerBook adapters.

We adapt to every generation.
What’s the Difference?

TIME FOR A POP QUIZ: CHICAGO

is (a) the home of deep-dish pizza, (b) a rock band whose members are old enough to withdraw money from their IRAs, (c) the setting for Guys and Dolls, or (d) the new version of Microsoft Windows that makes a PC “just as good as a Mac.” If you answered, “All of the above,” then you might need a refresher course on Mac innovation.

“Just as good as a Mac” is a phrase that’s been thrown around a lot lately, usually by PC users. But Mac users shouldn’t be fooled. Plenty of significant differences exist between the two systems — from usability to functionality. For me, the biggest difference between a Mac running System 7 and a PC running Chicago is innovation. When it comes to pioneering new technologies, Apple is still way out ahead.

Apple and Multimedia

Let’s review, shall we? Look at what multimedia means on Windows machines: CD-ROMs (that were probably developed on a Mac in the first place) and sound cards (an endless source of hardware headaches from which Mac users have been spared from the start). What does multimedia mean on the Mac? HyperCard (around since 1986 and still being used to create great CD-ROMs, such as Myst and Peter Gabriel’s Xplora 1), built-in 16-bit stereo sound, QuickTime, AV, Macs and Power Macs, and now the new 630 series of low-cost multimedia Macs.

The last of these, the 630-series Macs (profiled in this issue), exemplify Apple’s newfound ability to take hot technology and make it incredibly attractive from a price/performance standpoint. These Macs make affordable the multimedia technology previously available only from the more expensive, Av machines. I expect what will make them especially popular is their extreme versatility. The base-configuration machine can perform everyday business tasks at Quadra 800 speeds. But add a couple of optional goodies, and you can start editing your own videos or keeping up with the latest news or sports results by watching CNN or ESPN on your Mac.

Low-cost video editing and built-in TV are only the beginning of Apple’s multimedia offerings. QuickTime 2.0, scheduled for release in late summer of this year, brings digital video closer to broadcast standard. No more tiny, jerk movies — movies can now be played fullscreen and will be smoother and faster. Professional video editors will appreciate QuickTime 2.0’s support of SMPTE time code, 60 fields per second, high data throughput, and MPEG. It’s also easier than ever to synchronize music with video, so making that music video starring your kids isn’t such a far-fetched idea anymore.

On top of that, QuickTime 2.0 provides the foundation for even more exciting developments. If you thought you had to wear a helmet and gloves and grow dreadlocks to get into virtual reality, think again. One of the coolest things to come out of Apple recently is QuickTime VR (the VR stands for virtual reality, of course). Basically, with QuickTime VR, all you’ll need is a Mac and an application that takes advantage of QuickTime VR to experience moving around in a room, picking up objects from a virtual museum or store, or exploring an imaginary environment from your desktop (see New on the Menu, page 31, for details). Expect to see QuickTime VR finding its way into entertainment, education, and professional applications by this fall.

Quick seems to be the operative word around Apple, because the company has also brought out the QuickTake 100 digital color camera. Sure, the quality of the images it produces still leaves plenty to be desired, but the important thing is that Apple is carving out a new market — digital photography for the masses. If you’re a real-estate agent who wants to get a photo of a hot property into a sales brochure fast, a Mac and a QuickTake 100 are your best bet.

All these innovations are testaments to Apple’s willingness to maintain the Mac’s distinctiveness. In the short term, they’ll ensure that the Mac platform doesn’t disappear, just because the conventional wisdom decreed that Windows on a PC was “just as good.” Long-term, of course, I expect Apple’s market share to grow, based on the formula exemplified by the Power Macs — unbeatable performance for the price.

While we’re waiting, though, it’s good to remember that there are still plenty of distinctions between the Mac and Windows-based systems — because having the power to be your best usually means being a little bit different too.

The biggest difference between a Mac running System 7 and a PC running Chicago is innovation. When it comes to pioneering new technologies, Apple is way ahead.

MAGGIE CANON
Click the button. It's so simple. Click. It's the easiest way to get things done. Which is why new WordPerfect® 3.0 for the Mac® puts all the things you want from your interface in your face. Giving you more buttons to click than any other word processor. So features are easy to find. And use. Want to change your text formatting? Click. Apply a style? Click. Create a table? Click. Then you can bring up a different bar with all the table functions you want. Borders, editing—even math functions—it's all right there. Click. Our customizable button bars put your favorite tools right there, too. Like spell checking. Grammar checking. Our integrated drawing program. Whatever you want. There's even buttons for common tasks like bulleted indents. So you'll seldom have to do anything. Besides click. (And type, duh. This is a word processor.) But you can do other cool stuff, too, like run QuickTime.® Or WordPerfect native on the Power Macintosh®. So visit your local reseller or call us at (800) 526-2296 for our $99® competitive upgrade. If the number was nine buttons shorter, it'd be as easy as our interface. Click.
Newton connects. When you carry a MessagePad 110, the new
Newton communications assistant from Apple, you carry the power that
comes from having information at your
tips. Which means no matter where
you go, you always have access to the facts
you need, at the moment you need them.

With the Newton Connection Kit 2.0
for Macintosh, you can exchange informa-
tion with your Macintosh, as well as with
a range of popular Mac software, such as
ACT! contact manager, Lotus 1-2-3, Excel
and Microsoft Works.

So now you can do things like refer-
ence sales leads from Dynodex and work
with data created in Microsoft Word, all
from the palm of your hand. And if you're
working on a PC running Windows, the
Newton Connection Kit 2.0 for Windows
will allow you to easily do the same with
all your current Windows applications.

To find out more, call 800-365-3690,
ext. 100, for the Newton dealer near you.

Or check out an on-line service for the
interactive demo found on the Newton forum. Either way, you'll find that instead of
giving you more technology, Newton gives you something you can really use: help.

Newton. It's there when you need it.
Lawyers, Guns, and Sunny

HERE ARE SOME TRADITIONS, such as Aunt Dorothy’s melon boat at the family Fourth of July

barbecue or opening one gift on Christmas Eve, that we observe because they’re warm touchstones of familiarity and constancy. Other traditions, such as calling in sick on baseball opening day, feature films based on lame ’60s sitcoms, and Congress in general, persist only because no one had the good sense to put a stop to them the last time.

Modesty forbids my stating which one applies here, but it’s time again for my Traditional Summer Vacation Column. Yes, as I write this, I’ve retreated to sunny seaside Hyannisport with an ice chest full of Snap- ples; three Tom Clancy books; and CDs by Jerry Lee Lewis, Blues Traveler, and Joe Satriani — plus my trusty PowerBook Lilith and a folder of topics from the past year’s columns that merit further discussion.

Quick Draw for Newton

But I can’t let a month go by without passing along some sort of new and useful information, so here’s the traditional Arts & Crafts segment. Most Newton users have recognized the MessagePad’s lone deficiency (just humor me here): Nobody makes a trim and compact carrying case that keeps the MessagePad at your fingertips but does not look like a Yuppie Greed-Enabling Accessory™.

After dismissing a dozen generic and Newton-specific products, I turned my rage inward and made The Eastwood (see photo). Just call the Michaels of Oregon (503-255-6890), a maker of police holsters and accessories, and order Set No. 9927-1, a tactical holster for automatic weapons (Size 27 — $69.95 plus shipping and handling). With about 2 feet of 2-inch web strapping, 8 size 8-32 roundheaded screws, 12 flat washers, 4 nuts, and only 20 minutes of effort, you can easily modify it to holster a Newton instead. That’s the basic gist — for a complete and sporadically coherent set of plans and instructions, just jump onto ZiffNet/Mac or any other on-line service and download EASTWOOD.SIT, which I wrote free from the strictures of a limited word count.

The advantages of The Eastwood are myriad: Its midhigh placement with tie-down leg strap means that you’ll be able to execute rattlesnake-fast one-handed quick draws of your Newton, the holster is fully adjustable to fit any frame or physique, and it makes you look a little like Han Solo if you happen to look a lot like Harrison Ford. It has only two disadvantages: (1) If you are a MessagePad 100 owner, you’ll have to holster the Newton in its protective case, and (2) a person walking around in public wearing a modified police holster might attract a certain amount of unwanted attention. Three police departments gave it their thumbs-up and I’ve worn mine virtually everywhere for two months without incident, but I strongly urge you to read the full set of instructions, which explores this subject in greater detail.

Now onward to the column updates:

Copywrongs

I won’t mince words: I blew it in one of my copyright columns (“Monkey ©, Monkey Do,” April ’94). After receiving letters from two helpful readers, I retrieved the flight recorder from the wreckage of that column and determined that due to a boneheaded error during transcription of my notes, I had mistakenly reported that the “automatic” copyright to the works you create expires in three years unless it’s registered. In truth, even if you do absolutely nothing, your copyright will last throughout your lifetime plus 50 years. Although you can register the copyright at any time, if you hope to ever recoup statutory damages and attorney’s fees from a potential infringer, you must register within three months of the work’s first publication — otherwise, you’ll be able to win only actual damages and compensation for loss of profits. For additional details, write to Information Section, U.S. Copyright Office, Library of Congress, Washington, DC 20559 or phone 202-707-3000.

Now, the really dopey thing is, I’d gotten that same bit o’ data correct a mere month earlier, in part 1 (“Do You Copy?” March ’94). And as long as I’m flagellating myself here, I have to admit that the Prisoner episode I mentioned was entitled “Hammer into Anvil” rather than the other way around.

To atone for these errors, I promise that I’ll nip off right away and kill myself in the most disgusting manner possible. Right after the kid comes by with my basket of steamers.
How do you do survival analysis?

Are you analyzing survival data the hard way? Try our way.

Start with StatView...

StatView® is the only Macintosh stats package that combines data management, data analysis, graphing, drawing, and presentation into a single easy-to-use solution. From data entry to finished reports, StatView saves you time and effort.

...now add Survival Tools!

Survival Tools is the latest in a series of drop-in extensions to StatView. Survival Tools incorporates a complete suite of survival analyses into StatView — seamlessly. Survival Tools becomes part of StatView, so you'll enjoy all the benefits of StatView's award-winning interface, full presentation tools, and templates.

It's our way or the hard way

You can analyze the hard way, or the StatView way — the choice is up to you. For more information on StatView, Survival Tools, and other add-on products, call us at 1-800-666-STAT.

ANDY IHNATKO

The Rest of the Story

OK, on to happier things. Response to the story of The Letter ("Don't Leave It to Goofus," December '93) was overwhelming. Dozens of readers scrambled to their modems and word processors asking for copies of that mystical document of mine that, when mailed to software and hardware companies, inspired them to send me boatloads of free stuff when I was an impoverished student. Once again I must remind you that The Letter is the source of unspeakable power and it has to be researched; The Government has Top Men on it as we speak. But many readers also wrote in to tell me of the success they'd had with their own versions of The Letter. Impoverished individuals and highly worthy established charities alike recounted the generosity of various companies, which just goes to prove that Folks Act Like Good People when given the opportunity.

Back in February, I wrote about some of Apple's free Internet resources. Since then, Apple has set up an excruciatingly spiffy new home page — http://www.apple.com/ — on the World Wide Web. For those of you who have never heard of a home page, it's an on-line-readable hypertext document you can access by using either Mosaic (if your Internet connection is via SLIP or PPP) or Lynx (if you have a dial-up connection) software. Click on visual links of interest, and you'll be transported into directories of product-information sheets, technical info, remote servers of free and shareware software — trust me here, just tons of neat stuff.

You can even view QuickTime movies online, including Ridley Scott's legendary "1984" commercial. Unlike FTP or Gopher sites, a WWW page has a slick, friendly, and highly graphical interface reminiscent of America Online (provided you access it through Mosaic). Although parts of it are still under construction, Apple's home page is a killer resource.

Parting Shots

As always, positive, negative, and Just Wrote Because My Boss Forgot To Lock The Stamp Drawer reader feedback is welcome. Write to me at here at MacUser, 950 Tower Lane, 18th Floor, Foster City, CA 94404. Or prove that you're a thoroughly modern Millie by e-mailing me at 72511,204 (CompuServe) or andyi@world.std.com.
But you will.
And the odds are you'll lose your data, too.

In the last 12 months alone, half the respondents in a recent MacUser subscriber survey had lost data. It happened to them. And you can bet it's going to happen to you. Fortunately, you can avoid the inevitable with Retrospect from Dantz.

The number one backup software for the Macintosh. We're not talking about some after-the-fact recovery utility that sends you digging through the trash and sifting through the scraps. But rather, full-blown, 100% seamless restoration. Something you'll definitely want when the data really hits the fan. With automatic backups, point-and-click operation, unparalleled performance, total support of every type of storage device, and ridiculously simplified network operation.

Retrospect has swept the top industry awards. From the MacWeek Diamond Award to the coveted MacUser Editor's Award. So whether it's for a single user, or an entire network, Retrospect will keep you covered. And at a price you can afford—less than $200 for individuals, a bit more for networks. To learn how Retrospect can help you, visit your local dealer. Or call Dantz at 1-510-253-3020 to receive a free copy of our white paper: Backup—personal computing insurance.

What have you got to lose?
"FirstClass Goes Beyond The Capabilities Of Most Mail Systems"  BYTE Magazine  09/93

Says BYTE, "FirstClass blends conferencing and mail together under a remarkably clean interface that goes far beyond the capabilities of most mail systems ... a regrettably rare example of a useful piece of software."

FirstClass features e-mail, workgroup communication and remote access, all in the same application. Use FirstClass for internal mail, group discussion or even as a public access tech support solution! Maximum return, minimum expense!

What's remarkable about FirstClass? What other communication software lets your PC and Mac users share your ethernet network without a file server... or dial in via modem with the same client software they normally use? Add to this our integrated group communication, comprehensive security features, simple installation and robust server performance!

FirstClass is integrated e-mail and conferencing which works equally well over LAN and dial-up connections. Regardless of transport, users connect to the FirstClass server through a graphical-based (Windows or Mac) FirstClass client. Remote users with less-capable hardware can also log on through a local Macintosh and Windows support on the same network, with the same server or via modem. Connectivity via network or modem to other FirstClass servers or other manufacturers' mail systems. Remote or local administration via the normal simple installation and robust server performance!

Macintosh and Windows support on the same network, with the same server, or via modem. Easily accommodates more than a hundred simultaneous sessions, 20 of which may be modem connections without third-party communications software. Connectivity via network or modem to other FirstClass servers or other manufacturers' mail systems. Remote or local administration via the normal simple installation and robust server performance!

FREE DEMO PACKAGE AVAILABLE UPON REQUEST

CIRCLE 64 ON READER SERVICE CARD
Trouble in Windows Land

J ust press your ear to the ground along the Infobahn these days, and you're likely to hear ominous rumblings. Every software company, one gathers, is either struggling to survive or being investigated by the Justice Department, and every hardware company is in trouble. It reminds me of something my cousin Corbett once said: "Rough year. Everybody lost market share."

Hand-wringing is rife in Macland. Apple is losing the support of third-party developers. System 7 is showing its age. Either Apple needs to license its system software or it's too late to license it. Power Macs don't work right with NuBus devices. Native PowerPC applications are too slow in coming to market. Apple isn't providing decent PowerPC development tools. And all this will cause Apple to lose market share.

Well, maybe. But meanwhile, the other end of the universe is coming apart at the seams.

Ever since 1981, you could use the terms PC, Intel box, and DOS machine interchangeably. IBM gave us the widely imitated PC architecture; Intel has given us a long line of backwardly compatible microprocessors (generically referred to as x86 chips); and Microsoft gave us DOS, The Operating System That Would Not Die (lately dressed up in Windows, a garment that looks like a Macintosh but is really more of a slicker). Any one of the three implied the other two: PCs used Intel microprocessors and ran DOS; Intel machines were DOS-equipped PCs; DOS machines were PCs with Intel inside.

But no more.

IBM, still one of the top three personal-computer vendors and a force to be reckoned with if you can figure out what it's up to, has begun to abandon Intel and is in the last stages of severing its ties with Microsoft.

The imitators of IBM have not — yet — followed IBM's lead. Some aren't going to, but you might do well to consider that following IBM's lead was precisely the model that all of their businesses were founded on.

Intel chips have always been the clone makers' chips of choice — one might argue that this was because they had no choice. Now they do. Recently, much as IBM's PC was cloned, Intel's microprocessors have been cloned, and Intel has competition from AMD and Cyrix in producing the popular 486 and Pentium chips. The clone makers care little about brand loyalty and stickers saying "Intel inside" and much about performance and price. Intel is vulnerable on both fronts.

Adding insult to injury, IBM is supposedly developing a PowerPC chip (the 615) that will include x86 instructions, allowing it to run native PowerPC and native x86 software.

The Microsoft/Intel relationship is rapidly moving toward a situation in which Intel needs Microsoft a lot more than Microsoft needs Intel, at which point Intel will know how the rest of the industry feels.

And Intel does need Microsoft, desperately. As Jeff Duntemann and Ron Prong write in Inside the PowerPC Revolution (Scottsdale, Arizona: Coriolis Group Books, 1994), "Intel has probably lost the hardware war, but it can still keep up its market share by assuring that the PowerPC never wins the software war [by ensuring] that Microsoft and other major vendors of x86 software don't migrate their applications to the PowerPC platform."

Intel is no doubt pleased about Microsoft's slowness in delivering native PowerPC applications for the Macintosh. But even so, native PowerPC applications are appearing more rapidly than are native applications for Intel's Pentium.

But what was that about Intel losing the hardware war?

Well, chip experts claim that Intel made several mistakes when it introduced the Pentium chip. It was expensive, forced costly changes in system designs, wouldn't work in a portable computer, didn't automatically improve application performance, and retained an obsolete approach to providing registers. Intel is in no danger of losing its leading market position, but it could easily lose market share.

So could Microsoft. Windows is dying. Windows applications more and more often are referred to as legacy applications, which is what COBOL code is called. Microsoft's next-generation technology, NT, isn't catching on, and there's that pesky Justice Department business.

So could IBM. In its post-Microsoft era, IBM will face the challenge of maintaining 12 percent of the personal-computer market with an operating system — OS/2 — that has a 2-percent share of its market.

So it seems to me that with the non-Apple part of the universe coming apart at the seams, it would be difficult and dumb for Apple to lose market share.

That doesn't mean it won't happen, though.
The detail of EPSON's 4800 dpi scanner really stands
When it comes to detail, the new EPSON ES-1200C is in a class by itself. It’s the only personal scanner with 4800 dpi and 30-bit color internal scanning for crisp, clear image reproduction.

To ensure the best results with any image you scan, the ES-1200C provides one and three pass scanning, and standard parallel and SCSI ports allow you to connect simultaneously to a Mac and a PC—an EPSON exclusive. All this means the ES-1200C gives you more power than anything else in its price range.

The ES-1200C Pro for Mac. The highest detail of any personal scanner.

The ES-1200C Pro includes top-ranked Adobe Photoshop, Kai’s Power Tools, ScanTastic plug-in module & desk accessory and a SCSI cable. There’s also a PC version.

<table>
<thead>
<tr>
<th>Feature</th>
<th>EPSON ES-1200C Pro</th>
<th>HP ScanJet ICX</th>
<th>Microtek II HR</th>
<th>Umax UC1200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical Resolution</td>
<td>600</td>
<td>400</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Max Resolution</td>
<td>4800</td>
<td>1600</td>
<td>2400</td>
<td>2400</td>
</tr>
<tr>
<td>Bits Per Pixel</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>One &amp; Three Pass</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Dual Connectivity</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

To see what a difference the details can make, visit your local authorized dealer or call 1-800-BUY-EPSON.
Launch Your Mac into the World of PowerPC With DayStar' PowerPro 601.

DayStar's PowerPC upgrade for the Quadra 650, 700, 800, 900, 950 and Centris 650.

Power Mac 8100 Performance for Thousands Less

DayStar designed the PowerPro™ 601 for the graphics professional who needs the maximum in performance. This processor upgrade card plugs up to 80 MHz PowerPC speed into your current Macintosh. You save time and money compared to purchasing a new Power Macintosh™. And, PowerPro lets you avoid the emulation roadblock by letting you restart as a 68040 based Macintosh computer.

Developed in cooperation with Apple Computer, the PowerPro 601 has actual Power Macintosh ROM chips. So, you get the same basic hardware and functionality as Apple's own solution, all on an easy to install, 100% compatible upgrade card!

PowerPro 601 runs neck and neck with Apple's fastest—the Power Macintosh 8100—and leaves their upgrade card behind in the dust. Plus, the PowerPro offers up to 128 MB of additional memory expansion that combines automatically with your Mac's motherboard.

For Adobe Photoshop™ users, we include a broad family of filters that run Photoshop faster than any other solution. We also include DayStar's Product Bundle CD-ROM. This special edition disc contains ColorMatch™—a color management system for QuarkXPress—and Adobe Photoshop—and DayStar's revolutionary PhotoMatic™ scripting utility, also for Photoshop. Combined, you get over $600 of applications, demos and more, free!

And, when you buy the PowerPro from DayStar, you also get access to the next generation of PowerPC technology through our cost saving upgrade programs. So, take the fast road to PowerPC. Call DayStar Digital today.
Microsoft Opens Floodgates

Dry spell ends with new versions of Works, Word, Excel, and PowerPoint.

IT'S BEEN ALMOST two years since Microsoft made major changes to any of its mainstream Mac applications, but the dry spell should come to an end this summer.

First on the list is Microsoft Works 4.0, a brand-new incarnation of the company's venerable integrated productivity program. Next come the long-awaited Word 6.0, Excel 5.0, and PowerPoint 4.0, all of which are included (along with Microsoft Mail) in Microsoft Office 4.2, a new version of the company's heavy-duty application suite.

The main focus in the new Works and Office releases is on consistency, integration, and ease of use. All rely on OLE 2.0. Microsoft's object-linking and -embedding technology, to make it easier to insert and edit different kinds of data in a single document. The three remodeled Office applications present similar tool bars and menus. And they feature IntelliSense, a grab bag of enhancements designed to simplify complex tasks and automate routine ones.

Power Mac versions of Word, Excel, and PowerPoint are expected to ship within 30 days of the 680x0 versions. A native PowerPC version of Works is scheduled for release sometime this fall.

In the Works. In recent years, Microsoft Works has fallen behind rival ClarisWorks, particularly in the area of integration. Works 4.0 catches up by way of OLE 2.0: Instead of having to go back and forth among separate modules, you can add a spreadsheet, chart, or drawing to a word-processing document by clicking on a tool palette. Microsoft also broadened the package by adding a slide-show feature; paint tools; and a slew of personal-information-management aids. New Works Wizards help novice users create documents just by answering a few questions.

In a Word. A complete rewrite of the Mac's leading word processor, Word 6.0 is based on the same core code and file format as the Windows version Microsoft began shipping in January. IntelliSense conveniences include automatic correction of spelling mistakes and automatic formatting of tables and imported text. Redesigned dialog boxes with click-on tabs that bring up related options let users make formatting choices without repeated trips to the menu bar.

Buy the Numbers. In addition to blazing speed on Power Macs — two or three times as fast as on a Quadra 950, according to Microsoft — Wizards top the list of Excel enhancements. A Tip Wizard monitors what you do, and if it sees a better way to accomplish the task, it illuminates a lightbulb on the tool bar, where you can click for advice. A Function Wizard helps you locate and understand the available functions. A Query Wizard simplifies retrieval of information from external databases. A PivotTable Wizard helps you set up your data so you can easily switch row and column headings, vary categories, and hide or discover details.

Now Presenting . . . . When you're ready to make your case to colleagues and customers, PowerPoint 4.0 will help you get your act together with the AutoContent Wizard, which prompts you to determine your objectives, set up your arguments, and enter key data; the Pick-a-Look Wizard; and the Rehearsal mode, which just might keep you from running past your allotted time.

All Together Now. The new Works, Word, Excel, and PowerPoint releases each require System 7, a 68020 or later processor, and lots of disk space. Even the minimum installation of Works takes up 5 MB; a full install requires 16 MB. The recommended install of Excel 5.0 fills 10 MB; a minimum setup requires 6 MB, and full install takes up 22 MB. 800-426-9400 or 206-882-8080. / Henry Norr
Adobe Photoshop has ruled the roost so long that it's easy to overlook the program's shortcomings. But Photoshop 3.0, which was due this August, is a dramatic improvement over its predecessor, offering a plethora of new creative tools and enhanced production features. It's also completely PowerPC-native (the 2.5.1 plug-in accelerated only specific functions) as well as 680x0-based.

The most obvious of the new features is support for multiple floating layers, which provides you with much greater freedom in creating composite images than did the previous version. You can manipulate each layer separately, and opacity controls include transparent backgrounds that allow other layers to show through. The new move tool lets you shift layers independently, and the new Layers palette lets you change the stacking order from front to back.

Collapsible palettes that you can combine or split apart help maximize flexibility and conserve screen real estate. The Commands palette lets you assign buttons to provide single-click access to frequently used functions. Other user-interface enhancements are zoomable previews on all filters, drag-and-drop support for moving selections from one file to another, and CMYK preview.

New creative controls include the Color Range command, which quickly builds masks based on selected colors; a set of lighting-effects filters that apply multiple light sources with user-definable angles and intensities to an image; and Filter Factory, which lets you create your own plug-ins.

Production controls are also stronger. True selective color correction — the kind found on drum scanners — lets you adjust the ink densities for a specific color plate by plate. The Replace Colors command creates a mask and then lets you adjust the hue, brightness, and saturation of the unmasked colors. A gamut warning highlights out-of-gamut colors, and the new sponge tool lets you saturate or desaturate colors to bring them into gamut.

Conspicuously absent from Adobe's update are any sign of AppleScript support or proxy-based editing for faster work on large files. $895. Upgrade from full version, $149; from LE version, $199. 800-833-6687 or 415-961-4400. / Bruce Fraser

Xerox Enters Color-Laser-Printer Fray

COLOR COPIERS are key to Xerox's business. Now the company has brought that expertise to the desktop with the Xerox 4900 Color Laser Printer, its first product to be sold through traditional retail channels.

The Xerox 4900 is based on the same Hitachi engine as QMS' new $9,999 Magicolor (see New on the Menu, August '94, page 29). But unlike the 600-x-600-dpi QMS unit, the Xerox printer offers resolutions as high as 1,200 x 300 dpi for both color and black-and-white output — and it's priced at $8,495.

The printer's engine speed is rated at 12 ppm for monochrome and 3 ppm for color. It ships with 12 MB of RAM, upgradable to 48 MB (color printing at 1,200 dpi requires 24 MB). Adobe PostScript Level 2; PCL 5 emulation, and serial, parallel, and LocalTalk ports are standard. Ethernet ($849) and token ring ($649) are options.

Control-panel software lets you monitor toner levels, printer status, and other functions. 800-275-9376; 716-256-4499 (fax). / Pamela Pfliffter

MacUser/ZMacUtility of the Month

AppleScript for All

CURIous ABOUT AppLeScript but haven't learned scripting yet? This month's ZMac Utility, Script-a-File, is at once a powerful file-manipulation utility and an object lesson for novices in Apple's scripting language. First you choose how you want files to be processed, and then Script-a-File creates a drag-and-drop AppleScript application that can dispatch files to the Trash, install aliases on the Apple menu, or back up important documents. Under System 7.5's scriptable Finder, you can even turn TeachText files into Microsoft Word documents.

Created by Danny Goodman, author of The Complete AppleScript Handbook, Script-a-File is available from the ZiffNet/Mac service on CompuServe (GO ZMC/MACUSER), ZiffNet Selections on AppleLink, and ZiffNet/Mac services on eWorld (MacUser). / Mark Simmons

Technology Trends / The Incredible Shrinking Syquest

WHAT LOOKS LIKE A PROP from Honey, I Shrunk the Kids is actually SyQuest's new SQ1080 removable-cartridge drive, made to fit into the PCMCIA slot of the 500-series (Blackbird) PowerBooks. Measuring a mere 3 x 2 inches, the SQ1080 fits into all Type III and Stacked Type II PCMCIA slots. The cartridge itself is a minuscule 2 x 2 inches, holds 80 MB of data, and can even take a 2,000-g pounding without losing data. You'll need the PCMCIA adapter from Apple, once that's available, and driver issues with the SQ1080 still need to be worked out.

SyQuest estimates prices of about 70 cents per megabyte. 800-245-2278 or 510-226-4000. / Roman Victor Loyola
NEW CPUs / POWERBOOK ADDS TO BOTTOM LINE
Pared-down 150 is Apple's most affordable.

A HIGH-END HUBBUB surrounded the recent introduction of the PowerBook 500 series, but the classic style — and low cost — of the PowerBook 100 series is alive and kicking. With a suggested price of $1,449, the new PowerBook 150 replaces the 145B as Apple's most affordable laptop.

At first the 150 looks like other 100-series PowerBooks, but it's been reengineered for economy. It uses industry-standard components, such as a 120-MB IDE hard drive (popular with PC makers) and a passive-matrix 9.5-inch diagonal screen with 640x480 pixel resolution (with four levels of gray). It also uses existing 100-series accessories and borrows its logic board and RAM from the Duo 230.

Minimalism marks this model. The easy-to-break plastic door of previous models is gone. Set into the 150's back are a 30-pin SCSI connector and one serial port for a modem or AppleTalk connection, as well as space for an internal modem jack. The 150's internal modem slot holds modems originally designed for the 145B, but the 150 lacks an ADB connector and a second serial port. As a result, the unit weighs 5.5 pounds, about a pound less than most of its PowerBook brethren.

The 150 packs a punch, though: It's driven by a 33-MHz 68030 processor and has 4 MB of RAM (expandable to 40 MB). The 150's hard disk is preloaded with ClarisWorks, the PowerBook Mobility Bundle suite of utilities, and System 7.1 (but no backup floppy disks). Apple's improved battery-management scheme means that you should be able to get about three to four hours from each charge. 800-538-9696 or 408-996-1010. / Jason Snell

E-MAIL / QuickMail Inches Ahead
THE LONG-AWAITED upgrade of CE Software's QuickMail client software adds some snazzy new features but fails to address some old complaints.

On the plus side, QuickMail 3.0, which now operates as an application, adds a spelling checker that's based on the same InfoSoft engine found in Microsoft Word. A new feature called MailManager automatically replies to, forwards, files, prints, and deletes messages based on parameters such as date and sender. You can also search personal folders for messages based on words contained in them. Another new feature is the ability to print, import, and export address books. The limit on file messages is now 250 per folder, up from the previous version's 100-message limit.

Missing from QuickMail 3.0 are many features that are found in competing mail packages, such as background sending or receiving of messages. You're limited to 16 enclosed files, and you still can't enclose folders or access files messages from a remote machine.

Version 3.0 affects only the client software, leaving the QuickMail server at version 2.6, still lacking important network features such as directory synchronization. A server upgrade isn't expected until summer 1995. 10-user pack, $649; upgrades, $12 per user, 515-221-1801. / John Rizzo

COOL STUFF / A New Eye on Video
VIDEO CAMERA as desk accessory? Connectix's new smaller-than-a-baseball, bigger-than-a-golf-ball camera promises desktop video at a list price of $149. It attaches to your serial port and captures 16-level gray-scale video with resolutions as high as 320x240 pixels at speeds of up to 15 fps (frames per second). The camera, which is expected to ship in the late summer, sports a built-in microphone and comes with video-recording software. / JS

TECHNOLOGY TRENDS / Welcome to QuickTime's Virtual Reality
IMAGINE ENTERING a museum and on a distant wall spying an exquisite sculpture that you'd like to look at from all angles. In real life, picking it up is strictly forbidden. With most interactive CD-ROMs, you'd be able to zoom in jerkily, click on the sculpture to see various static views, and wait for your screen to redraw. But with titles authored with QuickTime VR, a nascent technology shown recently by Apple, you'd be able to glide around the room and rotate the sculpture to inspect its curves and textures.

QuickTime VR is an extension to QuickTime 2.0 that lets developers create photorealistic 3-D worlds based not on video clips but on still images stitched together into one continuous QuickTime file. You can see 360 degrees around you at all times, with seamless pan and zoom abilities, and you can designate objects in scenes — such as a sculpture — as hot spots that invite interactivity.

QuickTimeVR is extremely smart when it comes to compensating for distortion in composited panoramic photos. Its special suite of authoring tools knows to compensate on the fly when you're stitching images together, so perspective is maintained.

The technology uses standard QuickTime compression to create compact files. For example, a composited 5-MB view becomes a 782K clip. QuickTime VR files run completely in software, requiring no hardware acceleration, and are compatible with any QuickTime 2.0-compliant application.

Currently, QuickTime VR is available only to developers. The first commercial product based on it is expected to be Star Trek: The Next Generation Interactive Technical Manual, due from Simon & Schuster Interactive this fall. / Pamela Pfiffner
POWER MAC UPDATE

NATIVE ATM CUTS TEXT OVERHEAD

New version shows speed gains across the board.

AT LAST! Adobe Type Manager (ATM) is native for the Power Mac. Based on our tests of a beta version, ATM 3.8 speeds up text-intensive tasks such as scrolling by about 20 percent over its predecessor, version 3.6.

Those with Power Macs have been eagerly awaiting a native PowerPC version of ATM, because without it, native applications take a performance hit every time they draw text on the Mac's screen. This slowdown results when the Mac switches back and forth between the application's code, which runs native, and ATM, which — before this — had to be processed through the Power Mac's 680x0 software emulator. In our first look at Power Macs (see "The Power and the Promise," May '94, page 96), we found that ATM was one of the biggest slow-you-down culprits among popular system extensions.

That's all over now. With ATM 3.8 installed, you should notice a significant speed improvement over ATM 3.6 when a native application calls on your Mac to draw text on-screen. In MacUser Labs tests, we found that with a native version of ClarisWorks running on a Power Mac 8100, it took 21 percent less time to scroll a 30-page ClarisWorks document with ATM 3.8 than with 3.6. Autoflowing 300 pages of text into a PageMaker document (we were running the native version of PageMaker 5.0 on a Power Mac 8100) took 18 percent less time.

Although improved speed is version 3.8's primary advantage, the update has other benefits as well. The ATM 3.8 package, which also runs on 680x0-based Macs and offers support for 11 languages and Kanji, includes 30 Adobe typefaces, among them a multiple-master version of Tekton. Expected to have shipped in August, ATM 3.8 also takes advantage of Apple's QuickDraw GX, a part of Apple's new System 7.5. (Bundled with System 7.5 is ATM 3.7, which supports GX fonts but doesn't run native on Power Macs.) $60. 415-961-4400 or 800-521-1976. /Henry Fortman

YOUR GUIDE TO NATIVE POWERPC APPLICATIONS

THE FOLLOWING IS A LIST of selected native PowerPC applications shipping as of June 30. Many more are expected to ship in the next few months.

### Business
- OmniPage Pro 5.0 
  - Caere 
  - 408-395-7000
- ClarisWorks 2.1 
  - Claris 
  - 408-987-7000
- DeltaGraph Pro 3.1 
  - DeltaPoint 
  - 408-648-4000
- Full Contact 2.02 
  - FIT Software 
  - 408-562-5990
- Now Contact 1.1 
  - Now Software 
  - 503-274-2800
- MeetingMaker XP 
  - ON Technology 
  - 617-374-1400
- WordPerfect 5.0 
  - WordPerfect 
  - 801-269-7200

### Games
- Paths into Darkness 2.0 
  - Bungie Software 
  - 312-563-6200
- Spaceways 2000 1.1.1 
  - Casady & Greene 
  - 408-484-9228
- Flying Nightmares 1.0 
  - Domark 
  - 415-513-8929

### Multimedia
- After Effects 2.0.1 
  - CoSA 
  - 206-628-4526
- Morph 2.0.1 
  - Gryphon Software 
  - 619-536-8815
- Animation Master 2.05 
  - Hash 
  - 206-750-0042
- RedShift Multimedia 
  - Maxis Multimedia 
  - 510-652-7430
- LogonMotion 1.5 
  - Specular International 
  - 413-253-3100
- QuickFlix! 1.1 
  - VideoFusion 
  - 415-891-1690
- VideoFusion 1.6 
  - VideoFusion 
  - 415-891-1690

### Networking and Communications
- SPM Pro for Macintosh 
  - About Software 
  - 408-725-4242
- Retrospect Remote 2.1 
  - Dantz 
  - 510-253-3000
- MacBac 
  - Hi Resolution 
  - 508-463-6955
- LAN Surveyor 1.1 
  - Neon Software 
  - 510-283-9771

### Publishing and Graphics
- Illustrator 5.5 
  - Adobe Systems 
  - 415-961-4400
- Photoshop 2.5.1 
  - Adobe Systems 
  - 415-961-4400
- FreeHand 4.0 
  - Aldus 
  - 206-622-5500
- PageMaker 5.0a 
  - Aldus 
  - 206-622-5500
- PhotoFlash 1.1 
  - Apple 
  - Apple resellers
- Cumulus 1.2 
  - Cante Software 
  - 415-431-6871
- Dapple 1.0 
  - Fractal Design 
  - 408-688-8800
- Painter 2.0/X2 
  - Fractal Design 
  - 408-688-8800
- FrameMaker 4.0.3 
  - Frame Technology 
  - 408-433-3311
- IsoDraw 2.6 
  - Redo Software GmbH 
  - 313-668-6671
- Full Auto Frame 
  - Silesia America 
  - 617-275-5150

### Shareware
- Compact Pro 1.35P 
  - Cycles 
  - On-line
- Speedometer 4.0 
  - Scott Berfeld 
  - On-line
- JPEView 3.3 
  - Aaron Giles 
  - On-line

### 3-D/CAD
- DesignWorkshop 1.1 
  - Apple 
  - 408-746-3900
- Form 7.2 
  - Autodesk 
  - 614-488-8838
- MiniCAD 5.0 
  - Diehl Graphsoft 
  - 410-290-5114
- PowerCAD 1.0 
  - Engineered Software 
  - 910-299-4843
- ArchCAD 4.5 
  - Graphisoft U.S. 
  - 415-737-8665

### Utilities
- Conflict Catcher II 2.1.1 
  - Casady & Greene 
  - 408-484-9228
- MacTools 3.0 
  - Central Point Software 
  - 501-690-8088
- Open Sesame 1.1 
  - Charles River Analytics 
  - 617-491-3474
- Retrospect 2.1 
  - Dantz 
  - 510-253-3000
- Profiles 
  - Dayna 
  - 801-269-7200
- ultraSecure 3.0 
  - urf2 Software 
  - 714-756-5140
- MaxBench 1.1 
  - Ziff-Davis 
  - ZiffNet/Mac

### Other
- FORTRAN 77 SDK 
  - Absoft 
  - 313-853-0050
- Object Master 2.5 
  - ACI US 
  - 408-252-4444
- Data Desk 4.2 
  - Data Description 
  - 607-257-1000
- Ultimage/Pro 2.5 
  - Gra2hlsoft U.S. 
  - 415-737-8665
- LogOnVista E to J 2.0 
  - Language Engineering 
  - 617-489-4000
- Codewarrior 
  - Metrowerks 
  - 514-747-5999
- MacSign 4.01 
  - SoftTeam USA 
  - 410-243-1130
- Prism 3.3 
  - Signal Analytics 
  - 703-281-3277
- Frontier 3.0.2 
  - UserLand Software 
  - 415-369-6600
- Runtime 5.0 
  - Vicom Technology 
  - 604-684-9517
- Mathematica 2.2 
  - Wolfram Research 
  - 217-398-0700
POWER MAC ZIPS PAST 840AV
Native publishing, video, and 3-D applications run twice as fast — and then some.

POWER MACS HOLD the promise of super-fast performance, but chips and MIPS are meaningless without native applications. And nowhere is the computational muscle of the PowerPC chip more promising than in graphic-intensive applications such as those used in desktop publishing, 3-D modeling, and video production.

MacUser Labs compared the speed of Apple’s top-of-the-line Power Mac 8100 to that of the old king of the hill, the Quadra 840AV, by testing several common functions in native versions of Frame Technology’s FrameMaker, Aldus FreeHand, Specular International’s Infini-D, Macromedia’s MacroModel, Fractal Design’s Painter, Strata’s StudioPro, and VideoFusion’s VideoFusion.

In general, the Power Mac ran applications at least twice as fast as the Quadra 840AV. In some tests, the speed gains were even more dramatic. In 3-D applications, rendering (producing a picture of a virtual world) was three times as fast and screen redraw was four times as fast. Aldus FreeHand saw some stunning speed gains. Rotating an image was four times as fast, and a complex path operation had an eight-times speed improvement.

Native Fractal Design Painter, on the other hand, exhibited only a slight speed advantage, due primarily to the 840AV’s DSP, which enables rapid floating-point operations.

Raw speed isn’t the only advantage of these native applications. The Power Macs simply perform better: 3-D models redraw faster, FreeHand previews are snappier, and brushes in Painter have a much more natural feel than in the 680x0 version.

Look for even greater speed boosts next year, when Apple brings out faster 601-based units and the really, really fast 604-based machines. / Sean J. Saavedra

OCR SOFTWARE / Caere’s Speed Reading

THE SPEED ADVANTAGE of a Power Mac is clear if you’re a graphics professional, but what if you work with words rather than images? Despite their inherent speed, native PowerPC word processors still have to wait for you to type something. The real speed gain would be if you didn’t have to type at all.

That’s where Caere’s new native PowerPC OmniPage Professional 5.0 comes in. This OCR (optical character recognition) application significantly benefits from the added processing muscle of the PowerPC chip. In fact, Caere says that OmniPage now runs faster on a Power Mac than on any other personal computer, and it’s as much as 400 percent faster than on a Quadra 900. If you’ve ever drummed your fingers waiting for text recognition, you’ll understand why the Power Mac makes OCR more appealing.

But speed isn’t everything. OmniPage Pro 5.0 addresses two other common OCR pitfalls as well: accuracy and ease of use. To aid with the former, Caere has introduced a new technology, 3D OCR, which uses gray-scale information the scanner provides to improve accuracy on broken, faded, and joined characters. Another new technology, Compound Neural System, attempts to improve recognition of degraded documents (such as faxes and photocopies) by applying algorithms that have been “trained” to handle common recognition problems. These features do slow down character recognition somewhat, but you can disable them during scans of clean text if you prefer.

At the same time it’s making OmniPage Pro more technically sophisticated, Caere is also attempting to make it more user-friendly, by simplifying the interface and making it possible for users to change job settings without having to rescans pages.

$695. 408-395-7000. / James Bradbury
Sony's Sound Choice

LIKE TO BLAST CDs (and CD-ROMs) while working but find that most speakers take up too much desk space? Sony's new all-in-one CSS-8100 Speaker Box supports monitors as large as 17 inches (shown here is Sony's new $499 Multiscan 155f) and can be placed on a CPU or on your desk. The monitor rests on a separate platform that sits above the shielded speakers, so vibrations from thundering bass lines won't affect your display. $129.95. 800-352-7669 or 488-432-0190.

SOFTWARE /

Phyla. Billed as the next step in database evolution, Phyla is an object-oriented database program that lets users define complex relationships among different classes of information. Linking data types is as easy as dragging and dropping. $495. Mainstay. 805-484-9400.

Omnis 7. The latest revision of the Omnis 7 database-application development package adds cross-platform support for Power Macs, OS/2, Windows NT, and three flavors of UNIX — all stemming from one source code. This product means that Omnis developers can now create run-time applications at no additional charge. $5,000. Blyth Software. 415-571-0222.

Prince of Persia 2: The Shadow and the Flame. This sequel to Jordan Mechner's successful action game features cinematic-style animation and treacherous pitfalls as the title character travels far and wide to — once again — save the beautiful princess. $40. Broderbund. 415-382-4600.

Amazing Animation. With this application from Claris' ClearChoice line, children can create animated presentations that have moving pictures and sounds. You create an animation by selecting an item, clicking on it, and dragging it across the screen. The package includes backgrounds, animated characters, sound effects, and QuickTime support. $59. Claris. 408-987-7000.

bundled with Hayes' Smartcom software. $569. 404-840-9200.
You know, there's an easier way to see what's going on inside your Macintosh.

If you really want to keep an eye on the health of your Macintosh, look no further than Apple's Personal Diagnostics. The most comprehensive testing and repair program ever created for the Macintosh, to help keep it running trouble free. It's incredibly easy to use, performing a multitude of tests with just a click of the mouse. From complete logic board and drive testing to in-depth system software analysis to repairing damaged disk directories, even alerting you to problems before they occur. To find out more, call 800-538-9696, ext. 250, for the Apple reseller near you. And see the power lurking beneath that mild-mannered Macintosh exterior. The power to be your best.

Introducing Apple Personal Diagnostics for Macintosh.
It may sound like a party, but the benefits are far more substantial. You see, FileMaker® Pro Server lets you and your entire workgroup do more, more quickly. (Not a bad thing to celebrate.)

Maybe your company’s expanding, where more users will need to access files simultaneously. Or perhaps you’re looking for more power to speed existing operations. FileMaker Pro Server is here, at your service. It’s a high performance database engine, designed to dramatically accelerate multi-user file sharing over your network. In fact, its sophisticated client/server technology can speed database performance by up to 100 percent over FileMaker Pro 2.1, and increase multi-user file access from 25 to 100 simultaneous users per file.

Connecting FileMaker Pro Server to your existing network is simple. It can support both Macintosh and Windows users. And while it’s compatible with standard Mac systems, including Centris and Quadra, it’s also accelerated (native) for Apple’s new Power Macintosh systems.

Due to its simple plug and play design, the Server can be run by anyone in your organization, not just network administrators or those with database experience. To begin sharing files, simply take any FileMaker Pro file off a desktop machine and drop it on the Server. You needn’t worry about modifications or upgrades. It’s all in one box.
Comprehensive, graphical administration features ensure that the administrator can quickly and easily monitor file-sharing over the entire network, as well as Server performance.

You might be wondering if FileMaker Pro Server can stand up to the daily rigors of your business. Rest assured. We’ve already put the product through our own torture chamber: the Claris® Testing Lab. We experimented with a range of Mac and Windows computer models, running them in a wide array of network and file configurations—up to 100 computers at a time.

We ran tests and made refinements for a full six months. So as more and more of you become networked together, you’ll find fewer clock and coffee cup icons on your screens.

So come on! Grab a FileMaker Pro Server and get the whole gang working more productively!

It’ll definitely be more satisfying than the company picnic. (Sorry, onion dip and chips not included.)

You can get FileMaker Pro Server now from software resellers all over the world. If you’d like the name and address of the dealer nearest you, call Claris Customer Assistance at 1-800-3CLARIS.
Mitsubishi's DiamondTron aperture grille CRT ushers in a new era in high performance monitor design for all sophisticated Macintosh® II and Quadra® user applications.

With a big 21-inch screen (20° viewable), the DiamondTron CRT is the only display truly suited for WYSIWYG "two-page" spreads, pre-press, DTP, and other critical graphic design applications.

The DiamondTron CRT also delivers superior performance. Its new hybrid design incorporates a vertically-flat, square-cornered screen with an aperture grille mask and optical quality coating to minimize glare while increasing brightness. Plus Mitsubishi's proprietary NX-DBF™ (Dynamic Beam Forming) electron gun provides exceptional center-to-corner focus and brilliant edge-to-edge clarity. And the exclusive Diamond Control for Macintosh software lets you easily set up the expanded array of monitor adjustment functions on-screen, including full-power management capabilities for auto-dimming or shut down.

Best of all, you can get all the benefits of advanced DiamondTron technology in our Diamond Pro 21T monitor for just $2,525 MSRP.

For more information about DiamondTron, the Diamond Pro 21T monitor, or Diamond Control, call us at 1-800-843-2515. In Canada, call 1-800-387-9630. For immediate product specifications, call Mitsubishi Quikfax at 1-800-937-2094.
IF YOU THOUGHT razzle-dazzle presentations required a mule train's worth of hardware, think again. Mobile presenters are finding improved color and image quality wrapped in ever lighter and more portable packages — a welcome trend in presentation hardware. Two recent offerings, In Focus' ingenious new PanelBook 530LS portable LCD projection panel and Proxima's Desktop Projector 2800, offer distinctly different advantages to mobile presenters.

The PanelBook is a lightweight little wonder that doesn't even require you to bring a PowerBook along to deliver your presentation. The Proxima projector — considerably heavier than the PanelBook, because it rolls a projector and an LCD panel into one unit — offers good color quality and is considerably lighter than most competing desktop projectors.

In Focus PanelBook 530LS
Measuring a compact 11.8 inches long, 9.5 inches wide, and 2.2 inches high, the slimmer PanelBook weighs less than 6 pounds. It attaches to a Mac's video output and displays what's visible on the Mac's monitor. To project the image onto a large screen, you place the PanelBook on an overhead projector. You need a projector with enough lumens (3,000 to 4,000) to project the LCD image onto the screen.

The PanelBook boasts an active-matrix color LCD panel with a color palette of 1.4 million colors. The model we tested supports NTSC, PAL, and SECAM, so you can project video images as well. Audio support is not included.

The real beauty of the PanelBook — in addition to the quality of its LCD panel — is In Focus' LiteShow II software, a built-in presentation application that turns the PanelBook into a self-contained presentation device. This means you don't have to lug a PowerBook along to present your slides; however, you do need to create the slides on a Mac first, display them one at a time on the PanelBook, and digitize them with LiteShow II, which is rather time-consuming and cumbersome.

Once you've done that, however, not only can you present your slides with LiteShow II but you can also use the software to make basic modifications and add transition effects. LiteShow II can display thumbnails of your slides on the PanelBook, so you can change the order, add effects, and set the timing. You can store 15 to 50 slides on a floppy disk (DOS-formatted, we're sorry to say), depending on their file size. A proprietary compression scheme ensures that most presentations will fit on a single floppy disk.

To manage the LiteShow II software during a presentation, you use the 11 buttons on the PanelBook's remote-control device, in conjunction with on-screen selections. It's not exactly point-and-click, but the buttons work quite well once you get used to them. Overall, we found LiteShow II easy to use, although it does take time to shuttle through the selections.

You can also use a Mac application to convert your presentation to LiteShow II format. The $75 LiteTools II software offers a more familiar and convenient conversion method than LiteShow II does (because it lets you work with your Mac), but it's pricey, especially considering that it performs only the basic functions you need to transfer a presentation to LiteShow II. It's no replacement for your presentation software.

To use LiteTools II, you must first export...
slides from your presentation program as PICT files and bring them into the LiteTools II application. You can then add transitions, rearrange the order of the slides, and save them in LiteShow II format on a DOS-formatted floppy disk. LiteTools II can format, read, and write DOS disks — PC Exchange is not required. You can also format disks on the PanelBook, and the LiteTools II application will recognize them on your Mac.

**Proxima Desktop Projector 2800**

The Proxima DP2800 is one of the most portable desktop projectors we've seen. It weighs 19.5 pounds and is 17 inches long, 13.1 inches wide, and 5.9 inches high — just the right size to fit in a large briefcase. A Y-cable connects the projector to the Mac's video output.

Like the PanelBook, the DP2800 features an active-matrix color LCD panel, but it's capable of displaying 2 million colors — more than the PanelBook. The DP2800 is compatible with VGA, EGA, CGA, and VESA 640×480-pixel displays (you must purchase EGA and CGA cables separately). For those who want to project a video image, the DP2800 also supports NTSC, PAL, and SECAM.

For the ultimate multimedia experience, the DP2800 also comes wired for sound — it's equipped with two computer audio-input and two video audio-input jacks, a mini stereo jack for low-level stereo output, and two internal stereo speakers.

You control the DP2800's settings (contrast, brightness, color depth, and so on) with the buttons on the front of the unit or with the remote-control device.

An added benefit of working with Proxima's projector is the opportunity to use the company's $495 Cyclops Interactive Pointer System. The Cyclops pointer lets you control your presentations from the images the DP2800 projects, so you're not chained to your keyboard and mouse. You can select icons, menus, and text by clicking directly on or near the projected image of your Mac's screen. The wandlike Cyclops works its magic by using a video camera located close to the projector's lens. The camera maps the position of the wand tip's red LED onto the Mac's screen and conveys the information to the Mac via the ADB port.

Be prepared for a learning curve with the Cyclops. We didn't have a problem working with menus, selecting buttons, or dragging items, but more-precise maneuvers, such as clicking on the close box, marking check boxes, and moving sliding bars required lots of practice. Moreover, before you can use the Cyclops, you must first align and calibrate the camera with the projected image. That's easy enough, but if the projector moves slightly during your presentation, you'll have to recalibrate, which can take a few minutes.

**Image Is Everything**

To evaluate the image quality of the PanelBook and the DP2800, MacUser Labs developed three test documents — a color Aldus Persuasion presentation incorporating simple text and graphics, a Microsoft PowerPoint presentation with color gradations and detailed graphics, and a photographic image with flesh tones. Our test platform was a PowerBook 160, and we used the In Focus OverView 410P overhead projector with the PanelBook. Each device was set to produce the highest image quality possible.

Although neither the PanelBook nor the DP2800 can match the quality of a desktop monitor, we found each more than adequate for business presentations. Overall, we found the DP2800's image quality superior to the PanelBook's — colors appeared more vibrant and gradations were smoother, probably due to the DP2800's integrated projection system and larger color palette. For photographic images, both the DP2800 and the PanelBook displayed consistent flesh tones and maintained a good level of detail, although the DP2800's images tended to be more vibrant.

**The Bottom Line**

With their most recent presentation-hardware introductions, both In Focus and Proxima have made great strides toward improving the lot of mobile presenters. Choosing the device that's right for you depends on your priorities. If color quality takes precedence over portability, your best bet is the Proxima Desktop Projector 2800. It supports a wider range of colors than the In Focus PanelBook 530LS and is easy to set up and use. Proxima's Cyclops Interactive Pointer System is an added plus.

On the other hand, if you want the more portable device, you'll find the In Focus PanelBook 530LS to be lightweight, innovative, and capable. And with its built-in LiteShow II presentation software, the PanelBook can display your presentation without requiring you to take along a PowerBook. You can even use the software to make last-minute changes to your presentation without a computer. The one thing you will need is a bright overhead projector that's PanelBook-compatible. / Roman Victor Loyola
Introducing the on-line service for people who have never tried one. And for people who have.

Elegant graphic interface makes it easy to navigate and find information.

Keep up-to-date with the latest from major news sources.

Easily communicate with users of other electronic services, including the Internet.

Welcome to e•World

Your direct connection for the most in-depth Apple and third-party information and support anywhere.

Be more successful with relevant business, financial, and management insights.

Be part of a global community of eWorld users.

Enter eWorld™ now with this free starter kit.

If you've ever tried another on-line service, you'll notice the difference in eWorld immediately. The brilliant graphics are the kind you'd only expect from Apple. And the familiar interface makes it easy to go wherever you choose and find whatever you need.

eWorld puts you in touch with a global community of Macintosh users and with people on other electronic mail services, including the Internet. It's also the best place to get the most in-depth Apple product and support information. And whether you want to access key business information or conduct on-line meetings from anywhere, eWorld is the right place to be.

There are hundreds of other reasons why you'll want to try eWorld. But rather than tell you about them, we'd like to show you. Just send for your free eWorld starter kit, including software and special registration information so you can sign on immediately. And get ready to enter a world like no other.

I'd like to know more about the exciting, new on-line service from Apple. Please send me the eWorld starter software package—a $19.95 value—free.

Name

Company Name

Home Address

City

State

ZIP

Phone

Check one: □ 1MB Disk □ 800K Disk

Just return this coupon to:

eWorld Starter Kit

Apple Computer, Inc.

P.O. Box 4493

Bridgeton, MO 63044-9718

© 1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. eWorld and the eWorld logo are trademarks of Apple Computer, Inc. The World logo is copyrighted in the name of Apple Computer, Inc. Offer is subject to change without notice. Offer valid only in the U.S., its territories, and the District of Columbia. Offer expires 12/31/94. Offer good while supplies last. "NOTE: To enter eWorld, you'll need the free eWorld software, an Apple Macintosh computer with system software version 6.6.1 or later and at least 4 megabytes of RAM, a phone line, and a Hayes compatible modem."
**TextBridge / Xerox's low-cost OCR software packs a passel of high-performance features.**

At a price you might expect to pay for a utility, TextBridge OCR (optical character recognition) software combines low cost with high accuracy in a niche previously known for its sky-high prices and specialized applications. TextBridge's attractive combination of value, basic features, and ease of use may even edge OCR toward the realm of mainstream business applications.

**Buyer's Bargain**

At only $99, TextBridge may have a bargain price, but it competes with the big guns of OCR — such as Caere's OmniPage Professional, which costs over seven times as much — when it comes to performance. It's true that TextBridge doesn't have some of the same advanced features as OmniPage Professional, such as a built-in graphics editor or the ability to save training settings, but TextBridge surprised us with its dead-on accuracy (close to 99 percent at times), speed, and simple elegance.

TextBridge's accuracy is especially good if you use a Hewlett-Packard scanner, because the program supports HP's AccuPage technology, which is built into Hewlett-Packard scanners. We found that, in some respects, TextBridge rivaled the abilities of high-end OCR packages — for instance, recognized text files saved in the Microsoft Word RTF format and then opened in Word retained a welcome amount of formatting, including alignment, point size, and text style (bold and italics).

Admittedly, TextBridge competes more directly with Caere's $119 OmniPage Direct. But although this Caere product lets you scan text and acquire it from within almost any program instead of running separately as an application as does TextBridge, OmniPage Direct lacks many of the high-end features — interactive verification, the ability to recognize TIFF files, a spelling checker, and per-job trainability — that TextBridge has.

**Easy and Direct**

It took us less than ten minutes to set up TextBridge and start recognizing scanned text. The initial dialog box allows you to choose your source (either a scanner or an already scanned-in image) and your output format (a word-processing format such as Word or MacWrite or an image format such as TIFF or PICT). You decide whether you want to preview each page and interact with the recognition process, using TextBridge's Verifier. You can also specify the quality of the document you are scanning in (standard, fax, or dot-matrix), change the page orientation, add specialized words to a user dictionary, and decide whether you want to control which parts of the page TextBridge should recognize.

If you set the program to automatically zone your page, it breaks the page into text blocks. During the optional preview stage, you can accept those zones or respecify them manually. TextBridge will ignore any part of the page not designated as a text zone.

If you chose the Verifier option, a Verifier window appears during the recognition process and stops on words it's uncertain of and lets you verify or correct its best guess. The words are highlighted on the preview page so that you can see them in context.

You can even train TextBridge, albeit only temporarily. After you've verified the first page or two of a difficult document such as a fax, TextBridge will remember the look of certain words and recognize the rest of the pages more accurately and quickly. Unfortunately, you can't save these settings and use them for other documents.

When it's finished recognizing a page, TextBridge stops before it goes on to the next one. Once you've dealt with as many pages as you want to, you can have TextBridge save them in a file in your preferred output format. You can also save any unrecognized scanned pages as image files for later recognition. And the program supports batch processing of pages saved as TIFF or PICT image files.

Unlike many programs that support AppleScript, TextBridge provides documentation that fully describes its support for this feature. It even provides sample scripts. For example, the In Basket Watcher is an add-on or enhancement to word processing. For instance, the In Basket Watcher script monitors a folder, watching for new TIFF files, a common format for saved digital faxes. When a new TIFF file appears, the script automatically starts TextBridge and has it recognize the file, saving the text to another folder. TextBridge is also AppleScript-recordable, so you can record scripts in addition to writing them from scratch.

**The Bottom Line**

At $99 and with a 30-day, no-nonsense money-back guarantee if you order it directly from Xerox Imaging Systems, TextBridge gives you the ideal way to find out if OCR technology is what you need. Let's face it, to a large extent, OCR simply functions as an add-on or enhancement to word processing for most people. We applaud the fact that Xerox Imaging Systems acknowledges this and has priced this product accordingly.

/ Gregory Wasson

**TextBridge**

Ratings: ★★★★
List Price: $99.
Cons: Trainability limited to current file.
Reader Service: Circle #403.
Smartcom II 4.0 / Hayes teams sophisticated telecom features with a simple-to-use interface.

MAKING ON-LINE connections just got easier, with the latest release of Smartcom II. Version 4.0 of Hayes' highly rated telecommunications software boasts an improved interface as well as support for Apple events and the PowerTalk Mailer. The Smartcom II software works with just about any modem, including the new V.44 28,800-bps models, and it connected properly with every system we called.

Dialing In
Smartcom II's graphical dialing interface makes it one of the simplest telecom programs to use. To connect, you simply click on a telephone icon and choose the number to dial. With version 4.0, phone-number lists for each Smartcom II document can incorporate as many as eight phone numbers, a useful feature for services and remote sites that use more than one line.

Once we were on-line, our sessions ran smoothly, without interruption or unusual slowdowns. Controls let you slow the scrolling speed of text files in the Online Window, so you can browse through. If you're in a hurry, you can copy and save files for later reading.

Brief on-line sessions can be copied to Smartcom II's new Communications Editor. If you're picking up e-mail from a system that doesn't support off-line mail readers, for example, you can quickly dump your daily mail into the Communications Editor and read it off-line at your leisure. You can also use the editor to save user lists and bulletins. You can save text in a wide variety of word-processing formats.

The Communications Editor accommodates only 32,000 characters, so it can't handle long sessions or long documents. Fortunately, if you're dealing with something that exceeds this length limit, you can copy the entire contents of the buffer with a keystroke and paste the text into a word-processing document. For most on-line activities, however, the Communications Editor is a handy tool.

Smartcom II's Autopilot feature lets you create custom scripts and link them to buttons. The scripts can automate virtually any task, from logging on to downloading files. Buttons can also hold snippets of scripts or frequently used lines of text, such as a sign-off message or your credit-card number. You can create scripts by having Smartcom II record sequences as you perform them, or you can use the Autopilot editor to write them. We found Smartcom II's scripting features slightly easier to use than MicroPhone Pro's or White Knight's.

New with version 4.0 is the ability to assign icons to buttons. The program provides a library of prebuilt color icons as well as scripts for logging on to on-line services such as CompuServe and GEnie. With just a few easy operations, we were able to attach a prepared script to a button, customize the script, and assign an icon to the button.

Uploading and downloading files is fairly painless with Smartcom II. We had no trouble sending or receiving files, using any of the transfer protocols supported, including Xmodem, Ymodem, Zmodem, Kermit, and CompuServe B Plus.

In addition to the ubiquitous TTY and VT emulators, Smartcom II supports ProTel and Minitel emulation. The program also handles ANSI color graphics, an invaluable feature for those who call PC-based bulletin boards.

Advanced Features
Smartcom II is no substitute for such specialty programs as Qualcomm's Eudora, an excellent tool for Internet access, nor does it provide the same level of sophisticated functionality as MicroPhone Pro, with its fax tools and TCP/IP support. But Smartcom II is surprisingly powerful for a telecom program that's so easy to use.

For starters, version 4.0 works with Apple's PowerTalk mail system, so you can send, receive, and forward e-mail from any addressable location, including your corporate e-mail system. Apple-events support lets you use Smartcom II's features from within other Apple-events-savvy applications, such as HyperCard, as well as automate such tasks as virus checking of newly downloaded files.

With Smartcom Canvas, a built-in graphics application, you can create simple diagrams on your desktop and send them electronically. You can even create graphics interactively while you're on-line with another Smartcom II user. If you've ever tried to explain a knotty networking problem to a colleague over the Internet, you'll appreciate this tool.

Last, several advanced modem settings, such as the ability to turn error-correction protocols on and off, are available for users of Hayes modems.

The Bottom Line
Simple to use yet powerful, Smartcom II remains a good choice for novices and sophisticated users alike. Beginners will find the program's default settings and button interface helpful. Scripting and other advanced features are there when you're ready to grow. With its affordable price and excellent feature set, Smartcom maintains its position as one of the top telecom programs for the Mac. / Mitzi Waltz

Smartcom II for the Macintosh Version 4.0

Ratings: ★★★★★
List Price: $149.
Cons: Lacks fax tools and TCP/IP support.
Company: Hayes Microcomputer Products, Atlanta, GA; 404-441-1617.
Reader Services: Circle #404.
Tektronix Phaser 220i / New 600-x-300-dpi printer gives thermal-wax printing a face-lift.

NOT CONTENT TO REST on their laurels, the print wizards at Tektronix have followed the success of the popular thermal-wax Tektronix Phaser 200i with the next-generation Phaser 220i. The 220i offers all the features of its Eddy Award-winning predecessor, including impressive speed and the ability to print on plain paper. What sets the newcomer apart is top-notch color output.

Rich Color
The Phaser 220i achieves its good-looking output by combining a new 600-x-300-dpi print engine with innovations in color technology. Half-stepping, a technology long used in the monochrome world but relatively unknown in the color arena, helps enhance resolution, as does Tektronix’s improved halftoning method. Test images printed with the 220i (including those printed in standard-quality mode) were vastly superior to the 200i’s — colors were richer and more vibrant, text darker and more readable.

Unlike the 200i, the 220i has three settings: high-quality 300-x-600 dpi, standard resolution, and a midrange setting that saves time by half-stepping the engine without rendering the image at full resolution. You have three ways of controlling the settings — with hardware switches; with a printer utility; or via the Print dialog box, if you’re using a PostScript Level 2 driver.

At the high-quality setting, photographic images and graphic elements look great — the halftone dots that characterize most thermal-wax output are barely noticeable. Although you probably won’t mistake 220i output for that of a dye-sublimation printer, you might have to look twice to spot the difference. The 220i’s color-matching capabilities are also superior to those of its predecessor. Built-in color tables allow the printer to sync its color gamut with that of your monitor or of a standard offset press.

Although the 220i normally prints on coated stock, using a three-color ink roll, you also have the option of printing to standard copier or laser-printer paper. In order to print on uncoated paper, the 220i uses a ColorCoat ink roll, which applies a clear primer layer to the page before it applies the colored-wax inks.

Solid Performance
To find out how the Phaser 220i’s speed compared with that of the 200i (the fastest thermal-wax printer in our April color-printer roundup — see “Color, Inc.,” April ’94, page 76), we used the same series of tests we used for the April article. Like the 200i, the 220i is equipped with a 2-ppm engine and a 24-MHz AMD 29000 RISC processor, but its optimized PostScript controller and improved motors give it an advantage for printing certain types of documents.

At standard resolution, we clocked the 220i and the 200i at about two minutes each for printing a one-page Adobe Illustrator document and about three minutes each for a five-page Microsoft PowerPoint document. But the 220i was 68 percent faster than the 200i at printing the QuarkXPress page and a whopping two and a half times as fast at printing the Adobe Photoshop document.

The results weren’t quite as impressive at high resolution — the 220i took more than twice as long as the 200i to print the PowerPoint and Illustrator documents. That’s a slight drawback if you plan to print primarily presentations. And the 220i was about 60 percent slower at the high-resolution setting than at the standard setting when printing the QuarkXPress page and the Photoshop document. However, for those documents, the 220i was still faster than the 200i. Moreover, all of the 220i’s speed ratings are well within the range of the thermal-wax printers we’ve tested.

Out of the box, the Phaser 220i is network-ready. It comes standard with serial, parallel, and LocalTalk ports; optional Ethernet support for Novell NetWare and EtherTalk connectivity costs $695. The base model ships with 10 MB of RAM, upgradable to a maximum of 14 MB.

We were impressed with the 220i, but we have one complaint — it’s pricey. The printer’s list price is about $6,000, and memory and networking options will set you back another $1,000 or more. You can opt for the less expensive $3,995 Phaser 220e, but you’ll have to forgo the memory upgrade and the EtherTalk option.

The Bottom Line
For printing good-looking color-presentation graphics, the thermal-wax Tektronix Phaser 220i is your best bet, hands down. Solid overall performance, excellent output quality, and support for plain-paper printing make it a tough act to follow at any price. / Anita Epler

Tektronix Phaser 220i
Rating: ★★★★★
List Price: $6,995.
Cons: Price; Speed suffers at high resolution.
Company: Tektronix, Wilsonville, OR; 800-885-6100 or 503-682-7377.
Reader Service: Circle #405.
Face to Face / The first document-conferencing software for the Mac sticks to the basics.

DOCUMENT-CONFERENCING software was only a gleam in developers' eyes before 1994. Now Crosswise has taken the basic concept — live markup and annotation of documents viewed on remote networked Macs — and produced Face to Face, an easy-to-use document-collaboration tool that should be especially appealing to those who work in higher-education and publishing environments.

Meeting One-on-One
The idea behind Face to Face is startlingly simple: Present a shared document on LocalTalk, EtherTalk, TokenTalk, modemedial-up, or ISDN networks, and give users of two peer-to-peer connected Macs markup and annotation control. Face to Face does not use TV cameras, specialized network boards, or other fancy gymnastics.

To share and revise a document during the meeting, you must first convert it to the Face to Face ImageDocument format, a representation of what the document might look like printed on one long piece of paper. To convert a document, you open it, select the Face to Face Chooser extension, print the document to the ImageDocument format, and save it to your hard disk.

Then you set up a Face to Face address book that includes all the remote Macs with which you may want to confer. If you're using System 7 Pro, Face to Face will substitute the System 7 Pro PowerTalk catalog for its own address book. Each Mac must have its own copy of Face to Face installed, along with the Apple networking-support extensions that come on the Face to Face installation disk. You choose whether you want to conference over a local AppleTalk network or over a modem.

Beginning the Teleconference
Starting a meeting is as simple as calling your meeting partner on the phone and clicking on the Call a Meeting button. You select the documents for the meeting from a list of documents in ImageDocument format and select your meeting partner from the address book. Your partner launches Face to Face and clicks on the Waiting for a Call button. Once a successful connection has been made, the documents to be discussed have to be downloaded, which can take several minutes if they are large and the network is slow. Even though Face to Face can work at 2,400 bps, we strongly recommend using at least 9,600-bps modems.

Both of the meeting partners, designated as the controller and the participant, will see the Face to Face document window, in which they can make notes and annotations. A document may have several markup layers, such as a shared layer plus individual layers in which each partner can make notes. Each of these layers appears in a Layers list window. The controller has immediate control over the shared layer for making notes and annotations. The participant may add annotations, notes, and comments to his or her own layer. You can make the participant's layer the shared markup layer, simply by selecting it in the Layers list window and clicking on the Mark Up button. Basic annotation tools include various selection tools, a pencil for making freehand annotations, and electronic reminder notes.

There are several limitations when you're working with Face to Face and PowerTalk. You cannot use PowerTalk's catalog groups from within Face to Face, nor can you launch a Face to Face meeting from the PowerTalk In Tray. Face to Face also can't deal with multiple electronic entries in your PowerTalk catalog, so it will default to the first entry it finds unless you've set an address preference.

Crosswise calls Face to Face the “first cross-platform document conferencing system,” but currently the program works only on the Mac. (Version 2.0 will support Windows, and Crosswise says upgrades will be free.)

Two remote-control products, ScreenLink and Timbuktu, allow you to remotely control another Mac over a network, so you can get many of Face to Face's functions with either of them simply by controlling the remote Mac and the documents you want to discuss via conferencing. Since they require you to launch applications over a network, however, products such as Timbuktu can be considerably slower than Face to Face, and both meeting partners need to have all the same applications. We got more shared-document work done faster with Face to Face than with ScreenLink or Timbuktu, even when we factored in the time it took to save documents in the ImageDocument format first.

The Bottom Line
Should you buy Face to Face? The program's biggest competition is the fax machine — people fax documents to each other and then chat over the phone. But Face to Face is a winner for environments, such as higher education and publishing, that involve a lot of long documents and remote editing. If it weren't so expensive, home-based businesses as well might find Face to Face a convenient alternative to faxing. / Don Crabbe

Face to Face 1.1
Rating: ★★★★☆
List Price: Two users, $295 each; ten users, $236 each.
Pros: Good document-collaboration tools. No extra hardware needed.
Cons: Limited to two participants per meeting. Lacks cross-platform capabilities. Expensive.
Company: Crosswise, Santa Cruz, CA; 800-747-9060 or 408-459-9060.
Reader Service: Circle #406.
Canon IX-4015 / Small but mighty color scanner teams speed with good image quality.

WHAT'S SMALLER THAN a bread box but big on image quality? The Canon IX-4015, Canon's first scanner for the home and small office. Canon has teamed up with another powerful imaging player — Light Source, maker of the popular Ofoto scanning software — to create a low-cost color scanner with performance well above what you'd expect for the price. Poised to compete big on image quality? The Canon IX-4015, scanner teams speed with good image quality.

Compact Design
The first thing you notice about the 24-bit Canon IX-4015 is its small footprint — the scanner measures only 11.25 x 15.75 inches. Slightly bigger than a big-city phone book, it's about half the size of competing products and can handle documents as large as U.S. letter/A4.

From the outside, Canon's scanner looks pretty typical (except for its size, of course), but the company has made some interesting innovations in the IX-4015's scanning hardware. Instead of the usual fluorescent lamp, Canon uses a xenon bulb, which the company claims is less prone to flickering and doesn't need to be replaced. In our tests, the light source proved unusually consistent and stable over time.

To see how the Canon IX-4015 stacks up against the competition, we put it through the same suite of tests we used in our most recent roundup of low-cost color scanners (see "Low-Cost Color Scanners," February '94, page 129). To evaluate image quality, we scanned two color images and compared them to scans from the La Cie Silverscanner II, the winner in the February article. The Canon IX-4015's color fidelity was good, although we found that the scanner had a tendency to add a slight color cast to image highlights — something a reasonably skilled user could easily correct. Still, the scans were remarkably sharp and crisp.

You might expect that image quality as good as the Canon IX-4015's would exact a price in speed. Not so — the single-pass IX-4015 is a veritable speed demon. Scanning a 4-x-5-inch color photograph in slightly more than 30 seconds, the IX-4015 was two and a half times as fast as an Agfa StudioScan and nearly twice as fast as the Apple Color OneScanner, which had the fastest engine in our February roundup. Canon attributes the IX-4015's speed advantage to another technology innovation: Unlike scanners that move the lamp, lens, sensors, and mirrors during a scan, the Canon IX-4015 moves only the mirror and the lamp — the optics remain stationary.

The one drawback of the Canon IX-4015 is its Photoshop plug-in, which suffers from an unacceptably cumbersome user interface. Unlike nearly all competing products, the IX-4015's plug-in doesn't allow you to numerically define the area to be scanned — you're forced to use a less precise click-and-drag marquee for selection. Furthermore, the software measures the selected area in pixels rather than inches. Then, after it makes a scan, it trashes your manually entered scan parameters as well as the prescan image, so you're forced to reinvent the wheel for every scan.

Ofoto to the Rescue
Fortunately, Canon followed the lead of other low-cost-scanner makers and bundled Ofoto 2.0 with the IX-4015, so novices have an alternative to the frustrating plug-in. With Ofoto, getting a good scan can be as simple as clicking on the Autoscan button. The software does the rest, balancing color and brightness, straightening skewed images, eliminating moirés, and sharpening the image — no time-consuming rescanning and image tweaking is necessary. Built-in calibrations allow Ofoto to optimize scans for specific printers. The Ofoto software also provides tools for creating custom calibrations, correcting common photographic imperfections (color-cast problems, poor focus, and exposure error), and doing basic image editing.

In order to use the Canon IX-4015, you need at least a Mac SE, 4 MB of RAM, System 6.0.7 or later, a hard drive with a minimum of 20 MB of free disk space, and an 8- or 32-bit display card.

The Bottom Line
The news for entry-level scanner users keeps getting better. The new Canon IX-4015 boasts speed, image quality, features, and pricing that put it in competition with the big boys. And the scanner's small footprint makes it an especially attractive choice for home and small-office use. / Anita Epler

---

**Canon IX-4015**

**Rating:** 4 1/2 stars

**List Price:** $1,169 (with Ofoto 2.0)

**Pros:** Excellent speed. Small footprint. Good image quality.

**Cons:** Minor color-cast problems. Poorly designed Photoshop plug-in.

**Company:** Canon Computer Systems, Costa Mesa, CA; 800-848-4123 or 714-438-3000.

**Reader Service:** Circle #407.
Spyglass Plot / No data set is too large for Spyglass' new line-graphics plotting tool.

AIMED AT SCIENTISTS and engineers, the latest data-analysis tool from the scientific-visualization experts at Spyglass handles as many data points as your Mac's memory allows. Spyglass Plot completes the Spyglass family of data-visualization tools, bringing the same power and well-designed interface to analyzing column data that Spyglass Transform and Spyglass Dicer bring to analyzing matrix/image data and volumetric data, respectively.

The Plot Thickens
Spyglass Plot is so easy to use that we figured it out without even cracking the manual. The interface is well designed, simple, and straightforward. We especially liked the intuitive graph-annotation and text-modification tools.

To help you visualize your data, Spyglass Plot creates five types of plots: line graphs, double-Y plots, color scatter plots, parametric plots, and error-bar plots (such as those used to represent the highs and lows of the stock market). All plots are based on one-dimensional data sets that take the functional form \( a = f(x) \). If you need to analyze 2-D or 3-D data, you'll need the $595 Spyglass Transform or the $695 Spyglass Dicer, respectively.

As a robust data-visualization tool, Spyglass Plot does a lot more than simply create one-dimensional plots. Curve-fitting techniques coupled with a variety of numerical functions (including trigonometric, hyperbolic, arithmetic, and fast Fourier transforms) help you analyze and massage column data. And Spyglass Plot is designed to handle reams of data — the program's spreadsheet-style display window supports as many as 32,000 columns, and the total number of data points the program can plot is limited only by memory.

Getting data from other programs into Spyglass Plot is straightforward. In addition to generic ASCII text and binary files, the program can read many file formats, including the scientific HDF and HDF VSET formats, as well as standard spreadsheet files. Spyglass Plot additionally provides tools for enhancing graphic output once you've imported and plotted your data. You can customize each plot by using different line types and weights, colors, symbols, fonts, labels, legends, and titles. In short, you won't have to export raw plots to a graphics program to make them presentable. You can print from Spyglass Plot on color and monochrome PostScript printers and can export plots as EPS, PICT, or HDF files. Naturally, the program also fully supports the Mac's Clipboard.

Visualization analysis can be tedious, due to the repetitive task of comparing data sets, but Spyglass Plot provides excellent macro-programming features for automating the process. We had no trouble learning to automate our test analyses once we'd read the manual and experimented with the program's sample data sets. You can create macros to control virtually every function of the program.

And because Spyglass Plot uses the same macro language as Spyglass Transform, you can share macros, as well as data files, between the two programs. The Apple event-aware Spyglass Plot also works with AppleScript and UserLand's Frontier.

The $295 Spyglass Plot package comes with two versions of the program — one with FPU support and one without. Spyglass recommends using at least a 68020 color Mac and 4 MB of memory, but based on our tests, we recommend at least a 68030 Mac and 8 MB of memory. You'll get the most acceptable performance on a 68040 Mac.

We tested both versions of Spyglass Plot on a Mac IIsi, a Quadra 650, and a Power Mac 8100. The program zipped along nicely on our Quadra 650. Plots appeared seconds after we issued the plotting command, even when our sample data ran to thousands of data points. We never felt as if we were waiting for Plot to catch up with us. And when we modified data in worksheets, linked plots updated quickly.

We ran into some problems running the program on the Power Mac, however. The FPU version of Spyglass Plot not only failed to recognize the Power Mac's built-in FPU but also simply wouldn't run at all. An on-screen message advised us that we needed a more powerful Mac! And although we were able to run the non-FPU version on the Power Mac, the software's speed was unacceptably slow. According to Spyglass, a native PowerPC version may be available by the time this review appears.

Analyzing large sets of columnar data is nearly painless with Spyglass Plot, the newest member of the powerful Spyglass family of data-visualization tools.

The Spyglass Plot manual is straightforward and easy to understand, although we'd like to see it include additional sample data sets and macros. A UNIX version of the program is also available.

The Bottom Line
Spyglass Plot is a worthy addition to the Spyglass family of data-visualization tools. Its thoughtful interface design and time-saving macros make complex data analysis nearly painless. And the software handles large data sets with ease. All in all, the program's plotting and visualization features are well executed, easy to learn, and simple to use, even if you've had little experience with data visualization. / Don Crabb

Spyglass Plot 1.0
Rating: 4.5/5
List Price: $295.
Pros: Easy to install, learn, and use. Can handle large data sets. Excellent data-import and -export facilities.
Cons: Poor performance on Power Macs.
Company: Spyglass, Savoy, IL; 217-355-6000.
Reader Service: Circle #408.
PixelPaint Pro3 / Three-in-one paint tool gets high marks for versatility.

PAINTING, RETOUCHING, and compositing images are all fair game for Pixel Resources' PixelPaint Pro3. The latest version of this veteran paint tool combines features found in Adobe Photoshop, Fractal Design's Painter, and Specular's Collage. PixelPaint succeeds admirably in some areas — most notably special effects — and offers good

Create composite images or isolate objects for individual editing, using PixelPaint Pro3’s new Pixel-Layers feature. Each marqued selection shown here is a floating Pixel-Layers object.

value for the price, but we found it’s best used to complement, rather than to replace, any of those other programs.

Pixel-Layers

The most noteworthy addition to PixelPaint is the Pixel-Layers feature, which lets you create multiple floating selections (similar to those in Painter X2) within a single document. The selections are live objects that float over the background — you can edit or move them independently and combine them to create complex composite images.

But although Pixel-Layers selections are easy to create, they’re not nearly as flexible for complex compositing as objects in Painter or Collage. For example, PixelPaint lacks Painter’s list view for naming and arranging layers and Collage’s ability to undo any operation you’ve performed on a layer.

Natural-media effects are new to PixelPaint. The customizable impressionist brush simulates the effect of dabbing with a paintbrush, and there are tools that simulate pastels, graphite, and charcoal. The texture brush responds to PixelPaper texture selections. The program comes with 66 paper textures, which you select from a floating palette.

You can also apply paper textures to existing artwork, and you can combine them with the Glass setting and specify the thickness and frostiness of the glass. Although similar to Painter’s Apply Surface Texture and Glass Distortion filters, PixelPaint’s tools lack the helpful interactive controls Painter’s provide.

PixelPaint brushes are highly customizable. You can vary their size, angle, and color and even use any gray-scale image as a brush. Although you will find more built-in settings for traditional media effects in Painter, PixelPaint’s brushes let you create a wider variety of your own effects.

PixelPaint features a good selection of filter effects (Blur, Sharpen, Show Mask, and Find Edges, to name just a few) and color-correction tools, similar to Photoshop’s. PixelPaint also supports the Photoshop plug-in format, so you can use filters such as those in Xaos’ Paint Alchemy. Most of the PixelPaint filters give you the same types of controls as Photoshop’s, but the program’s color-correction tools fall short. PixelPaint gives you control over color balance, hue and saturation, and color-content percentages, but it does not provide the fine level of control you get with Photoshop’s interactive preview dialog boxes.

But PixelPaint does provide several special tools you won’t find in any other paint program. Most notable is the effects tool, which lets you work with color in novel ways. For example, you can selectively paint noise into an image or brush color away from a portion of an image. Additionally, you can set the degree of transparency for the colors you apply, so underlying artwork can show through — a handy feature.

Thanks to PixelPaint’s support for AppleScript, you can record any series of operations (with the exception of painting) as a script. This capability makes it easy for you to automate color-correction tasks or achieve artistic effects quickly without doing any programming. Scripting support is also useful for automating graphic-file-format translation — PixelPaint’s Open command now accommodates a variety of raster formats, so you can automate file translation from CompuServe GIF to standard TIFF, for example.

PixelPaint’s precise selection tools are also a big plus. The program lets you use a series of Bezier curves to select areas, and you can add selected areas to, subtract them from, or intersect them with new selections. You can also make selections based on color ranges.

The variety and power of PixelPaint’s tools make the program a great value at $379, but we have several caveats. Professionals will miss the fine level of control over brightness, contrast, and gamma provided by Photoshop’s Levels and Curves commands. And although PixelPaint supports Apple’s ColorSync and provides controls for color separation, you can’t edit in CMYK.
Now your everyday purchases can save you money on Apple products.

The new Apple Citibank card earns you rebates of up to 5% — good toward Apple products. Plus, your first year of membership is free.

Just fill out the application below.

---

**YES, I want to earn rebates of up to 5% toward the purchase of Apple products.**

Select one: □ MasterCard □ Visa

Please Tell Us About Yourself

<table>
<thead>
<tr>
<th>City Or Town</th>
<th>State</th>
<th>Zip Code</th>
<th>Years At Address</th>
<th>□ Own Home</th>
<th>□ Rent</th>
<th>□ Other</th>
<th>Social Security Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Of Birth (Month/Day/Year)</td>
<td>Mother's Maiden Name</td>
<td>Home Phone Number And Area Code</td>
<td>Name Home Phone Is Listed Under</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please Tell Us About Your Job

<table>
<thead>
<tr>
<th>Business Name Or Employer</th>
<th>Position</th>
<th>Years At Job</th>
<th>Business Phone Number And Area Code</th>
<th>Bank Account Number</th>
</tr>
</thead>
</table>

About Your Income

You do not have to include alimony, child support, spouse's income, separate maintenance or other income unless you want us to consider it in connection with this application. Your total yearly income from all sources must be at least $12,000 to be considered for card membership.

Your Total Personal Yearly Income Other Yearly Income Sources

Would You Like An Additional Card At No Charge?

If Yes, Print The Name Of The Additional Cardmember (First, Middle, Last)

Please Tell Us About Your Computer Use

Do You Own A Computer? □ Apple □ Other □ None

Do You Use Your Computer At? (Check Those That Apply) □ Home □ School □ Business

Please Sign This Authorization

I certify that I meet the terms to all the Citibank credit terms and conditions on other side. Please allow 30 days to process this application. Applicant’s Signature

JUBAL 01498 LYLY 0000
Turn your everyday credit card purchases into big savings on Apple hardware and software.

Earn rebates of up to 5% — good toward the purchase of Apple products. No fee first year and a competitive APR.

Now, it's easy to earn big savings on Apple products. Just use the Apple Citibank card for everyday purchases and you'll earn Apple Rebates of up to 5%. Then, use your rebates toward the purchase of a PowerBook® computer, Newton® MessagePad®, At Ease® software or other Apple products. You can accumulate rebates of up to $500 in any year — up to a maximum of $1,500 over any three-year period.*

Find your best price on Apple products. Then use your rebates to save even more. Just shop at any authorized Apple dealer. Once you find your best price on Apple products, you can use your rebates to save even more. So you'll know you're getting the best deal on Apple hardware, software and peripherals.

No fee first year and a competitive APR. The Apple Citibank card has a low, variable annual percentage rate (APR) of 16.65%. What's more, there's no annual fee for your first year.*

Apply now and earn Apple Rebates of up to 5%. And all the service you'd expect from Citibank. With the Apple Citibank card, you get more than Apple Rebates. You get all the service and security of the nation's leading credit card company. So apply for your Apple Citibank card today. Just complete the application on the reverse.

See below for details. Certain conditions apply.
mode — a major limitation for achieving good screen-to-print fidelity.

There are also several shortcomings in PixelPaint’s interface. The program’s profusion of palettes is unsuitable for small screen displays (the Hide Palettes command only slightly mitigates this problem). The zoom tool is limited — you can enlarge images only by factors of 2, 4, 8, or 16. And unlike with other graphics programs, when you enlarge an image in PixelPaint, everything in it gets bigger, including Bézier selection lines. That can be a drawback if you’ve zoomed in to the image to do more-precise editing — the enlarged lines are likely to get in your way. Last, PixelPaint’s basic brush tool is limited to a maximum of 63 pixels, which makes painting on large canvases tedious.

The PixelPaint manual is informative but poorly indexed. Most disappointing is the lack of a tutorial, so you’re on your own to find all the ins and outs of the program’s many tools.

The Bottom Line

PixelPaint Pro3 offers a breadth of paint and image-enhancement tools, but it lacks depth. Most impressive are the program’s special-effects and selection tools. We especially liked the brushes, which do a good job of creating abstract images and are a great choice if you’re looking for a way to generate backgrounds for multimedia products or presentation graphics.

Professionals, however, won’t find any reason to substitute PixelPaint for Photoshop as their main image-editing tool. PixelPaint’s color-correction tools and layer support fall far short of Photoshop’s. Still, many graphics users will find PixelPaint a versatile program that brings several special features to the drawing table. / Sean Safreed

PixelPaint Pro3
Rating: ★★★★☆
List Price: $379.
Cons: Lacks tutorial. No support for CMYK editing. Poorly implemented zoom feature.
Company: Pixel Resources, Norcross, GA; 800-851-1427 or 404-449-4947.
Reader Service: Circle #409.
Dabbler / Paint box and art lessons rolled into one.

PAINT PROGRAMS have the tools and effects for creating stunning artwork, but they're useless unless you have the talent and knowledge to use them. Dabbler, on the other hand, is not only an excellent entry-level art program but also includes innovative on-screen lessons.

Easing into Artistry

Dabbler’s work area resembles an artist’s desk with four drawers that have nearly everything you need: drawing tools, textured paper, color palettes, and tool-customizing options. The tools behave in a pleasantly realistic way: Markers bleed into paper, crayons create waxy buildup, and water drops smear colors together. Sounds add to the feeling of realism: Pens scratch, markers squeak, and drawers whoosh out.

You can also use the program’s special tools to create sophisticated-looking artwork. Want to see what a photograph would look like if it had been drawn in chalk? Scan it into a sketch pad, and place a blank page on top of it. Select the Clone icon from the color-palette drawer, and then rub over the page, using the chalk tool. Dabbler automatically selects the color of the chalk based on the underlying image and re-creates the image in the new medium. You’ll have to experiment to get the desired results, however, and the documentation for this feature is unacceptably weak.

You can also trace an image by placing a piece of paper over it in a sketch pad and making the paper transparent. And the program’s support for Adobe Photoshop plug-ins gives you a virtual cornucopia of special effects.

Dabbler has a series of 14 on-screen lessons based on two classic how-to-draw books by Walter Foster, both of which are reprinted in the manual. The on-screen lessons are animations of drawings from the books sketched in by an invisible hand, with instructions and tips that pop up as the drawing takes form.

Dabbler saves drawings automatically into multipage sketch pads, bypassing the traditional Save command. But this convenience has its cost, since the sketch pads eat up hard-disk space. A 72-pixel-per-inch, 640-x-402-pixel sketch pad, just shy of 9 x 6 inches, took up 2 MB when its 12 pages were blank and ballooned to 12 MB when we added several complex drawings and scans. An annoying quirk keeps the sketch-pad storage size from shrinking even when you trash drawings.

Dabbler has unusually high hardware requirements for a hobbyists’ program, even though they’re not outrageous, given the realistic tools, sounds, and effects. It demands 5 MB of RAM — real RAM, not virtual memory. Eight-bit-display representation on-screen lags behind your input, so you really need a 16-bit display. Add a digitizing tablet as well, since drawing with the mouse is awkward.

The Bottom Line

Beginners will love Dabbler’s intuitive interface and easy-to-follow art lessons, and its variety of realistic natural-media tools at this price will even please more-experienced artists. / Shelley Cryan

Dabbler 1.0
Ratings: ★★★★
List Price: $99.
Cons: Hefty hardware requirements. Weak documentation.
Company: Fractal Design, Aptos, CA; 800-297-2665 or 408-688-5300; 408-688-8836 (fax).
Reader Service: Circle #410.
Joule™ Drives provide the powerful value and performance you need today.

There's a powerful difference in La Cie's Joule Drive that sets an unparalleled new storage standard.

True, Joule's stylish case won ID Magazine's silver medal design award, but inside is where the difference really counts. Here you have a choice of Quantum hard drives, SyQuest removable formats, or Optical drive mechanisms. All drives include the extra strength of up to 100 watt power supplies, built-in surge protection, digital active SCSI termination, 2 AC outlets, SCSI ID switching, up-front power switch and termination status LED, plus an exclusive built-in path to modular expansion!

Each Joule Drive is formatted and reliability tested, then shipped ready to plug and play including Silverlining disk management software (a $149 value), double shielded SCSI cable, power cable, and a superior warranty. Joule Drives are only available factory direct from La Cie, a Quantum Company. When you get so many benefits and value in a Joule, along with Fortune 500® stability, the choice is simple.

Call our toll-free number today for more facts or to order now.

"Finally a hard drive that grows with you. The best value today."

Bob Marchant
President, Agio Design

To order or for more information, call toll-free
800-999-1735

Mon.-Fri. 5AM-7PM & Sat. 8AM-NOON PST

International 503-520-9900 Fax 503-520-9106 (24 hrs.)
UK 0800-89-3025 Australia 0014-800-123-007

VISA, MasterCard, C.O.D. and approved purchase orders accepted.
Now You’re Playing With POWER!

VST ThinPack™ and ThinPack™ PLUS are high-density, maintenance-free batteries for the PowerBook™ 100 through 180c. Both are UL listed and come bundled with VST ThinPack Utilities battery management software.

Consistently rated BEST in technical reviews.

RunWay Software for the Macintosh

Warp-speed file-transfer utility for networks.

FRUSTRATED WITH how long it takes to move large files from one Mac to another over a network? Try RunWay, an innovative network utility that in MacUser Labs tests was as much as three times as fast as the Finder at transferring large files over an Ethernet network.

Takeoff

RunWay works its magic by modifying AppleTalk protocols, which enables the program to make more-efficient use of available network bandwidth. RunWay does not compress files, so data maintains its integrity.

The utility installs as an application and uses the same Users/Groups model as System 7 file sharing and AppleShare — in fact, one of these must be active for RunWay to access shared files.

On our two-node Ethernet network, we clocked RunWay at 600K per second for a 20-MB file transfer — compared to 200K to 250K per second for the Finder! That translates to 34 seconds for RunWay and 85 to 105 seconds for the Finder to make the file transfer. (Finder throughput varied depending on whether we were using System 7 file sharing or AppleShare and on whether we were reading or writing data.) Even greater speed gains are possible on busier networks, according to the company.

RunWay also improved the speed of file transfers over our two-node LocalTalk network by a factor of 2 to 2.5, achieving a throughput rate of 25K per second — close to LocalTalk’s limit.

RunWay is a great network tool, but we have several caveats. Speed gains aren’t as great for small files as for large ones. And RunWay doesn’t work like file-server software — a RunWay-equipped Mac can transfer files to and from only one other RunWay-equipped Mac at a time. As the utility reads and writes files, it tells everyone else on the network that it’s busy.

From an interface perspective, we think the program could benefit from a face-lift. RunWay has a single dialog box for creating a list of the files and folders you want to transfer and another for selecting their destination. The company claims that this simplifies batch transfer of files stored in separate folders, but we strongly recommend that RUN integrate RunWay with the Finder in future releases.

And last, RunWay’s copy-protection scheme is archaic. The RunWay installation disk lets you install the software on a limited number of machines. If you want to install the utility on an additional machine, you have to remove it from one of your original installations. We’d like to see the company allow unlimited installations and use network-ID checks to limit the number of simultaneous users.

For an even greater speed boost, check out the $675 NuBus RunWay Ethernet Accelerator Board (10BASE-T only — a three-interface version costs $800). It arrived too late for us to test for this issue, but according to RUN, this card’s hardware implementation of RunWay protocols lets you transfer files over an Ethernet network at the incredible rate of 1 MB per second. And because its onboard 68020 processor offloads Ethernet processing from the host Mac’s CPU, the card can achieve this rate in any NuBus Mac, according to the company.

The Bottom Line

For those whose network regularly gets bogged down with large file transfers, RunWay is a must-have utility. At a cost of $399 for a two-user license, the program will quickly pay for itself. / Henry Bortman
Style with Purpose

Joule™
cable-free
modular storage
systems offer
advantages that
tower above
the rest.

The Joule system was designed to meet a powerful combination of purposes. To provide system expandability, and module portability in a space saving tower that grows without desktop clutter, as easy as 1,2,3.

**Step One:**
Start with a Joule base drive. The base unit forms the foundation to future growth or functions independently. It includes a hard disk or removable drive, power supply, digital active SCSI termination, surge protection, AC outlets, shielded SCSI cable, and connections for a future storage system up to 28GB.

**Step Two:** To expand, simply stack extra storage modules one upon the other. Built-in connectors eliminate cables and hassles.

**Step Three:** To remove a module, simply unplug and play without cables, termination or SCSI ID trouble. It's that simple.

The Joule System offers a complete selection of storage modules and is only available direct from La Cie - owned by Quantum, a Fortune 500® company.

Joule has simplified the path to future storage. It's up to you to take the first step. Just call our toll-free number today for more facts or to order now.

**Complete Storage Module Choices — Great Prices**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Module Type</th>
<th>List Price</th>
<th>Internal Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>85MB</td>
<td>2.5” HD</td>
<td>$299</td>
<td>$199</td>
</tr>
<tr>
<td>170MB</td>
<td>2.5” HD</td>
<td>$349</td>
<td>$249</td>
</tr>
<tr>
<td>256MB</td>
<td>2.5” HD</td>
<td>$449</td>
<td>$349</td>
</tr>
<tr>
<td>170MB</td>
<td>3.5” HD</td>
<td>$259</td>
<td>$199</td>
</tr>
<tr>
<td>270MB</td>
<td>3.5” HD</td>
<td>$329</td>
<td>$249</td>
</tr>
<tr>
<td>340MB</td>
<td>3.5” HD</td>
<td>$359</td>
<td>$259</td>
</tr>
<tr>
<td>540MB</td>
<td>3.5” HD</td>
<td>$499</td>
<td>$349</td>
</tr>
<tr>
<td>1050MB</td>
<td>3.5” HD</td>
<td>$649</td>
<td>$449</td>
</tr>
<tr>
<td>1400MB</td>
<td>3.5” HD</td>
<td>$999</td>
<td>$599</td>
</tr>
<tr>
<td>1650MB</td>
<td>3.5” HD</td>
<td>$2039</td>
<td>$1399</td>
</tr>
<tr>
<td>2000MB</td>
<td>3.5” HD</td>
<td>$2329</td>
<td>$1699</td>
</tr>
<tr>
<td>2100MB</td>
<td>3.5” HD</td>
<td>$1399</td>
<td>$1139</td>
</tr>
</tbody>
</table>

To order or for more information, call toll-free Monday – Friday 5AM-7PM & Saturday 8AM-NOON PST

La Cie Limited
International 503-520-9600 Fax 503-520-9100 (24 hrs.)
UK 0900-89-3025 Australia 0014-800-123-007
VISA, MasterCard, C.O.D. and approved purchase orders accepted.

800-999-1735

Innovative and compact. The Joule system sets a new standard for plug and play."

Bill Leppo, President
Leppo Instruments

* Available as a Base Drive, call for prices.

**Prices do not include shipping and apply to products shipped within the continental United States. All sales tax where applicable. Joule, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum Company. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or recourse. Copyright 1994 La Cie, Ltd. All rights reserved.

**CIRCLE 43 ON READER SERVICE CARD**
Kodak Arrange-It and Kodak Create-It
Create Photo CD-based presentations with Kodak's new software tools.

THINK presentation software, and you probably don’t think Kodak. Well, it's time to think again: In step with the company's recent Photo CD-related software releases, Kodak's latest offerings target presentations created on your Mac and played from Photo CD discs. Kodak Arrange-It provides a more affordable vehicle than videotape for multimedia presentations; Create-It aims to make the slide carousel obsolete.

Kodak Arrange-It
A powerful layout tool for creating kiosks and point-of-sale displays, Arrange-It lets you build sophisticated interactive multimedia presentations, using audio files and image frames you’ve created with other programs. Once you’ve laid out your presentation, Arrange-It generates a script; a Photo CD service bureau uses the script to transfer your presentation to a Photo CD disc, which you can play using a CD-ROM player and your Mac or using Kodak's own Photo CD player and a TV.

Central to Arrange-It are Collections — user-defined libraries of graphics files (Photo CD, TIFF, or PICT) and sound files (AIFF). You can display the contents of two Collections simultaneously; to create a presentation, you drag image frames and audio files from the Collections and arrange them in the desired sequence in the program's Canvas window. For interactivity, Arrange-It provides a transparent way to link menu objects, frames, sounds, and groups of frames — you simply drag to create connecting paths that determine how the presentation branches as users click on objects or press buttons on a Photo CD player. You have full control over time-out settings, image resolution, transition styles, and delays between frames or frame sequences. You can also use an outliner to create presentations, although we suspect most users will prefer the visual approach.

You can view your finished presentation on your Mac before you create the export script and ship everything off to a Photo CD service bureau. Kodak provides a toll-free number for finding the location of service bureaus in your area. The cost of the service varies according to the complexity of the...
presentation—we were quoted prices that ranged from $250 to more than $1,000. At those prices, Arrange-It provides a less expensive option than does videotape, making it a good choice for schools, visitor centers, and museums.

**Kodak Create-It**

Create-It may be kin to Arrange-It, but it's a far less capable program. Unlike Arrange-It, which is designed primarily for sequencing and linking existing slide frames, Create-It is designed for creating and editing individual frames. Like Arrange-It, the program provides the tools you need to transfer your finished presentation to a Photo CD disc. But unfortunately, Create-It is slow and the presentation tools it provides pale in comparison with those of more-established presentation-software packages.

You design frames by importing or placing existing images (Photo CD, TIFF, or PICT) as well as by adding text and graphic objects you create with the program's basic tools. Objects can reside on one of three frame layers—background, foreground, or master. In the Presentation view, you can further refine your presentation by adding sound (AIFF), controlling the duration of frames, and creating hot spots that branch to other frames.

Text handling is one of Create-It's strengths: You can kern text, wrap it around a graphic object, and fit it to a path or within a shape. Basic image-enhancement features let you control the brightness, contrast, and color balance of your photographic images, and there's even an option for removing the eye redness caused by flash exposures.

Create-It's features are straightforward, even for beginners, but the program doesn't measure up overall. It's slow on anything other than a 68040 Mac and requires lots of RAM to be useful. And there are several major gaps in its feature set—it has no integrated outliner, for example, and it can't create charts or autobuild lists.

**The Bottom Line**

Kodak Arrange-It is an excellent tool for creating Photo CD-based interactive presentations for kiosks or point-of-sale displays. Kodak Create-It, on the other hand, is a disappointment overall and falls far short of other slide-based presentation programs such as Aldus Persuasion and Microsoft PowerPoint.

---

**Kodak Arrange-It 1.0.2**

Rating: 4.5

List Price: $395.


Cons: Requires a separate program to create presentation elements.

Company: Eastman Kodak, Rochester, NY; 800-235-6325 or 716-724-1021.

Reader Service: Circle #412.

**Kodak Create-It 1.0**

Rating: 3.5

List Price: $245.

Pros: Easy to use. Good text-handling tools.

Cons: Slow. Lacks outliner, special effects, charting, and autobuild lists.

Company: Eastman Kodak, Rochester, NY; 800-235-6325 or 716-724-1021.

Reader Service: Circle #413.
Not only have we lowered its price, it now comes with a very cool card trick.

Talk about a deal. OmniScan, the world's most complete, integrated hand scanner, now costs less—and includes a cool card trick.

Buy OmniScan and we'll send you CardScan from Corex, the amazing business card reading software that organizes cards instantly. Just scan them in, and CardScan OCRs, sorts and files the information. It even searches, auto-dials phone numbers, plus much more.

And that's just part of the deal. OmniScan also includes Caere's award-winning OCR, image-editing and fax software.

You can OCR most any typeface, size or style with OmniScan's integrated OmniPage Direct. Plus, scan letters, magazine articles, and even faxes directly into your applications. You'll never waste hours retyping documents again.

You can professionally edit grayscale images with OmniScan's built-in Image Assistant GS.

Whether you're working with line-art, logos or photos, its complete set of editing tools lets you customize the perfect graphic for your newsletters or articles. And stay within the tightest budget.

Tired of printing documents just to put them through the fax machine? Just send and receive faxes from your desktop using your existing fax modem with OmniScan's integrated FaxMaster. This powerful software also OCRs fax text and compresses faxes up to 33:1.

So call your local reseller for the new low price on the best deal in hand scanners. Or, call Caere at (800) 535-SCAN for a list of resellers nearest you. OmniScan from Caere.

It's the easy way to put plenty of tricks up your sleeve.
**TimeSquare and DateView / Can these new calendar programs challenge the competition?**

IF AFTER SIFTING through the current selection of calendar programs, you still haven't found the one that best matches your unique style of tracking appointments and activities, check out TimeSquare and DateView, two new entries that are solid all-around performers. But don't get your hopes up too high. Although each program has a handful of features that may appeal to certain users, neither packs the punch necessary to seriously challenge leading contenders Now Up-to-Date and DateBook Pro.

**TimeSquare**

TimeSquare isn't really a completely new product. Rather, it's a version of Team Building Technologies' AgentDA that's been enhanced with additional capabilities, such as multiuser and to-do-list functions.

TimeSquare's main view is an appointment calendar with a user-selectable display range of 1 to 35 days. You can view each day's events either as a simple list or lined up along a time grid (as in a typical appointment book). We appreciated the convenience and flexibility of this approach, but we were slightly disappointed by the absence of a traditional month-by-month display.

TimeSquare's alarm reminders, complete with snooze controls and advance warnings, are on a par with what you'll find in any competing program. TimeSquare's to-do lists are functional but not as elaborate as the multicolumn to-do lists in other programs.

You can avoid having to open a separate to-do-list window by selecting a view that always shows to-do items without a time to the left of the calendar display. You can sort the list alphabetically by type or in order of priority, which helps you see just the information you want in the order you want to see it. TimeSquare also has excellent navigation features that make it a snap to locate any date, no matter how far it is from the current one.

Beyond these basics, TimeSquare's showcase feature is its unique method for sharing information among users. After you complete the one-time setup, multiuser access is so seamless that you almost never know that publish-and-subscribe is at its heart. You have more control over which users can see what messages than is possible in most, if not all, competing programs. In particular, by creating a separate edition for each user and using TimeSquare's password security, you can set the program up so that users can see and/or modify only those shared messages intended for them. The primary inconvenience of TimeSquare's approach is that you cannot make changes to a shared message created by another user unless you are on-line and have access to the relevant edition and document. Even then, if you want to edit messages, you must access the information indirectly via publish-and-subscribe dialog boxes. Now Up-to-Date, in contrast, lets you edit shared messages directly, even when you're off-line.

Once you get past TimeSquare's multiuser advantages, the program falls short of the competition in several significant areas. For example, it cannot create banners that span several days. In addition, although you can enter repeating events, they are not linked. This means that if you want to make the same change to all dates of a recurring event, you have to modify each one separately. TimeSquare's printed output also does not provide the...
The Macworld Magazine WORLD CLASS AWARD for training sits in my office. The readers of Macworld voted for MacAcademy by a margin of 2 to 1 over audio training systems, disk based systems, and all other training companies and products. Simply, we won because our training works! It’s affordable, it’s flexible, it covers an incredible amount of programs, it’s simple to use and it’s guaranteed! We won the award because over 250,000 satisfied customers are proof that MacAcademy training programs will work for you. Below please find a current listing of the MacAcademy Video Training Library. Each video is approximately two hours in length and costs only $49. Each video carries a complete money-back guarantee if not totally satisfied and can be upgraded when software is upgraded for only $14.95.

Randy Smith

Toll Free Order Line: 800-527-1914
Order Fax Line: 904-677-6717
Checks, PO’s, Credit Cards Accepted 48 Hour Delivery
100 E. Granada Blvd., Dept. MU994, Ormond Beach, FL 32176

MacAcademy®
“Where the world learns the Macintosh”

CIRCLE 83 ON READER SERVICE CARD
REVIEWS

Electronic Calendars

monthly calendar or appointment-book layouts common in most other electronic calendars.

**DateView**

DateView's primary features have a lot in common with TimeSquare's. The two programs have similar find and navigation tools as well as a similar time-grid-versus-to-do-list display. DateView's display range is somewhat more limited, giving you a choice of viewing one to six weeks at a time, although you can redefine weeks to span, say, Tuesday through Friday instead of Sunday through Saturday. Like TimeSquare, DateView doesn’t have a traditional monthly calendar view and lacks a banners feature.

If you already use Advanced Software's contact manager, InTouch, that’s probably the most compelling reason to choose DateView. DateView can link its appointments to names and addresses in InTouch, in a manner similar to that of other program combos such as Now Up-to-Date/Now Contact and DateBook Pro/TouchBase Pro.

Other DateView assets include the program's handling of repeating events, which are linked and can be edited simultaneously. And no matter what irregular repetition pattern you need, DateView's superb customizing options should be able to accommodate you. DateView also can print out activities in a healthy variety of appointment-book formats.

On the negative side, DateView's to-do-list options are so sparse as to be almost useless. To-do items are not separated from daily event listings, and most annoying, if you choose the time-grid (rather than the to-do-list) display, to-do items vanish altogether. Finally, DateView has no multiuser capabilities.

**The Bottom Line**

TimeSquare and DateView each turned in a respectable performance. If you don't need multiuser access and already use InTouch, DateView is an excellent choice. If you need sophisticated multiuser features or if you want better to-do-list functions and don't care much about printed formats, you should choose TimeSquare instead. For those users who are somewhere in the middle, we found TimeSquare to be the superior product overall.

The main problem with both programs is that, for most users, there are too few compelling reasons to prefer these contenders over the top electronic calendars in the field. For example, despite its few weaknesses (such as an inconvenient method for navigating to other dates), we still much prefer Now Up-to-Date over either program reviewed here. Now Up-to-Date offers a stronger feature set while staying at least as easy to use. To achieve success in this highly competitive arena, we predict that it will take greater innovation than evidenced in either TimeSquare or DateView. / Ted Landau ☛
The only thing missing is the wait.
New SprintScan 35 Slide Scanner from Polaroid—Brilliant Scans in Under a Minute.

Think of how much more high-quality scanning you’ll be able to do at your desk. Or how fast you’ll respond to high-volume or last-minute projects. Or even how soon you’ll get home.

At under a minute per scan, the SprintScan™ 35 is 5 to 15 times faster than other tested slide scanners, with no loss of quality.* Scanning at resolutions up to 2700 dpi, it samples 10 bits per color (RGB) to deliver the best 24 bits. Which gives you a broader range of colors and better shadow detail. And at only $2,495,* SprintScan 35 won’t change the color balance on your bottom line.

Just drop in the slide (positive or negative), point and click. It’s that easy. Automatic real-time color processing and image sharpening reduce the need for lengthy post-processing. And it’s compatible with both Macintosh and Windows.

The SprintScan 35 Slide Scanner—part of an exciting new line-up of electronic imaging systems from Polaroid.

Don’t waste another minute! For more information call today, 1-800-816-2611 ext. 964.

Polaroid®

Dennis Manarchy, 2700 dpi scan, 30 sec.

*Polaroid® and "SprintScan" are trademarks of Polaroid Corporation.

See us at Macworld in Boston from August 2-5.
Have you seen the new Raven 8100 disk array? It's easy enough to spot. It's perched right next to the most powerful Apple in history, the Power Macintosh. Our dual channel Raven was designed specifically for these high performance machines. Offering a cardless design and flexible system configuration, Raven's 7.2 MB/sec transfer rate and 17.3 GB potential capacity maximizes the raw speed of the 8100, 8150 and 9150.

So if your hunger for power is ravenous—the new Raven disk arrays are here to feed the need. Simply call MicroNet at 1-800-800-DISK, and watch your system fly.

MicroNet has received the Editor's Choice award from MacUser for two consecutive years as a result of our commitment to the technological advancement of high-integrity storage systems.

Raven 8100 arrays are SCSI Manager 4.3 Savvy and support SCSI-DMA transfers. The Direct Memory Access (DMA) support enables data transfer directly into memory without CPU intervention.

Utilize existing Ravens, upgrade the native Power Macintosh 8100, 8150 and 9150 or cascade external configurations up to 69.2 GB of total storage capacity.

Look for us at MacWorld booth #5652 CIRCLE 91 ON READER SERVICE CARD
StrataVision 3d 3.0 / Integrated modeling, rendering, and animation

GRAPHIC DESIGNERS and multimedia artists looking for an integrated set of 3-D-modeling, -rendering, and -animation tools will find exactly that in StrataVision 3d 3.0, a respectable upgrade to an already popular program. With more modeling tools, better textures, and more-sophisticated animation, version 3.0 of StrataVision 3d is a good value, even though it’s not up to the modeling prowess of its more powerful relative, Strata StudioPro.

StrataVision 3d 3.0 comes with a multitude of modeling tools, such as predefined shapes and extensive 2-D drawing tools, which will satisfy basic and some more-advanced modeling needs. However, modeling mavens excited about the new vertex-level editing options will be only mildly content: Although you can select any control point or groups of points and pull them out of the object mesh, there are no curve-based reshaping tools.

Drag-and-Drop Textures. Texture and animation tools have received a nice overhaul, however. The package includes a healthy selection of procedural textures, such as solid woods, marbles, and stones: texture maps, for leather surfaces and the like; and sample StrataVision 3d models (both in the program and on a bundled CD-ROM) of cars, landmarks, partial skeletons, and more. Texture placement has also been improved, with new mapping methods, the ability for you to preview selected settings, and a graphical method for adjusting the scale and placement of textures on surfaces. You can also drag textures from a palette and drop them directly onto shapes in a scene. Animation tools include smoother, editable motion paths and more-sophisticated motion controls. This new version also sports reasonably faster rendering speed.

All things considered, we found StrataVision 3d 3.0 to be a good value. / David Biedny


Gryphon Dynamic Effects, Volume I

Special FX for Adobe Premiere

THE VAST CREATIVE POTENTIAL of moviemaking with Adobe Premiere (version 2.0 or later) has just expanded, with Gryphon Dynamic Effects, Volume I, a set of special-effects plug-ins that includes 20 useful, attractive, and downright bizarre effects. Some are enhancements of existing Premiere effects, such as the Smooth Iris and Smooth Wipe transitions, and some are completely new and have no counterparts in any other QuickTime editor or special-effects program.

Creativity Made Easy. The effects are easy to install and even easier to use. Photoshop fans will be pleased to find animated versions of the familiar Twirl and Zigzag filters as well as a dynamic brightness/contrast control that can be set to change gradually. Many of the effects are designed to manipulate the colors of a movie over time, including the Color Lookup filter, which applies precise colorization effects based on the colors in an 8-bit-color table, and the Duotone filter, which converts a color movie to black-and-white.

The real standout of the package, though, has to be the incredible Tempus filter: With it, a gray-scale image you select becomes a mask. As a movie plays, the parts of an earlier frame within the mask remain in place. The resulting distortion over time is arresting and unique, and by using different images, you can achieve a staggering variety of effects.

Originality Unlimited. By creatively combining the Luminance and Offset Jitter effects with the Dust filter you can quickly achieve a silent-film look. The unique Soft Focus filter is equivalent to a photographic diffusion effect.

Adobe Premiere moviemakers looking to expand their creative options will find Gryphon Dynamic Effects, Volume I, a desirable addition to their video desktop tools. / David Biedny


Summagraphics SummaSketch FX ADB Tablet / Despite a unique pen design, this new tablet misses its mark

ALTHOUGH IT HAS an innovative stylus, the Summagraphics SummaSketch FX ADB Tablet, the newest contender in the arena of pressure-sensitive drawing tablets, won’t send its competition scurrying.

The tablet looks like the Wacom UD-1212 (see review, March '94, page 68), with some key differences. To work with the Mac, it requires three cables with two clumsy 25-pin connectors and a large ADB serial-port plug as well as an AC adapter. And although Wacom’s 12-inch tablets have macro buttons, the FX has none.

Tactilo Stylus. Overall, we enjoyed drawing with the FX pen. It has three sides, so you can easily locate the buttons by feel. A fast input rate and 256 levels of pressure made it easy to get the effects we wanted.

The pen has a very springy tip that compresses completely into the stylus; although artists and designers used to pressing down with brushes might prefer this, after a few hours we found it tiring. Adding to our fatigue was the stylus’s weight: It uses two batteries and weighs about twice as much as the Wacom UltraPen stylus.

Mediocre Software. Summagraphics lets you control basic tablet-to-screen mapping and pressure settings, but you can’t program the two buttons on the stylus to do anything except a mouse click.

In spite of a good pen design, the shortcomings of the SummaSketch FX still leave the Wacom UD-1212 as the best 12-inch drawing tablet. / Jim Benson


SEPTEMBER 1994 / MacUser 65
Disc-To-Disk / Digital pipeline from audio CDs to your Mac

YOU CAN PLOP an audio CD into your CD-ROM drive and play it, but taking the next logical step — direct digital capture of the CD's sound on your Mac — was problematic before Optical Media released Disc-To-Disk. This application grabs digital-audio files from standard audio CDs played in a CD-ROM drive and turns them into Mac digital-sound files — going directly through SCSI, without any special sound hardware.

High-Quality Sound. Because this method does not involve any analog conversion (unlike with the QuickTime Movie Player, which records audio-CD tracks to the Macintosh, using internal analog-to-digital conversion), you eliminate the possibility of introducing noise or distortion into the resulting sampled-sound file. You can create sound files of CD quality (44.1kHz, 16-bit stereo) or lower quality and save them in a variety of formats, including Sound Designer, AIFF, snd, QuickTime audio, and even Windows WAV (making sure you use Windows naming conventions).

Easy Recording. The process is simple: Just choose a section of an audio track (by specifying start and stop times or by dragging markers — there's a waveform view to help you), and click on a button. You can preview specific portions of audio through the Mac speaker or play them directly from the CD-ROM (using the CD-ROM drive's audio output). You can also put multiple selections from an audio CD into a recording list for batch sound processing.

One drawback of the program isn't Optical Media's fault: Not all CD-ROM drives support the transfer of sound data directly through the SCSI bus (NEC drives reportedly have this problem). We tested Disc-To-Disk with an AppleCD 360, and it performed flawlessly. Plus it was fast — the conversion process was like copying a file from a CD-ROM to a hard disk (which is much faster than digitizing the audio with a typical audio digitizer). Anyone using audio-CD sound effects or music excerpts (in sampling keyboards, for example) will find Disc-To-Disk a dream come true. / David Birney

Super 7 Utilities 2.0 / A medley of System 7 enhancements

WHETHER YOU'RE prospecting for gold or buying a general utilities package, you're doing the same thing: staking a claim and mining it, hoping to strike it rich. Super 7 Utilities, a set of System 7 enhancements, isn't the mother lode, but it's valuable enough to warrant its price.

Choice Morsels. The newcomer in version 2.0, Window Master, lets you stack or tile the windows of applications by using a pop-up menu that appears when you Shift-click on a window title bar. Helium Pro lets you turn Balloon Help on or off with a keystroke, change the font and size of the Balloon Help text, and move Balloon Help messages to a display area at the bottom of the screen. Speed Beep Pro lets you add custom sounds to a wide variety of events such as when you insert or eject a disk. Unlike the Finder, Speed Beep Pro lets the Mac continue to do its work while the sound plays.

Alias Assistant and Desktop Extras are not quite as useful but are worthwhile to have nonetheless. Alias Assistant tracks your aliases and automatically deletes them when the original file is deleted. Desktop Extras streamlines the sometimes laborious processes of copying, moving, aliasing, and deleting files in the Finder by making these operations menu items that bring up a dialog box containing frequently used folder destinations.

Marginally Mighty. Mighty Menus and Super Comments are less practical. Mighty Menus allows any menu to be torn off and made into a floating palette, but since most frequently used menu items have keyboard command equivalents or floating palettes, there's no reason to give up precious screen space. Super Comments keeps comments in Get Info boxes from disappearing when you rebuild your Mac desktop and now lets you enter Get Info comments into files, using Save and Save As dialog boxes. Unfortunately, we long ago lost any comments we cared to put into the Get Info box, the first time we rebuilt the desktop, so most of us lost any interest we may have had in using Get Info comments.

Although some of the Super 7 Utilities are only modestly valuable, Window Master, Helium Pro, and Speed Beep Pro are conveniences well worth getting. / Jeffrey Sullivan

PGA Tour Golf II / Virtual golfing

LIKE REAL GOLF, PGA Tour Golf II is easy to learn and fiendishly difficult to master. And given its choice of seven courses, mastering it will take you a good, long time.

You can play alone; with as many as three friends; or with any of ten computerized pros, including Tom Kite, Fuzzy Zoeller, and Craig Stadler. The game has several modes: Start with the Driving Range and Putting Green for practice (you'll need it), and then move to the Practice Round, Tournament, or Skins Challenge. Finally, choose from seven gorgeously reproduced courses such as Scottsdale, Avenel, and Sawgrass.

Realistic Play. Control over your shots is easy and intuitive. The mouse button or space bar controls your swing; you can also adjust your aim and draw (hook to the left) or fade (slice to the right). As in real golf, wind plays a significant part, so keep an eye on the wind indicator.

Other thoughtful touches include a user-controlled flyby of any hole and the ability to examine the contours of each green.

If you like golf and challenges, you'll love PGA Tour Golf II. / Bob Levitt
DiskTop 4.5 / File-management finesse

DISKTOP HAS WAITED several years for a major update, but the wait has been worth it. This popular file-management utility now boasts an attractive look and some powerful new features.

Finder Finesse. DiskTop displays all hard and floppy disks you have mounted and lets you find, list, and rename files as well as copy, move, and group files on them in one window. Since it's a DA, DiskTop works perfectly even for people who aren't using MultiFinder or System 7. You can launch applications and documents directly from DiskTop too.

Uncluttered and Fast. DiskTop has abandoned the cluttered and awkward volume window you had to click through to view files in previous versions. And by adding jump-to submenus, you can now instantly move to any frequently used folder on a disk. You can create as many as ten kinds of custom views of volumes, folders, and files.

DiskTop combines features power users will love and a simplicity that even novices can appreciate. And PrairieSoft isn't about to let it stagnate again. By the time you read this, the company plans to have a utility out that will let you customize DiskTop with colors and different point sizes for text. / Gregory Wasson


VideoDirector 1.5 / Remote-control home-video editing

VIDEODIRECTOR 1.5 ELIMINATES much of the drudgery of editing and copying home videos. The software and a bundled serial cable allow your Mac to act as the remote control for an 8-millimeter camcorder and a VCR.

Name That Scene. First use the controls on your Mac (SE or later, System 6.0.7 or later) to play the camcorder tape, marking the beginning and end of each scene. Then give each scene a title, and arrange and delete the scenes by title as you would like them to appear. Once you've created a sequence, VideoDirector will automatically create a new video — recording, pausing, fast-forwarding, and rewinding the camcorder and the VCR to do so.

Repeated Curing. VideoDirector does require some willingness to regularly recalibrate the playback to correct tape drift. Although this can be complicated, VideoDirector does a good job of helping you make these adjustments. Since VideoDirector does not digitize video, it cannot do special effects such as dissolves and wipes.

Gold Disk's tech-support people were friendly and helpful with the few problems we had. Our use of a PowerBook Duo, with its unique single serial port, accounted for one of the problems: The port had trouble operating the camcorder's remote control very well. But with a MiniDock, VideoDirector worked perfectly.

VideoDirector requires a lot of direction and involvement on the user's part to work well, but as long as you don't need special effects and have the time, VideoDirector is a useful, inexpensive tool for editing your home videos. / Joseph O. Holmes

VideoDirector 1.5⭐⭐⭐⭐ / List Price: $199.95. Company: Gold Disk, Santa Clara, CA; 408-962-0200. Reader Service: Circle #424.

MusicTime 2.0 / Toon transcription

NONPROFESSIONAL MUSICIANS looking for a quick way to get notes onto paper can get quality music notation and recording from MusicTime. But the whimsical illustrations, the regular appearances of the Toon Band throughout the manuals, and some notable shortcomings may drive even some intermediate-level musicians to upgrade immediately to MusicTime's more talented sibling, Encore.

Encore Lite. MusicTime is basically a stripped-down version of Encore, although it has two unique features that Encore doesn't have: You can play your computer keyboard like a synthesizer, and you can use color for emphasizing notes, staves, and other musical elements on-screen and on printouts. The simulated keyboard makes it possible to use MusicTime without a MIDI keyboard controller, but you still need either a sound card or a synthesizer module to hear music played back.

These features are overshadowed by the program's drawbacks. MusicTime is limited to only eight staves, making it hard to create scores for ensembles larger than a few players. Its speed is less than impressive — scrolling and printing are slow, and note entry with the Mac's keyboard is slower still.

Pyun Primer. Worst of all is MusicTime's manual. At 83 pages, it doesn't even cover all of the program's functions. The ReadMe file says you can buy another book discussing MusicTime in greater depth — for another $20!

As if you've always wanted to use color in your notation or have limited synth equipment and can't afford Encore, you may want to try MusicTime. Serious composers looking for a low-priced bargain would be wise to try something else. / Ken Gruberman


Icon Mania! / Revitalize your desktop

EVER WISHED YOUR icons could be graphical representations of files? Icon Mania! lets you easily replace any icon with one that offers a better visual clue to what is in the underlying document, folder, or disk.

Iconography Made Easy. The documentation isn't stellar, but the program is intuitive. Using a pull-down menu, you find the folder whose icon you want to change. Next, open an icon library and drag a new icon onto the one you want to change.

Icon Mania! provides a library of several hundred icons, including animals, celebrities, and software programs. You can also create your own icons with Icon Mania's built-in editor, or with a single command, you can create a thumbnail of an EPS, PICT, or TIFF file.

Sure, you can get some of Icon Mania's functions by cutting and pasting in Get Info windows under System 7. And some documents in certain formats, such as Adobe Photoshop, automatically appear as thumbnails. But Icon Mania! is easy to use, works on a wide variety of graphics formats, and provides an extensive collection of ready-made icons. / Shelley Cryan

Icon Mania!⭐⭐⭐⭐ / List Price: $68.95. Company: Dubl-Click Software, Woodland Hills, CA; 800-266-9525 or 818-888-2088. Reader Service: Circle #425.

September 1994 / MacUser 67
DECK II and DigiTrax / Digital-recording champs compete head to head

TO KEEP ITS COVETED MacUser Editors' Choice title as best music/sound product, OSC's DECK II digital-audio-recording software (pictured here) has to be unassailable enough to withstand assaults from would-be deposed such as Alaska Software's premier release, DigiTrax.

Equalized Basics. These programs allow you to record, edit, and play CD- and DAT-quality audio files with an AV Mac or a Mac that has an audio card equipped with a DSP (digital signal processor). If you have an AV Mac or Spectral Innovations' NuMedia audio card, DigiTrax provides you with six audio tracks. DECK II supplies four to eight audio tracks, depending on your hardware (four with most Digidesign systems and RasterOps' MediaTime, six with the Quadra 660AV, and eight with the Quadra 840AV and Digidesign's Pro Tools). The interface for each program looks like a multitrack cassette recorder, complete with volume faders, LED meters, and pan controls. Each also has audio scrubbing, autolocation, and automatic punch-in and -out and supports synchronization to SMPTE time code as well as to QuickTime movies.

Finely Tuned Subtleties. The differences emerge only when you venture beyond the basics. Although DigiTrax has a few features not available in DECK II — such as the ability to play audio CDs on a CD-ROM player, record audio directly from an internal CD-ROM player, work with 8-bit-audio files, and adjust a track's tone with a single-band EQ — it falls short of DECK II's sophistication.

For example, when you're controlling audio transitions, the ability to fade one sound out as another fades in and to determine the shape, timing, and transition of the fade is vital. DECK II provides a variety of fades and allows you to incorporate them in a single track. DigiTrax has only a single type of fade and requires two tracks.

DECK II also has an edge in speed. When executing a Normalize operation, which maximizes the volume setting of an audio file, DigiTrax took more than six times as long to perform the operation as DECK II.

Among DECK II's special features are automated mix down and virtual work tracks that can be mixed in with your normal play tracks. If you are serious about editing multitrack 16-bit digital audio on the Mac, DECK II is a must. / Christopher Breen


ONE PRINTER!

That is... if the printer is a Dataproductions LZR® 1580 or LZR 2080 network laser printer. One Printer can act like 64 different virtual printers, each with its own configuration, including selection of emulation (PostScript® Level 2 or PCL®), paper tray, page orientation, job priority and more. A simple-to-install PostScript fax/modem option turns your LZR 1580 or LZR 2080 printer into a fax machine that produces high quality images at up to 800 dpi on paper sizes up to 11" x 17" for tabloid-size layouts, spreads and B-size drawings for graphics or engineering applications.

By the way, if your print requirements are 200,000 or even a million pages per month, our Typhoon 30 or Typhoon 60 has the duty cycle and paper capacity you need. Dataproductions has the One Printer solution for your complex network.
Astro Chase 3D / Arcade action in a pooped-out spaceship

AFTER A MERCILESS SIEGE by an evil alien menace, in which the United Earth Confederation's Space Force has been almost completely destroyed, the invaders launch a volley of mines toward Earth. Standing between the planet and the worst Thursday in history are you and your Ultraship.

Satisfying Detail. There's a terribly nifty shoot-'em-up arcade game in here. Using a simple set of controls, you zoom through space, blowing up mines and alien ships. The game's graphics are superb, offering realistically shaded and textured ships and planets at any screen size or resolution.

Space Yugo. The biggest problem with Astro Chase is that this Ultraship you're piloting just doesn't move fast enough. Oh, the software is certainly zippy — the animation is perfectly fluid, whether you're using a Quadra 800 or an LC II — but the Ultraship's engines were apparently lifted out of a 1990 Yugo. You'll be drumming your fingers on the desk while you wait for the ship to arrive at that cluster of mines, and you'll have to take two or three passes at a ship before your vessel can maneuver high or low enough to get it in your viewscreen. And sooner or later, you'll run low on energy, and if you're not next to an energy depot when that happens, you're dead.

Astro Chase 3D is a good game that would be great if its programmers spent a weekend giving it a tune-up. / Andy Ihnatko

Freak Show / Exploring the new and the bizarre

OVER TWO DECADES AGO, the Residents made their first foray into the music industry and since then have consistently combined the visual with the auditory in groundbreaking ways.

The Residents' unique music and the stunning design of Jim Ludtke have now found an ideal forum on CD-ROM. Freak Show is liberally peppered with references to the Residents' earlier endeavors, such as the eternally preserved Herman the Head.

Be prepared to be overwhelmed as you enter the CD-ROM's bizarre big top and discover that there's far more to Jack the Boneless Boy and Wanda the Worm than their mere stage personas. Go behind the velvet curtain to get the real stories of the circus' inhabitants and attempt to piece together their interconnected sagas. As you click around, the cursor either turns into arrows to guide you or becomes a Resident's eyeball when you find something cool.

The object of this visual feast is to explore, explore, and explore some more. Your efforts will be rewarded with amazing animation; surprisingly fluid QuickTime movies; and as expected, lots of music.

Both Residents fans and new inhabitants of their world will undoubtedly be entranced by this successful marriage of the innovative band to this burgeoning medium. / Kristin Mollon


Double your RAM.

Just install RAM Doubler™ software in your Mac and it doubles your RAM. It's that easy. No more hassles, just more RAM.

RAM Doubler is an extension that works by reclaiming memory not being used. MacWEEK says "RAM Doubler couldn't be easier to use." It is the latest from Connectix, the Macintosh memory experts and makers of the award-winning CPU and MODE32.

RAM Doubler is affordable at $99 SRP with a 30-day money back guarantee. Get RAM Doubler wherever great software is sold.

© 1994 Connectix Corporation. RAM Doubler requires Mac II (with PMME) or better 1680x10 or 386/33 processor with a 1MB RAM & System 6 or 7. RAM Doubler is not compatible with Mac LC, Classic, Plus, SE or PowerBook 100. RAM Doubler, CPU and MODE32 are trademarks of Connectix. All other trademarks are the property of their respective holders.

CIRCLE 62 ON READER SERVICE CARD

Connectix
800-950-5880 ext. 27
or 415-571-5100, fax 415-571-5195

SEPTEMBER 1994 / MacUser 69
Apple's Newest 68040 Macs

Versatile Values

Apple's new 630-series desktop systems offer AV, CD, and even TV in a flexible, affordable package.

Apple's latest desktop systems — the look-alike Quadra 630, LC 630, and Performa 630 series — would certainly appeal to James Bond. Like the best weapons in the superspy's arsenal, the new systems embrace the possibility that a simple, even innocuous, device can become surprisingly powerful when you add a few equally simple accessories.

In Bond's case, this principle might entail snapping a cuff link or two onto a Rolex to create an atomic laser cannon. The Macintosh 630s, however, aren't nearly as pernicious: The core hardware of these machines is a new CPU architecture built around the venerable 66/33-MHz 68040 chip. The key to the new Macs is a gaggle of affordable add-ons that can turn any 630 into a speedy office workstation, a low-end video-digitizing and -editing station, or a multimedia machine for education or presentation use. You can even turn it into a TV set — or into a Power Mac that runs native PowerPC applications as well as 68040 applications without emulation.

And we do mean you can do all this: In the best Bond-gadget tradition, the 630s are engineered for quick on-site modification. Apple designed them so that all parts, including the logic board, can be installed or removed with just a screwdriver. The versatility of this easy configuration, combined with impressive performance at low cost, heralds a new class of Macs that meet a variety of business, home, and educational needs.

To get an idea of the 630 line's core hardware, consider the Quadra 630 ($1,199), a no-frills version in all respects save one: It offers a full 66/33-MHz 68040 processor with an integrated number-crunching FPU (floating-point unit) rather than the FPU-less 68LC040 found in the LC and Performa versions. Its single, Spartan configuration includes a 250-GB IDE hard drive (more on IDE later); 4 MB of RAM.

By Jim Shatz-Akin

HAVE IT YOUR WAY — inexpensively. The new 630-series Macs make adding features a snap, thanks to an ultramodular board design and a set of easy-to-install options. If you can handle a screwdriver, you can customize your 630-series Mac — there are even identification labels next to each expansion slot, to show you what goes where.
Power Macintosh Upgrade Card
With this card installed, you can run your 630-series Mac from either the card’s PowerPC 601 processor or your Mac’s 68040 processor. **Price:** $599.

- 66/33-MHz 68040 processor
- RAM-expansion SIMM slot
- Communications slot
- 4 MB of RAM on motherboard
- Video-in slot
- PDS (processor-direct slot)

Apple Video System
With this low-cost option, you can capture still images or QuickTime clips, with sound, from your camcorder or VCR. **Price:** $149.

- Apple Video System
- For $100 more than the Apple Video System, you get all the Video System’s capabilities plus a cable- and antenna-ready TV tuner. **Price:** $249.

- Floppy-disk drive
- Infrared receiver for universal TV remote control
- Volume control
- Stereo headphone jack
They're inexpensive and versatile — but are the new 630-series Macintoshes fast enough to earn a place on your desktop? Yes. In most cases, they're as fast as a Quadra 800 — at about a quarter of that now discontinued Mac's price when it was introduced last year.

MacBench, our industry-standard test suite (available on ZiffNet/Mac), shows the FPU-equipped Quadra 630 to have a substantial edge
Easy Video Control / watch TV or capture QuickTime

COUCH POTATOES WILL LOVE a 630-series Mac equipped with the Apple Video System or the Apple TV/Video System. Apple Video Player software lets you grab still images or video segments from a camcorder, VCR, videodisc player, or the TV/Video System itself. The unselected buttons in the Controls window (left) access TV-picture adjusters, sound-capture controls, and closed-caption TV controls.

An expandable viewing window allows you to preview and play back video and QuickTime clips — and watch TV, if you've got an Apple TV/Video System-equipped 630 Mac. In addition, when you list TV shows in the TV Reminder window (not shown), Apple Video Player asks you just before those shows begin if you'd like to tune in and then plays them for you if you wish.

The prerelease version of the Apple TV/Video System we tested achieved video-capture frame rates of about 5 fps (frames per second) for a 16-bit, 320-x-240-pixel image and 10 fps for a 16-bit, 160-x-120-pixel image. That's a far cry from the broadcast-quality rate, 60 fps, but it's adequate for turning a home video of your daughter's first home run into a QuickTime movie to send to your Mac-equipped relatives.

In addition, the single-frame-capture capability lets you take instant snapshots from videotape and insert them into your documents. This option should appeal to small-business folks, including real-estate brokers and car dealers, who need quick-and-dirty images of their wares to insert into sales materials.

To complement the video-in capabilities, Apple offers an external video-out option, the Apple Presentation System, which lets you display your screen's contents on a television monitor or output them in real time to videotape. The unit sits outside the Mac, and although its results are not broadcast-quality, they're fine for low-budget presentations and classroom use.

Easy-to-Use AV Software

A single piece of software, Apple Video Player, controls the video-in and -out functions. Its main screen contains four icon-labeled buttons — one each for video recording, TV tuning, audio recording, and accessing closed-caption TV broadcasts. (The TV and closed-caption buttons are grayed out if the Apple TV/Video System is not installed.) Each of the buttons presents you with a series of options.

in floating-point performance over its LC and Performa counterparts (with all Macs set to 8-bit video). Application-based testing, however, shows that all 630-series Macs perform identically, because neither ClarisWorks nor PageMaker requires fast floating-point performance. As expected, a Power Mac 6100 running native PowerPC applications can be significantly faster than the 68040-based 630-series Macs.
### Bundles of Difference / extras set the 630s apart

Accessories and bundled software differentiate the Quadra 630, LC 630, and Performa 630 series. The stripped-down Quadra — the only 630 with an FPU — is designed for office users who'll customize it for their specific needs. The LC is aimed at users in education, and the everything-in-a-box Performas are geared for computing neophytes.

Shop carefully for your Performa — which bundle you get depends on the store you choose. You'll find the Performa 630 in computer superstores such as CompUSA and the 635 in office superstores such as Office Depot, the 636 will be sold in university bookstores, and teachers can get a 638CD through Apple's Educator Advantage Program.

<table>
<thead>
<tr>
<th></th>
<th>Quadra 630</th>
<th>LC 630</th>
<th>Performa 630</th>
<th>Performa 635CD</th>
<th>Performa 636</th>
<th>Performa 638CD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>List price</strong></td>
<td>$1,199 (4/250)</td>
<td>$1,299 - $1,349 (4/250)</td>
<td>$1,449 - $1,499 (4/250)</td>
<td>$1,849 - $1,899 (8/250/CD)</td>
<td>$1,349 - $1,399 (4/250)</td>
<td>$1,649 - $1,699 (8/250/CD)</td>
</tr>
<tr>
<td><strong>Processor</strong></td>
<td>68040</td>
<td>68LC040</td>
<td>68LC040</td>
<td>68LC040</td>
<td>68LC040</td>
<td>68LC040</td>
</tr>
<tr>
<td><strong>Clock speed</strong></td>
<td>66/33 MHz</td>
<td>66/33 MHz</td>
<td>66/33 MHz</td>
<td>66/33 MHz</td>
<td>66/33 MHz</td>
<td>66/33 MHz</td>
</tr>
<tr>
<td><strong>FPU</strong></td>
<td>built in</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td><strong>Monitor</strong></td>
<td>none</td>
<td>Apple 14-inch</td>
<td>Apple 14-inch</td>
<td>Apple Multiple Scan 15</td>
<td>Apple 14-inch</td>
<td>Apple Multiple Scan 15</td>
</tr>
<tr>
<td><strong>Keyboard</strong></td>
<td>none</td>
<td>AppleDesign keyboard</td>
<td>AppleDesign keyboard</td>
<td>AppleDesign keyboard</td>
<td>AppleDesign keyboard</td>
<td>AppleDesign keyboard</td>
</tr>
<tr>
<td><strong>Modem</strong></td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td><strong>Maximum RAM</strong></td>
<td>36 MB</td>
<td>36 MB</td>
<td>36 MB</td>
<td>36 MB</td>
<td>36 MB</td>
<td>36 MB</td>
</tr>
<tr>
<td><strong>Expansion slots</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>PDS</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>NuBus</strong></td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td>1</td>
<td>1</td>
<td>1*</td>
<td>1*</td>
<td>1*</td>
<td>1*</td>
</tr>
<tr>
<td><strong>Ports</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Serial</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>ADB</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>SCSI</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Bundled software</strong></td>
<td>QuickTime 2.0</td>
<td>QuickTime 2.0</td>
<td>American Heritage Dictionary, At Ease 2.0, Best of Homeworks Templates, ClarisWorks 2.1, ClickArt Performa Collection, eWorld, KidWorks 2, MacGallery Clip Art, MacLink Plus Translators, PC Exchange, Quicken 4, QuickTime 2.0, Spectre Challenger, Spin Doctor Lite, Teleport Fax Send, Thinkin' Things, The Writing Center</td>
<td>American Heritage Dictionary, At Ease 2.0, Best of Homeworks Templates, ClickArt Performa Collection, eWorld, KidWorks 2, MacGallery Clip Art, MacLink Plus Translators, PC Exchange, Quicken 4, QuickTime 2.0, Spectre Challenger, Spin Doctor Lite, Teleport Fax Send, Thinkin' Things, The Writing Center</td>
<td>American Heritage Dictionary, At Ease 2.0, Best of Homeworks Templates, ClarisWorks 2.1, ClickArt Performa Collection, eWorld, KidWorks 2, MacGallery Clip Art, MacLink Plus Translators, PC Exchange, Quicken 4, QuickTime 2.0, Spectre Challenger, Spin Doctor Lite, Teleport Fax Send, Thinkin' Things, The Writing Center</td>
<td>American Heritage Dictionary, At Ease 2.0, Best of Homeworks Templates, ClarisWorks 2.1, ClickArt Performa Collection, eWorld, KidWorks 2, MacGallery Clip Art, MacLink Plus Translators, PC Exchange, Quicken 4, QuickTime 2.0, Spectre Challenger, Spin Doctor Lite, Teleport Fax Send, Thinkin' Things, The Writing Center</td>
</tr>
<tr>
<td><strong>Bundled CD-ROMs</strong></td>
<td>NA</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

*Bundled modem occupies communications slot.
Subject to change without notice.
Dealers may offer custom bundles.
Included only with CD-ROM configurations and subject to change without notice.
Philips Shatters The Status Quo In Monitor Technology.

(Lift to see how it all comes together, perfectly)

Philips Brilliance™ 21A Monitor with new CyberScreen® technology dramatically reduces beam misconvergence and increases color and brightness uniformity to give you the best on-screen image you've ever seen.

For more information, call toll-free
1-800-835-3506

Another First From Philips

PHILIPS
Introducing Philips Brilliance™ 21A With CyberScreen®

• Brightness uniformity over the screen of 90% or more.
  For traditional monitors, uniformity is only 75% or less.

• Superb color uniformity and accuracy. (x and y coordinates
  change no more than +/- 0.006 over the screen, as compared
  with +/- 0.015 for traditional monitors.)

• Exclusive Magnetometer maintains constant magnetic field so
  there is no sensitivity to north, south, east or west orientation.

• Maximum misconvergence of 0.2 mm.
  (traditional technology is .35 mm.)

• High resolution up to 1600 x 1280.

• High refresh rates up to 76 Hz in
  1280 x 1024 mode*.

• Large flat square screen with fine
  0.28 dot pitch.

• Black Matrix Invar tube.

• Autoscan with high 30-82 kHz
  scanning rates and 150 MHz
  video amplifier bandwidth.

• Low-emissions comply with
  MPR-II and ISO-9241 standards.

Call 1-800-835-3506
In Canada, 1-800-387-0564

Another First From Philips

PHILIPS
task-specific controls that let you adjust video color and contrast, audio-sampling rates, and so forth. Along with each video option, Apple is also bundling Avid VideoShop 2.0, a QuickTime-based program that provides video- and audio-editing capabilities as well as basic special effects and scene transitions.

If you choose the Apple TV/Video System option, you'll also have access to Apple Video Player's TV Reminder. This feature lets you log the times and channels of your favorite television shows and prompts your Mac to ask you if you want to tune in just before they come on. You can also use Apple Video Player to lock channels out from anyone who doesn't know your password. This might work for keeping young kids away from the Playboy Channel, but don't count on it to keep a Mac-savvy employee away from The Young and the Restless: The password setup is fairly easy to circumvent.

**Sound and Vision**

THE LOW-COST MULTIMEDIA capabilities of the 630-series Macs inspired Apple to equip its new 15-inch color monitor with built-in stereo speakers and a headphone jack. The Apple Multiple Scan 15 ($479) also offers digital controls, a tilt/swivel base, and a respectable dot pitch of .28 millimeters. It can switch resolutions from 640 x 480 pixels to 1,024 x 768 pixels without being restarted, on Macs capable of supporting those resolutions. (The top resolution for the 630 series is 832 x 624 pixels.)

**Apple introduces a new technology** with the Multiple Scan 15. Previously, all of Apple's high-end display systems used Sony Trinitron aperture-grille tubes. The Multiple Scan 15 is the first quality Apple monitor to feature Hitachi's flat-square shadow-mask tube.

When aperture-grille technology — which creates pixels by firing electron beams through a screen of vertical wires — was introduced by Sony, in 1968, it provided brighter, crisper displays than any early shadow-mask tube. But shadow-mask technology, which focuses electron beams through a sheet of metal perforated by tiny holes, has steadily increased in quality.

**Some professional designers prefer** shadow-mask monitors, claiming they display fine line art more uniformly than aperture-grille monitors. Apple apparently thinks these folks may have a point. Aperture-grille aficionados shouldn't be worried, however: Sony's Trinitron patent recently expired, and other monitor manufacturers — led by Mitsubishi — are exploring aperture-grille improvements. Sony, of course, won't sit still and let its dominance erode; expect monitors to continue to improve in quality as a result of this competition. / Rik Myslewski

**Stereo speakers, multiple resolutions, and a new — for Apple — display technology distinguish the Apple Multiple Scan 15.**

---

*MacUser* associate editor Jim Shatz-Akin insists his Ovaline be shaken, not stirred. *MacUser* Labs project leader Roman Loyola oversaw the testing for this story.

**Mac of All Trades, Master of None**

We found the Macs in the 630 series an exceptional value for entry-level users — but be forewarned: Despite all of its expandability, the 630 line is limited in its capacity to grow, largely because it cannot accept NuBus expansion cards. If your 630 inspires you to pursue serious video editing, for example, you'll need a non-630 Mac in order to use a high-end NuBus digitizing card. Ditto if you get excited about photo manipulation and decide you'd like to run millions of colors on a 21-inch monitor.

Nevertheless, the 630 Macs succeed as speedy, versatile entry-level desktop systems. Their numerous expansion options make them readily adaptable for use in small businesses, introductory-level multimedia development and presentation, and multimedia-based instruction (including educational TV).

In addition, their PowerPC upgrade option enables the 630 Macs to take advantage of the native PowerPC applications that are — at last — beginning to appear in force. And perhaps best of all, you can finally get a versatile, high-speed Mac at a comfortable, low-stress price. Isn't that what we've been demanding for years?
The Book That Inspires the Movie.

Whether you're aiming to take the box office by storm or just to impress the neighbors with some slick home video, a well-equipped Macintosh can handle the job. But what hardware and software will meet your needs without busting your budget? And once you have it, what next?

Now there's MacWEEK Guide to Desktop Video, an exciting new book/CD-ROM package that penetrates the hype to uncover the real Mac desktop video story.

Macintosh and video expert Erik Holsinger has created the ultimate buyer's and user's resource for both dabblers and devotees. Improve quality and slash costs in all phases of production by following the many insider tips from successful producers, graphic artists, cinematographers, and editors who have incorporated Mac desktop video tools into major motion pictures and network television productions.

It's all here in one easy-to-use guide with full-color examples, dozens of illustrations, and a CD-ROM that contains software demos, interactive tutorials, clip-art samples, and much, much more.

Ask your favorite bookseller for MacWEEK Guide to Desktop Video or call 1-800-688-0448 ext. 203 for more information.

© 1994 Ziff-Davis Press
Apple's New System

What's in it?

What's in it for you?

HERE'S STEAK. And then there's sizzle. System 7.0 had sizzle. It was bold. It was new. It was exciting. System 7.5? Well... It's not that Apple's latest system-software release is bad. It has potential. It's just that after waiting so long — it's been three years since the release of System 7.0 — it would have been nice to get a System 8.

But, as Mick Jagger once pointed out: You can't always get what you want. In the meantime, System 7.5 is here. And since we're not likely to see any major improvements on it for at least a year, it's worth considering what it has to offer. And by the way, there will be no System 7.5 Pro. Unlike with System 7.0, with System 7.5, everyone gets everything.

Some good news: It's fat — as in fat binary. That means that the same set of installation disks can be used to install System 7.5 for either a 680x0 Mac or a Power Mac — or for both. Some bad news: It's fat — as in enormous. It requires 2.5 to 3 MB of RAM for the basic installation (the larger number is for Power Macs). If you install PowerTalk and QuickDraw GX as well (they require separate, optional installations), increase that to 4.5 to 5.5 MB of RAM. Don't try this on a Mac Plus.

The cost? Sorry. When we went to press, Apple was being characteristically cagey on this critical question. But we can tell you that Cupertino is expected to release System 7.5 toward the end of August and that it should begin appearing preinstalled on Macs shortly thereafter.

By Henry Bortman
Apple plans to preinstall the basic System 7.5 software — but not necessarily QuickDraw GX and PowerTalk — on the internal hard disks of all new Macs. It wouldn't make sense to install the whole shebang on a 4-MB Mac, for example. However, Apple will put the installation software for GX and PowerTalk on the hard disk, and if users purchase the additional RAM required, they will be able to perform the installations without a bunch of floppy swapping. (In case you're wondering, the Installer that ships with System 7.5, unlike its predecessor, can install on the boot disk and upgrade the currently running system software.)

Several major new (or sort of new) technologies appear in System 7.5: AppleScript, PowerTalk, QuickDraw GX, Apple Guide, and Macintosh Drag and Drop. In addition, System 7.5 users get a slew of desktop enhancements (see the "System 7.5 Desktop" sidebar). Many of them are modified versions of shareware utilities that have been around for years. Here's what all these goodies will do for you.

**AppleScript: Let Your Mac Do the Work**

AppleScript, which shipped as part of System 7 Pro, lets you automate repetitive tasks by writing (or recording) scripts. They're like macros. A script can operate within a single application or across multiple programs. For example, you might create a script that queried a database in one application, charted the data in a second, and pasted it into a weekly report in a third.

All this requires that the applications you want to control be scriptable, and many still are not. The Finder, for example, becomes scriptable only with the release of System 7.5, and many control panels are still AppleScript-unaware.

Although developer support for AppleScript will likely grow now that it's part of the standard Mac OS, it remains a tool for power users. It offers a relatively easy way of creating automated custom processes. Consultants and in-house developers will find it invaluable. But make no mistake: AppleScript is a programming language. If that sentence made you flinch, get someone else to create your scripts for you.

**PowerTalk: A Mailbox on Your Desktop**

PowerTalk is the first offering to emerge from a far-ranging concept for providing simplified and secure communications among computer users. The concept, known as Apple Open Collaboration Environment (AOCE), includes mail and messaging, catalog services, and various levels of security. Apple envisions AOCE as being capable of supporting everything from the simple exchange of e-mail between two individuals to enterprise-wide automated document-routing systems. PowerTalk is the first step, a set of basic client services for Mac users.

PowerTalk puts two new icons on your desktop — one called Mailbox, the other called Catalogs. The Mailbox does what you'd expect: It stores mail you receive from other people until you get around to reading it. With PowerTalk, though, Apple has put a new twist on e-mail. With other e-mail systems, you have to use a special e-mail application to compose and send messages. If you want to send someone a file, you have to add it to your message as an enclosure. With PowerTalk, you can send a file itself as a message, directly from within the application that created it — if the application supports PowerTalk. The Catalogs icon displays lists of electronic
features is now standard equipment

In addition, several productivity-enhancement utilities that have been available as shareware or as part of commercial products such as Now Utilities are built into System 7.5. These include a hierarchical Apple menu, quick access to recently used files, WindowShade (which collapses a desktop window to display only its title bar), and even a clock in the menu bar.

A Wealth of New Features

1. The Apple menu is hierarchical in System 7.5, displaying the contents of folders stored in the Apple Menu Items folder. One Apple-menu submenu, Automated Tasks, contains AppleScript scripts that perform various useful system tasks.
2. System 7.5 automatically creates aliases for your most recently used applications, documents, and file servers and stores them in special folders whose contents can be viewed from the Apple menu.
3. The Launcher (formerly available only on Performas), which gives you convenient access to frequently used documents, folders, and applications, is part of the standard System 7.5.
4. System 7.5's General Controls control panel reveals several new features, among them the ability to lock the System Folder (and a special Applications folder, new to System 7.5) and control what folder is displayed when you open or save a document.
5. The Sticky Memos application lets you stick electronic notes on your desktop — and you don't have to worry about them falling off.
6. System 7.5 provides nearly 50 new desktop patterns, many of which impart a rich 3-D-like texture.
7. WindowShade is a system extension, formerly shareware, that lets you collapse any window on the desktop by double-clicking on its title bar.
8. Sporting a spiffy new 3-D look, System 7.5's AppleCD Audio Player may offer a sneak preview of the Mac's next-generation user interface. After all, the original look and feel of the Mac has had a ten-year run without a major redesign.
9. In System 7.5, the Find File command is much more versatile than its predecessor. Its Find Results window displays all the files that meet the file-search criteria and shows you exactly where each file is located. You can double-click on these files to open them, or you can drag them to copy or move them.
10. Apple Guide, Apple's new help system, guides you step by step through the byways of the system and the Finder.
11. PowerTalk, included with System 7.5 as an optional item to install, adds directory and e-mail services to the Mac's desktop.
12. With QuickDraw GX, also included with System 7.5 as an optional installation, selecting a printer in the Chooser creates a desktop printer icon. Dragging a file onto the icon sends that file to the printer the icon represents.
13. Dragging a file to the PDD Maker GX desktop icon, which you create from within the System 7.5 Chooser, generates a portable digital document (PDD) that can be read by System 7.5's SimpleText application, regardless of which application created the original.
14. From within the General Controls control panel, you can tell System 7.5 to create a Documents folder on the desktop into which all newly created documents are saved.
addresses and network services. PowerTalk ships with built-in support for an AppleTalk catalog, which displays mail addresses for other PowerTalk users and provides an alternative to the Chooser for accessing AppleShare-type file servers.

Already, some third parties have developed gateways that let PowerTalk users exchange mail with users on a variety of other e-mail systems including CE Software's QuickMail, Microsoft Mail, and the Internet. Apple expects PowerTalk users to be able to receive not only e-mail and files but also other types of electronic messages — faxes, for example, or even voice-mail.

In addition, PowerTalk provides something Apple calls a Key Chain. Accessible from the Mail and Catalogs submenu of the Apple menu, the Key Chain provides a one-stop log-in service that simplifies access to your PowerTalk mailbox and AppleShare file servers. Today, most users access file servers from the Chooser. Each time you log on to a server, you have to enter your password for that server. If you routinely access several servers, this can get tedious. With the Key Chain active, the first time you access a server, the system asks you if you want to add the server to your Key Chain. If you do, thereafter you have only to enter a single password — your Key Chain password — and you can take the express lane to log on to any server on the Key Chain (or in to your PowerTalk mailbox). You don't have to go through each individual server's log-on dialog box.

Like AppleScript, PowerTalk first became available as part of System 7 Pro last year. But it has caught on even more slowly. Few mainstream applications support it yet, because its restriction to System 7 Pro has made supporting it a low priority for most developers. With System 7.5, however, it will be readily available to many more Mac users and to everyone who buys a new Mac. (Although PowerTalk is included with System 7.5, it requires that users perform a separate installation.)

Expect many more programs to begin supporting PowerTalk. For example, the upcoming versions of Microsoft Word and Excel, the two most popular applications on the Mac, will feature PowerTalk messaging. (For more information on PowerTalk, see "System Software for the '90s," December '93, page 105; "Unlocking PowerTalk," April '94, page 131; and "Apple's PowerTalk," July '94, page 100.)

QuickDraw GX: Graphics Worth the Wait?

Announced more than two years ago, QuickDraw GX is finally available in System 7.5. GX generated a great deal of excitement when it was first announced. Some developers, such as Corel, made plans to base entire products on it. But it took so long to arrive that many companies got tired of waiting. Our survey of half a dozen top Mac developers found the prevailing attitude to be, "Now that it's shipping, we'll take a look at it." One impediment to adoption mentioned by vendors is that Apple hasn't announced plans to port GX to Windows, as it has with many other system technologies. Since most major vendors today develop for multiple platforms, supporting GX only on the Mac presents problems.

One thing developers are likely to adopt — it will be relatively easy — is GX's new print architecture. With GX installed, you can print files by dragging them onto desktop printer icons. Opening a desktop printer icon displays a list of print jobs queued up for that printer. In applications that implement GX printing support, the Print dialog box displays a pop-up menu of all printers that have desktop icons, letting you target a specific printer at print time without an annoying visit to the Chooser.

The GX print architecture is extensible. One such set of extensions — Peirce Software's Peirce Print Tools, which lets you do such things as add a "watermark" to your print jobs; print two-up, three-up, and more; and log printer usage — is available now.

The second major advantage of GX is that it provides new type capabilities. Developers (of TrueType as well as Type 1 fonts) will be able to create a font that contains multiple weights and widths, small caps, swash characters, and dozens of ligatures. From within GX-
savvy applications, users will be able to take advantage of these font features much more easily than they can now. Ligatures, for example, will display and print automatically, rather than having to be typed manually as they are today.

Type 1 PostScript fonts are supported directly by System 7.5; a new version (3.7) of ATM is included with the new system software. Although version 3.7 cannot run native on Power Macs — for that you'll have to purchase version 3.8 from Adobe — it does support GX's new font format. In fact, when you install GX, all Type 1 PostScript fonts present in your system's Fonts folder will automatically be combined with their associated bit-map files and converted to the new format, making them indistinguishable from TrueType fonts. The GX Type Enabler utility, included with System 7.5, is for converting any old-style Type 1 fonts you want to install later.

Of all the features of GX, the new typographic possibilities are the most exciting. But here's the bummer: These are the features major third-party developers are least likely to adopt anytime soon. Small companies, startups, and companies that have specialized type products may go for it. Pixar, for example, will support GX typography in its Typerty product. But changing the basic way an application places text in a document involves digging way down into the guts of the application. Because GX isn't available for Windows, developers whose core code is shared between the Windows and Mac versions of their applications are going to take a long, hard look before implementing this stuff. (For more information on QuickDraw GX, see "System Software for the '90s.")

Apple Guide: Unlocking the System's Mysteries
Apple Guide is the Mac's new help system, appearing for the first time in System 7.5. If you're worried that this might be the Son of Balloon Help, relax. The only thing the two have in common is that they're accessible from the same menu (formerly dubbed the Help menu, henceforth known as the Guide menu). Apple Guide is a strong candidate for the coolest thing in System 7.5. (To see a QuickTime movie of Apple Guide in action, download the Apple Guide in Action clip, from ZiffNet/Mac, Library 1 [Special Reports] of the MacUser Forum; filename SVSYS37.SEA.)

It's unlike any other help system you've seen. It doesn't just tell you how to do something; it shows you (see the "Apple Guide" sidebar). For example, if you want to know how to do something that requires opening the Control Panels folder, Apple Guide will draw a red circle, called a Coach Mark, around the Apple menu to point you in the right direction. When you click on the menu, Control Panels appears in red and underlined. If you do the wrong thing, Apple Guide will often tell you to go back a step. When it can, it performs actions for you, such as opening a folder or a control panel or scrolling a window to display the file you need to open and highlighting it.

It's not perfect. There are things missing. It doesn't always point you to the right spot. And we would like to see it do things for you more often than it does. But it's a great beginning. Apple has as much as stated that Apple Guide will be the foundation of the active assistance it is planning for future Mac system software.

It may take a while for third-party developers to implement Apple Guide-based help. But consultants and corporate support and training personnel don't have to wait. Using Guide Maker (available separately from APDA), they can create Guide databases tailored to their clients' needs, not only for in-house custom applications but also for tasks users perform regularly in commercial applications.

Drag and Drop: Here, There, and Everywhere
Over the past year, the number of tasks you can accomplish by dragging things around on the Mac's desktop has increased. PowerTalk, for example, lets users enclose files in a mail message by dragging them from the Finder to the Enclosures area of the PowerTalk Mailer (the addressing portion of a mail-enabled document). With the new QuickDraw GX printer drivers, you can print files by dragging them onto desktop printer icons.

Now Apple is making the capability pervasive. As developers implement this technology, you'll be able to drag any selected item from one window to another, within a single application or between applications. You'll also be able to drag a selection directly to the desktop, to create a "clipping" file. You will be able to insert a clipping into another document later by — you guessed it — just dragging it in. And if you just want to see what's in the clipping, you'll be able to view its contents directly from the Finder.

Desktop Enhancements: Loaded with Features
Dozens of handy system utilities are available for the Mac. Many of them are shareware; others are available in commercial packages such as Now Utilities. System 7.5 incorporates close to a dozen such improvements. Among them are

- A hierarchical Apple menu.
- Folders on the Apple menu that display recently accessed files, applications, and file servers.
- Sticky Memos, an electronic Post-it-note application.
- A menu-bar clock.
- WindowShade, which lets you collapse a window so that only its title bar shows.
- A vastly improved Find File command in the Finder.
10 Good Things About System 7.5

1. The Finder's Find File command. It displays a list of all the files that meet your search criteria. No more wandering from folder to folder in frustration.

2. Menu-bar clock. You've seen SuperClock, which displays the time and date in the menu bar. Now it's part of the system.

3. Hierarchical Apple menu. The contents of folders in the Apple Menu items folder display as Apple-menu submenus. So, for example, you can access an individual control panel directly from the Apple menu.

4. Desktop printer icons. System 7.5's QuickDraw GX lets you print files by dragging them onto printer icons on the desktop. Opening a desktop printer icon displays a list of files queued up for printing.


6. PowerTalk. Want to send that spreadsheet you're working on to a colleague without leaving your application? It's a snap if the application supports the PowerTalk Mailer — and a growing number of programs do.

7. Drag and drop. Drag selected text or graphics onto the desktop to create a clipping file. Drag data from a spreadsheet to a chart to update the chart. Drag a graphic directly into a page layout. You get the idea.

8. MacTCP. Been waiting for that chance to cruise the information superhighway? MacTCP provides a needed network connection. Of course, you still have to pay your own tolls.

9. Faster Finder. Apple claims it's as much as twice as fast at copying files as the System 7.1 Finder. And it's fully scriptable!

10. System 7.5 is fat. From a single set of disks, you can install System 7.5 on either a 680x0 Mac or a Power Mac — or install a system that works on both.

We couldn't leave a discussion of System 7.5 without mentioning MacTCP. For those who don't dabble in acronyms, TCP (Transmission Control Protocol) is a network protocol common on UNIX systems. What makes it a hot item these days is that you need it if you want to make a direct connection to the Internet. Formerly available bundled only with third-party products or licensed through developer programs, it will now be part of the standard Mac OS offering.

What's in It for You?

New system software always creates the urge to upgrade. In some, Others, the cautious types, prefer to watch someone else find the kinks and let Apple iron them out rather than offering up their Macs to an uncertain future.

System 7.5 will be no exception. Early adopters will run out and install it — they're probably already running a beta version — and ride out the storm. But a lot of people will wait. For two reasons: (1) Much of the technology in System 7.5 is already available, either in System 7.1 or in third-party utility packages and shareware. Those who have parts of System 7.5 may not want to pay for those parts again. (2) System 7.5 takes a big bite out of RAM. Apple's installed-RAM recommendation on this one has hit new heights: If you have a Power Mac and plan to install GX and PowerTalk, the suggested minimum RAM is a whopping 16 MB. No word on whether Apple plans to bundle SIMMs with the new system software.

Some people should definitely upgrade. If your office is using PowerTalk, odds are you're frustrated because System 7.1 doesn't run on Power Macs. Using System 7.5 is the only way to run PowerTalk on Power Macs. If Apple Guide appeals to you — particularly if you're a consultant or in-house support specialist who wants to develop custom Apple Guide databases — go for it. And if you're a network administrator, you might appreciate being able to maintain all of your users' systems with a single system-software release instead of being trapped in the current nightmare of having to support System 7.1 for PowerTalk users, 7.1.2 for Power Mac users, and 7.1 for the rest.

But if you're just J. Q. Average User — if your Mac works just fine the way it is, or if you barely even understand what all this new stuff is about, much less feel the need for it — stick with the system you're running. You'll save hard-disk space, have more RAM available to run applications, and avoid the headaches that often accompany a system-software transition.

Henry Bortman is MacUser's technical director. He currently keeps two systems handy: System 7.5 beta for thrills and System 7.1 for when he really needs to get some work done.

The Apple Guide in Action QuickTime movie is available in the MacUser Forum of ZiffNet/Mac and in the MacUser Online Section of eWorld. See page 4 of this issue for information on how to sign on to these services.
Introducing a printer for those who have ideas bigger than this page.

The HP DesignJet 650C/PS printer. Large-format at a small price. $9,995*

Go on. Give yourself room to think. With the HP DesignJet 650C/PS, you can now print in sizes up to 2' by 9' (up to 3' by 9' with our larger model**). Right in your office. Right away. No tiling. No hang-ups. No problem. Just clean, inkjet output with PANTONE™-licensed colors. Adobe® PostScript® Level 2 software and a built-in RIP are included. For an output sample, call 1-800-354-7622, Ext. 8277.

HEWLETT PACKARD

CIRCLE 12 ON READER SERVICE CARD
Everybody’s talking about the Internet. Once the exclusive domain of academics and hard-core UNIX nerds, the Internet has grown into a vast storehouse of information useful — and easily accessible — to even the most inexperienced traveler of the information superhighway.

Originally, the Internet was created to serve the needs of university researchers, government agencies, and the military. Large corporate sites were the next to see the advantages of an open community where information is shared and provided freely and where geographic boundaries can be traversed transparently.

Now just about every on-line dabbler has discovered — or at least heard about — The Net. Maybe you’ve heard jargon such as surfing the net, flaming, or WWW (World Wide Web). Maybe you’ve received a few business cards with strange e-mail addresses such as john_paul@vatican.org. Now you’re thinking that it’s time to check out this new way of communicating.

Well, rest assured — you can connect to the Internet from your Mac. It’s easy, but careful planning is essential. Here’s our step-by-step guide to getting wired.

From the viewpoint of Joe or Jane User, the Internet is an information resource, a gathering place, and a message center all in one — but it’s much bigger and far less structured than even the largest,
most popular on-line service or bulletin-board system. The reason is simple: The Internet isn't a single, identifiable entity—it's a network of networks, a multitude of computers all around the world, communicating via phone lines, Ethernet, and any other media that can support IP (Internet Protocol), the Internet's special protocol, or language. Each host computer (a remote computer you log on to on the Internet) is set up so information can move freely through it and, therefore, around the entire Internet. The Internet's e-mail and newsgroups depend on this free-flowing movement of information.

Some of these hosts also act like file servers—that is, they contain information Internet users can download to their own computers. In many cases, the information is contained in public directories, whose files anyone can access.

What You'll Find on the Internet

Although the Internet has a wealth of resources, a few of its features are more commonly used than others:

**E-Mail.** The most basic Internet service is electronic mail. Like e-mail within your company or on an on-line service, Internet e-mail lets you send messages to one or more other users, regardless of where they are located or what type of computer they use.

**Newsgroups.** Newsgroups are the Internet's town hall. Over 5,000 discussion groups, or newsgroups, cover a multitude of topics. Devotees of The Simpsons, bicycle repair, linguistics, the Newton, African-American culture, fax technology, and particle physics all have one or more newsgroups, with readers and contributors from around the world. In the true Internet spirit of information exchange, many newsgroups include regular postings of answers to frequently asked questions (FAQs). Newsgroups such as comp.sys.mac.com, which focuses on telecommunications for Mac users, have extensive FAQs that are updated regularly.

Some newsgroups are sedate forums for researchers; some are the homes of novice computer users seeking help; and some are arenas for rabid conspiracy theorists, political activists, and troublemakers. The most vitriolic of the messages they send are called flames.

**Mailing Lists.** Like newsgroups, mailing lists bring together people with similar interests, through postings that can be read by the group. Mailing lists are managed by one person or through automated mailing-list software and are distributed through e-mail to subscribers. You subscribe to a list about, say, folk music or Claris' FileMaker Pro by sending an e-mail message to the list's owner. You will soon receive daily, weekly, or occasional e-mail messages from people who submit them to the list. You can contribute your questions, comments, or information in the same way.

Some mailing lists receive many messages per day, and the owner sends periodic collections of posted material in digest form, keeping your e-mail traffic down considerably.

**FTP.** Like many other Internet terms, FTP (File Transfer Protocol) is often used as a verb, as in, "Where can I FTP the agenda of last year's International AIDS Conference from?" You use FTP to transfer files from an Internet host computer to your computer. Many Internet hosts support anonymous FTP (you don't need an account for the machine you are trying to reach), which lets you retrieve files from public directories.

**Search Engines and Browsers.** The Internet's vastness has given rise to software that helps you search for and retrieve information even when you don't know where it is stored. Using search engines with names such as Archie, WAIS (Wide-Area Information Server), and Gopher, you can learn the location of information on almost any topic. You can then FTP it to your Mac (getting the hang of the jargon?).

A WWW browser lets you take a virtual walk around the Internet or one of its sites, checking out what's available and deciding whether you'd like to see more, all via hypertext links. WWW is among the Internet's flashiest and fastest-growing services.

**Telnet.** Think of Telnet—another versatile noun/verb—as a transporter, à la Star Trek. Telnetting refers to logging on to one computer from another. For example, you can log on to the Internet host at your office and telnet from there to an Internet-connected computer at your firm's European office. If you have an account for the remote computer, you have all of that computer's privileges available to you. If you have Telnet access to an on-line service such as CompuServe or America Online, you can log on to the Internet without using a modem.

The Easy Part: Getting Connected

The basic requirements for Internet access are an account with an Internet service provider; communications software; and in most cases, a modem. Some corporations maintain their own Internet connections; if you work for one of them, you can usually log on to the net via AppleTalk networks in-house. For most, though, Internet access requires a dial-up connection—that is, through a modem and an account you pay for. The scope of your Internet access will depend on the type of account you have and the software you use.

Internet service providers are connected directly to the Internet, usually through one or more UNIX-based computers. You pay for an account that allows you to log on to the provider's system, just as you would log on to an on-line service or corporate mainframe. Logging on puts you on the Internet. Service-provider lists, including nixpub and pdial (two of the most well-known lists of service providers), are available on the Internet and on-line services.

The other way to get onto the Internet is to go through a commercial on-line service such as CompuServe. Such services have gateways to the Internet, although you can generally exchange only e-mail and occasionally news if you go through them (see figure 1).

The Hard Part: Choosing an Interface

The Rubicon of Internet connectivity is the choice between text-based access—terminal emulation—and a graphical interface, like the one you're used to on the Mac. This may seem like a no-brainer, but applying a friendly face to an Internet connection takes a bit of work and forces you to confront the nuts and bolts of Internet networking. On the other hand, terminal emulation requires you to
learn UNIX commands, something Mac users rarely relish.

The easiest way to log on to the Internet is to dial in to your service provider’s system with a Mac communications program such as the shareware ZTerm or Hayes’ Smartcom II. Your Mac then becomes a terminal on the Internet host. Because the Internet host uses the UNIX operating system, you need to use UNIX commands to read news, send mail, and transfer files. Some UNIX applications running on an Internet host have rudimentary menus, but the menus are driven by your keyboard, not your mouse. Fortunately, you can use e-mail and access newsgroups without learning many commands. You can also read documentation for the application you’re using while you’re connected or after you have downloaded it.

The commands for transferring files and searching for information are trickier, and they vary with the telecommunications protocols your Internet host supports.

**Direct Access**

**HOOKING UP YOUR MAC NETWORK to the Internet is not difficult, but it involves some cost and a little network expertise.**

For complete connectivity — giving your site continuous access to the Internet — you will need a dedicated data circuit (also called a leased line) from an Internet service provider’s POP (Point of Presence) to your site. POP is a fancy name for a rack of modems and routers owned by an Internet service provider. If you provide your own Internet access, you’ll need your own POP.

**Think of a POP as your on-ramp to the Internet.** Data speeds over a leased line range from 56 kbps to 45 Mbps. Typically, the line is owned by your local telephone company. You pay a monthly fee for the line and a flat fee to the Internet access provider. For 56-kbps connectivity in the U.S., the total cost is around $1,000 per month. Although this isn’t cheap, one leased line will let you connect all the computers within your organization to the Internet.

Your leased line is connected to a device on your site called a CSU/DSU (Customer Service Unit/Data Service Unit), the interface between the phone company’s equipment and your router. The CSU/DSU is connected to a router connected to your LAN. The router, using IP, allows any properly configured Mac on your network to communicate with any host on the Internet.

**Macs connected to your network** need MacTCP, available with some Mac Internet access packages and as part of System 7.5. Each Mac requires a unique IP address, which your Internet service provider gives you. You also have to register a unique domain name for your organization. Your Internet provider can help you with this too.

You’ll also need a DNS (Domain Name Server), which keeps track of the names and addresses of your own and other Internet hosts. You can either set up your own DNS or use your service provider’s. Having your own DNS lets you add users to and remove them from your network. You will, however, need a UNIX system to run the DNS software, since no DNS software is available for the Mac. Setting up a DNS is not trivial, but it isn’t terribly difficult if you know your way around UNIX. If you want to manage your company’s e-mail and newsgroup access, you need server software for that as well. The best server software runs on UNIX systems — you can use your DNS machine for e-mail and news, to centralize Internet administration.

Security is another Internet-connectivity consideration. Most routers support the filtering of information, so that you can deny access to your network to the outside world. / Smoot Carl-Mitchell

Terminal emulation’s advantages are ease of configuration (all you need to get connected is to know your user ID, your password, and the phone number of the Internet host’s modem), speed, and full functionality. Terminal emulation — sometimes called a shell account — is usually the cheapest kind of Internet account, although that is changing a bit. The UNIX-based software for reading news often has more features than the Mac alternatives. Since UNIX-based mail and news software is not burdened with a graphics interface, reading large volumes of news or mail often goes faster.

**Internet Access: the Mac Way**

If you find the Mac’s point-and-click interface indispensable, you can apply it to the Internet, as long as you have two important items: Apple’s MacTCP software and a SLIP or PPP account from your service provider. MacTCP is a control panel that lets your Mac communicate with an Internet host in its native language. IP. A SLIP (Serial Line Internet Protocol) or PPP (Point to Point Protocol) account puts your Mac on the Internet.

Getting MacTCP is easy — it’s part of Apple’s System 7.5 and is also included with several Internet software packages. You can’t, however, just buy a copy of MacTCP alone. Setting up MacTCP can be a headache (fortunately, you have to set it up only once). It’s best to have your service provider configure MacTCP for you to ensure that all settings are correct. If the provider won’t do that, you need to find out the following, some of which will be needed when you configure SLIP or PPP:

- The service provider’s modem phone number.
- An IP address (your unique Internet identifier) and an e-mail address for your use.
- Whether your IP address is determined manually (you enter a permanent IP address) or dynamically (one is assigned by the host each time you log on).
- The name and IP address of your Domain Name Server (there might be more than one).
- You may also need:
  - A gateway address for the server you’re dialing in to.
  - The name of your news server (the machine on which newsgroup information is stored).

Now all you have to do is open the MacTCP control panel, click on the More button, and fill in the settings with the information you received from your service provider.

Once you have MacTCP configured, your next task is to configure SLIP or PPP software. SLIP tools such as Synergy Software’s VersaTerm SLIP, part of VersaUtilities, and InterCon Systems’ InterSLIP, part of TCP/Connect II, come with commercial Internet software packages. InterSLIP is also distributed freely through the Internet. MacSLIP is available for $49.95 from TriSoft (800-531-5170). InterPPP is a separate product from InterCon Systems. MacPPP is available free on the Internet and from on-line services.

Be forewarned that not every Internet site supports SLIP and PPP. And, compared to terminal-emulation accounts, SLIP and PPP accounts are often more expensive. SLIP and PPP accounts are more likely to be billed on an hourly basis than are terminal-emulation accounts, so you may pay a higher monthly fee (more than $30 a month) plus a per-hour charge (as opposed to a flat fee of $20 a month for a terminal-emulation account).
EXPLORE the INTERNET!

FIVE HOUR FREE TRIAL!

Dial By Modem 1-800-365-4636, Press return until you get a prompt
At Username, enter JOINDELPHI. At Password, Enter MCU949

DELPHI is the only major online service to offer you full access to the Internet. And now you can explore this incredible resource with no risk. You get 5 hours of evening/weekend access to try it out for free!

Use DELPHI's Internet mail gateway to exchange messages with over 20 million people at universities, companies, and other online services such as CompuServe and MCI Mail. Download programs and files using FTP or connect in real-time to other networks using Telnet. You can also meet people on the Internet. Internet Relay Chat lets you “talk” with people all over the world and Usenet News is the world’s largest bulletin board with over 4500 topics!

To help you find the information you want, you’ll have access to powerful search utilities such as “Gopher,” “Hytelnet” and “WAIS.” If you aren’t familiar with these terms, don’t worry; DELPHI has hundreds of expert online assistants and a large collection of help files, books, programs, and other resources to help get you started.

Over 600 local access numbers are available across the country. Explore DELPHI and the Internet today. You’ll be amazed by what you discover.

Questions? Call 1-800-695-4005.
Send e-mail to INFO@delphi.com

CIRCLE 37 ON READER SERVICE CARD
SLIP is more common than PPP, primarily because it has been
around longer. PPP, a more efficient protocol, is growing in accep-
tance. Since both kinds of access use the service provider's system in
the same way, you shouldn't have to pay more for PPP. If you have a
choice, pick PPP.

If you decide to go with a graphical Mac interface, you'll have sev­
eral shareware Mac applications to choose from when assembling a
software tool chest. Mail and news readers, FTP client software (the
software used to transfer files to your Mac), information browsers,
and clever utilities circulate freely from anonymous-FTP sites. Most
of this software is good and well supported. With these applications,
you may miss some advanced features available in UNIX-based soft-
ware on your Internet host — news readers don't yet support filtering
documenting the kind you find on UNIX systems, for example — but using
Mac software definitely beats learning UNIX.

Several telecommunications products take an integrated ap­
proach to the Internet. Synergy Software's VersaTilities, Software
Ventures' MicroPhone Pro II, and InterCon Systems' TCP/Connect II
each combine e-mail, news, FTP, and Telnet into one software
bundle. The integrated approach speeds configuration of your
Internet account and provides a standard interface for several
Internet services. You also gain the advantage of technical support
(see the "Internet Software" sidebar for our ratings of leading
Internet-access programs).

Internet in the Office
Many companies, particularly in high technology, have joined the
Internet, either through direct links (using their own UNIX-based
systems) or through service providers. If your company has an
Internet connection and allows its employees to access the Internet,
you may be able to reach the Internet directly from your Mac and the
office network. Your system administrator should be able to provide
what an Internet service provider would: MacTCP configuration
and software. If your company is not on the Internet, it can purchase
access from a service provider or buy equipment to make the con­
nection (see the "Direct Access" sidebar).

Some businesses have integrated the net to the extent that Inter­
et e-mail arrives on your Mac directly from your company's e-mail
system. Several vendors, including StarNine, sell e-mail gateways.
With one of the StarNine Mail*Link SMTP Internet e-mail gateways,
a QuickMail, Microsoft Mail, or PowerTalk user can receive Internet
e-mail. You can attach files to e-mail messages, because StarNine

<table>
<thead>
<tr>
<th>Service</th>
<th>Phone</th>
<th>Internet Services</th>
<th>Mac Software</th>
<th>Price</th>
<th>Internet Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>America Online</td>
<td>800-827-6364</td>
<td>E-mail gateway.</td>
<td>yes</td>
<td>$9.95/month (includes 5 hours), $1.50/additional hour</td>
<td>no extra charge</td>
</tr>
<tr>
<td></td>
<td>703-448-8700</td>
<td>Usenet newsgroups.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>703-506-1942 (fax)</td>
<td>Internet forum/software.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>WAIS and Gopher search.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CompuServe</td>
<td>800-848-8199</td>
<td>E-mail gateway.</td>
<td>yes</td>
<td>$49.95 membership (includes $25 usage credit); basic service, $8.95/month, unlimited access; Enhanced Services, $1.20 or 2,400 bps; $9.80/hour, 9,600 or 14,400 bps</td>
<td>$1.5 per e-mail message, using the Internet gateway; forums/downloading are Enhanced Services</td>
</tr>
<tr>
<td></td>
<td>614-457-8650</td>
<td>Internet forum/software.</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>614-457-0348 (fax)</td>
<td>Telnet to service.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delphi</td>
<td>800-695-4005</td>
<td>E-mail gateway.</td>
<td>no</td>
<td>$10/month (includes 4 hours), $4/additional hour; $20/month (includes 20 hours), $1.80/additional hour</td>
<td>$3/month</td>
</tr>
<tr>
<td></td>
<td>617-491-3393</td>
<td>Usenet newsgroups.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>617-491-6642 (fax)</td>
<td>Internet forum/software.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>WAIS and Gopher search.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Telnet to other hosts. FTP IRC (Internet Relay Chat).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>eWorld</td>
<td>800-775-4556</td>
<td>E-mail gateway.</td>
<td>yes</td>
<td>$8.95/month (includes 4 hours)</td>
<td>no extra charge</td>
</tr>
<tr>
<td></td>
<td>408-974-1236</td>
<td></td>
<td></td>
<td>$2 evening or weekend hours, $7.90/hour (day), $4.95/additional evening or weekend</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEnie</td>
<td>800-638-9636</td>
<td>E-mail gateway.</td>
<td>no</td>
<td>$8.95/month membership, $125/month, unlimited access</td>
<td>no extra charge</td>
</tr>
<tr>
<td></td>
<td>301-251-6415</td>
<td>Internet forum/software.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>301-251-6421 (fax)</td>
<td>GEnie sygops will search/FTP files for users.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCI</td>
<td>800-444-6245</td>
<td>E-mail gateway.</td>
<td>no</td>
<td>$5.00/first 500 characters, $1.10/next 9,500 characters</td>
<td>no extra charge</td>
</tr>
<tr>
<td></td>
<td>202-833-8484</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prodigy</td>
<td>800-776-3449</td>
<td>E-mail gateway.</td>
<td>yes</td>
<td>$14.95/month (first month free)</td>
<td>no extra charge</td>
</tr>
<tr>
<td></td>
<td>914-448-8000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CREATIVE FORCES ARE DRAWN TO THE ViewSonic 17

"Your mind's eye visualizes the finished work and you are drawn to the screen of the new ViewSonic 17. This is where perfection is found. The image on the screen is vital to you — not all monitors are created equal. That's why we developed the New Generation ViewSonic 17 color monitor. There is a difference!

The revolutionary super dark screen of the ViewSonic 17 is designed to increase contrast and produce pure, sharp colors. In addition to a vivid, luminescent image, our digitally controlled 17" monitor offers ViewMatch, a color control system designed to accurately match the screen to printer output. To customize settings, such as screen size or pincushioning, there is OnView, an easy-to-use array of on-screen adjustments. And the monitor supports non-interlaced resolutions up to 1,600 x 1,200 pixels.

The ViewSonic 17 is even equipped with BNC connectors; which allows two systems to be attached to the monitor at the same time. As a matter of fact, the entire line of ViewSonic's 15-through 21-inch New Generation monitors is MAC and PC compatible, and meet Swedish MPR-II standards for low radiation.

Unleash your creative forces with the new ViewSonic 17 ... and See The Difference!

20480 Business Parkway Walnut, CA 91789
Tel: (800) 888-8583 or (909) 869-7976 Fax: (909) 869-7958
17" CRT model 17" diagonal viewable screen

ViewSonic See The Difference!

CIRCLE 76 ON READER SERVICE CARD
There's a wealth of Mac software — both commercial and shareware — that will help you access and navigate the Internet. Most of the commercial products take an integrated approach to the Internet, with modules for e-mail, news-file transfer, and Telnet.

Integrated Packages
MicroPhone Pro II
MicroPhone Pro II is a popular telecommunications program that includes some Internet tools: a Telnet tool, MacTCP and Fetch FTP client software, and modules for e-mail and news. The e-mail and news modules are written in MicroPhone's scripting language and use the program's interface-building tools to make icons, windows, and buttons. The news-group interface is particularly friendly and Mac-like, with standard dialog boxes for subscribing to and unsubscribing from groups. Unfortunately, the program lacks important article-management and searching features and is slow. You can script your own Internet applications, a feature unique among these products. Documentation is well written and organized, including separate manuals for TCP/IP tools, Internet utilities, and scripting.


TCP/Connect II 1.2
A wealth of features is packed into TCP/Connect II, This ambitious program includes e-mail, news, and FTP software. It also supports multiple terminal-emulation sessions and Telnet. For news and e-mail, TCP/Connect II supports message filtering, a handy feature for sorting through the dozens of messages you're likely to receive. However, its single-window, multipane approach to news reading is marred by poorly designed keyboard navigation commands. It's also slow when retrieving newsgroup information. Its single, dense manual is merely a catalog of features and offers little troubleshooting help.


VersaTilities 1.13
A versatile package of Internet utilities, VersaTilities includes SLIP client and server software; FTP server software; and an integrated application for news and e-mail access and FTP. VersaTerm Link, the package's application software, contains a handy icon bar and an impressively fast news reader. However, although it alphabetizes subject lines for news articles, it lists threads (a group of messages on the same topic) continuously — there's no indenting or other tidy means of distinguishing articles beyond the first in a thread. A convenient e-mail module allows you to define aliases for individuals and for groups, and the easy-to-read manual makes setup simple. VersaTerm Link is also included with Synergy's VersaTerm Pro, a telecommunications and terminal-emulation package.


WorldLink
For beginners, using WorldLink is a convenient way to sample the Internet. With a graphical interface and feature set almost identical to that of TCP/Connect II, WorldLink is a dial-up application that needs neither MacTCP nor SLIP/PPP software. To use WorldLink, you must buy an account with PSI, a Virginia-based Internet service provider. WorldLink downloads your e-mail, news, and FTP requests in batch mode, letting you read material and create responses off-line. At 2,400 bps, WorldLink is painfully slow, and like TCP/Connect II's, its documentation needs work. Still, using WorldLink is an easy way to sample the Internet.

WorldLink / List Price: $29.95, plus $9 (2,400 bps) or $19 (9,600 bps) per month. Company: InterCon Systems, Herdon, VA; 703-709-5500.

Single-Purpose Programs
Anarchie 1.13
Anarchie allows you to use the Archie protocol to search for files on countless hosts across the Internet and provides a slick interface for downloading files to your Mac from anonymous FTP sites. Anarchie lets you connect to more than one FTP site at a time and download multiple files simultaneously. Anarchie uses Apple events to automatically decode compressed or BinHex files once
Yes! I'd like to try America Online—FREE.
Send me the free software and trial membership. I understand there's no risk—if I'm not completely satisfied, I may cancel without further obligation.

NAME

ADDRESS

CITY

STATE ZIP

HOME PHONE

Use of America Online requires a major credit card or checking account. Limit one free trial per household. America Online is a registered service mark of America Online, Inc. Other names are service marks or trademarks of their respective owners.
Test Drive The Internet On America Online For 10 Hours, FREE.

The Internet Center, An America Online Exclusive!
Before you can exchange ideas with people around the world, you have to learn your way around the information superhighway. No problem. Just go to our Internet Center—your road map to the Internet. You'll find we've made it as easy to handle as America Online. With a point and click, you can access newsgroups on hundreds of topics, send e-mail to other online services or overseas, access information on everything from home brewing to NASA news using Gopher and WAIS databases—and more. Best of all, on America Online, you can navigate the Internet without worrying about message counts, block counts, or surcharges—it's all at no extra charge!

Plus, Expert Advice, Fast Downloading And More!
In addition to the Internet, you can check out everything that America Online offers. Get expert advice from over 300 hardware and software manufacturers and developers. Send comments and questions to the editors of your favorite magazines. Exchange programs in our software libraries, featuring over 50,000 files to download. With multi-file downloading, it's fast and easy. Plus, you can even talk with other members in real-time conversations, conferences and classes. All on the most "clickable" online service there is.

Start Your Test Drive Today.
So hit the information superhighway and head for America Online. It's easy. Just mail the attached card or fax it to us at 1-800-827-4595. Or simply call 1-800-827-6364, Ext. 1452, to order today! We'll send you everything you need to try it free.
they're on your Mac. Although it doesn't yet allow users to upload files or view text files on the fly, Anarchie is so flexible that it may soon become the Mac FTP application of choice.

**Anarchie 1.13 / List Price: shareware ($10 for Individuals, $500 for companywide site license). Provider: Peter Lewis.**

**Eudora and Eudora shareware**

Eudora is the pioneer Internet e-mail package for the Mac. It can be used with a MacTCP connection or as a stand-alone application that can dial your Internet host and retrieve e-mail automatically. To use the stand-alone option with most systems, you must use ResEdit to modify Eudora resources for your particular Internet host — but sorry, there's no documentation on how to do this, except with a HyperCard stack on the Eudora disk.

Both the commercial and the shareware versions store messages in an unlimited number of mailboxes, so you can organize your e-mail by sender, subject, or any other criteria. You can create address books and aliases for e-mail addresses. Eudora lets you attach Mac files to e-mail messages and is smart enough to translate attachments to and from the common BinHex transfer format. The commercial version also includes e-mail-filtering options.


**InterNews**

Fast and efficient, InterNews represents newsgroup sets (a set of newsgroups you group together) with attractive icons. It features a single-window, multipane layout that's compact and attractive.

You have the option of three horizontal windows (newsgroups on top, article titles in the middle, article text at bottom) or one horizontal window (article text) topped by two side-by-side windows (newsgroups and article titles). Reply functions are also well integrated with each other. InterNews lets you perform text searches on newsgroup and article subject lines.

**InterNews 1.01 / List Price: free for individuals, $25 for commercial users. Provider: Dartmouth College.**

**NCSA Mosaic**

A sophisticated assistant, Mosaic helps you navigate the World Wide Web, an international hypertext-based network of linked information. Also available for Windows and UNIX environments, Mosaic is based on a "home page" interface — a document containing text and graphics. Some words, phrases, and pictures are linked to other home pages, indexes, and sound or video files. Clicking on a link takes you to another page, whether it's located on the WWW server you're using or on another one across the Internet. A pull-down menu and HyperCard-style arrows let you backtrack at any time. The only limitation for the impatient user is speed. Much of the program's slowness is due to the searches and remote connections Mosaic must do during your Internet travels. Mosaic 2.0, due later this year, will support text searches and add other features.

**NCSA Mosaic / List Price: free. Provider: University of Illinois National Center for Supercomputing Applications.**

**NewsWatcher**

Written and distributed freely by one of the heroes of personal computing, John Norstad, this news reader tracks and displays the number of articles in a newsgroup. NewsWatcher can search a newsgroup's subject line, author name, keyword, or other header information, displaying resulting messages in a new window. Some newsgroups consist of user-uploaded files called binaries. NewsWatcher can download and decode these BinHex files with one click. Threads are succinctly represented by System 7-like triangles to the left of the subject line. Click on the triangle, and the subject lines of the other messages in the thread appear. Replying to the author of an article by direct e-mail, adding your own article to a thread, and starting a new thread are all easy. Unfortunately, NewsWatcher cannot search or sort newsgroup-article titles and does not support BinHex files — that is, it is unable to filter out article titles or authors that you don't want to see.

**NewsWatcher 2.04 / List Price: free. Provider: John Norstad, Northwestern University. / Shelly Brisbin and Joe Clark.**

looking for an Internet service provider, for example, have a friend who's already an Internetter provide you access to the Internet's nixpub or pdial lists.

Each of these directories, which are also posted on the Internet forums of such popular on-line services as America Online, CompuServe, and ZiffNet/Mac, provides listings of Internet service providers. Lists of FTP sites, mailing lists, and WWW servers can tell you where to find everything from Macintosh software to the lyrics of popular songs.

Internet books abound. At least two, accompanied by disks of shareware containing Internet utilities and tools, are specifically for Mac users. Adam Engst's Internet Starter Kit for Macintosh (Indianapolis: Hayden Books, 1993) comes with a copy of MacTCP, InterSLIP, the Eudora e-mail reader, and more. Michael Fraase's The Macintosh Internet Tour Guide (Chapel Hill, NC: Ventana Press, 1993) also comes with a disk of software. Each book includes lists of newsgroups, service providers, and FTP sites as well as detailed explanations of Internet services, conventions, and commands. If you're serious about exploring the Internet, these books will prove a valuable investment.

The Internet is a vast source of information, growing daily. Once you've started surfing the net, you won't regret the time it took you to get set up. In fact, the only regret you may have is that you have to log off and get back to work.

Joe Clark is a Toronto-based writer who spends way too much time on-line. Smoot Carl-Mitchell, managing partner of Texas Internet Consulting in Austin and coauthor of The Internet Connection: System Connectivity and Configuration, also contributed to this story.

You can find more information about the Internet, including lists of service providers, on ZiffNet/Mac. See page 4 for details on how to access ZiffNet/Mac.
La Cie hard drives with Silverlining™ hard disk management software deliver the best performance and value. La Cie’s Tsunami drives are sleek, portable and powerful. With features like switchable active termination for maximum data integrity and up to a five year warranty, Tsunami drives can be used with confidence.

<table>
<thead>
<tr>
<th>Capacity Internal Tsunami</th>
<th>Capacity Internal Tsunami</th>
</tr>
</thead>
<tbody>
<tr>
<td>170MB $199 $259</td>
<td>2050MB $2269 $2329</td>
</tr>
<tr>
<td>270MB $269 $329</td>
<td>S=Seagate mechanism (1 year warranty)</td>
</tr>
<tr>
<td>340MB $299 $359</td>
<td></td>
</tr>
<tr>
<td>540MB $399 $499</td>
<td></td>
</tr>
<tr>
<td>1080MB $749 $849</td>
<td></td>
</tr>
<tr>
<td>1400MB $939 $999</td>
<td></td>
</tr>
<tr>
<td>2100MB $1339 $1399</td>
<td></td>
</tr>
<tr>
<td>1650MB $1979 $2039</td>
<td></td>
</tr>
</tbody>
</table>

LaserWriter 630 installation kit available

ZFP REMOVABLE MEDIA SOLUTIONS

For reliability and quality in removable media choose La Cie. Our SyQuest drives offer capacities from 88MB to 270MB. Our CD-ROM drive supports both single and double speed data transfer, plus Photo CD. Our new optical drive offers quiet, reliable operation with cost-effective media. Protect your valuable data with our high-capacity DAT drives. For economical back-up for smaller capacities, try our TEAC tape drives. We have your selection. External drives are shipped in zero-footprint cases.

<table>
<thead>
<tr>
<th>DAT Drives</th>
<th>CD-ROM Drives</th>
<th>Optical Drives</th>
<th>Tape Drives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Internal External</td>
<td>Drive External</td>
<td>Drive Internal</td>
<td>Drive Internal</td>
</tr>
<tr>
<td>5.0GB DAT $1099 $1159</td>
<td>Toshiba Dual Speed $639</td>
<td>230MB Cartridge $59</td>
<td>1.55MB $569</td>
</tr>
<tr>
<td>TurboDAT $1299 $1359</td>
<td></td>
<td></td>
<td>600MB $729 $789</td>
</tr>
<tr>
<td>8.0GB DAT $1539 $1599</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For all our pricing, call 1-800-368-8978 ext. 2 or visit: www.lacie.com

*Call for details on tax, conditions, limited money back guarantee (shipping not included), warranty and free offers. Comparison may not apply to all vendor products, check specifications. Prices do not include shipping and only apply to products shipped within the continental United States. International customers must pay for all shipping charges. Add sales tax where applicable. Jewel, ZFP, Tsunami, PocketDrive, PowerDock, Silverlining, SilverCase, SilverDrive, La Cie and the La Cie logo are trademarks of La Cie, Ltd., a Quantum Company. FORTUNE 500 is a registered trademark of the Time Inc. Magazine Company. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or occasion. © Copyright 1994 La Cie, Ltd. All rights reserved. Printed in U.S.A.
HURRY! ACT NOW!

We are making room for the new releases by offering closeout prices on these popular hard drive models. These prices won't last long! Quantities are limited!

This first quality merchandise carries a ONE YEAR WARRANTY and includes SILVERLINING hard disk management software ($149.00 value).

**Closeout External Hard Drives**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>External</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>40MB</td>
<td></td>
<td>$89</td>
</tr>
<tr>
<td>80MB</td>
<td></td>
<td>$119</td>
</tr>
<tr>
<td>100MB</td>
<td></td>
<td>$149</td>
</tr>
<tr>
<td>120MB</td>
<td></td>
<td>$199</td>
</tr>
<tr>
<td>200MB</td>
<td></td>
<td>$249</td>
</tr>
<tr>
<td>400MB</td>
<td></td>
<td>$369</td>
</tr>
<tr>
<td>525MB</td>
<td></td>
<td>$449</td>
</tr>
<tr>
<td>1000MB</td>
<td></td>
<td>$799</td>
</tr>
<tr>
<td>1200MB</td>
<td></td>
<td>$929</td>
</tr>
</tbody>
</table>

*Drive enclosures vary.
Every drive also includes owners manual, necessary cables, Apple System software and a generous collection of shareware.

---

**COLOR SCANNING SOLUTIONS**

**SILVERSCANNER II**

As low as **$1599**

Silverscanner II makes scanning as quick, painless and productive as possible. With features like dynamic color preview (16 sec.), magnify in preview, proof in preview, savable scan settings, up to 400% scaling in 1% steps and up to 1600 dpi in 1 dpi steps—all in one pass. It's easy for the beginner and powerful for the advanced user. And it's Macworld's Editor's Choice.

| Color | Full | 1.8 | Normal | Precision
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>4.84</td>
<td>4.84</td>
<td>4.84</td>
<td>4.84</td>
</tr>
<tr>
<td>Height</td>
<td>4.72</td>
<td>4.72</td>
<td>4.72</td>
<td>4.72</td>
</tr>
<tr>
<td>Resolution</td>
<td>300</td>
<td>600</td>
<td>2400</td>
<td>4800</td>
</tr>
<tr>
<td>DPI</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

*Drive enclosures vary. Every drive also includes owners manual, necessary cables, Apple System software and a generous collection of shareware.

---

**The La Cie Advantage**

- Silverlining Disk Management Software
- Unlimited TOLL-FREE Technical Support
- 30 Day Money Back Guarantee
- All Drives Burned In and Tested
- Double Shielded SCSI Cables
- FCC, UL, TUV, VDE & CSA Approved
- Ready to Plug and Play
- Valuable Warranties

---

**COLOR SCANNING SOLUTIONS**

**SILVERSCANNER II**

As low as **$1599**

Silverscanner II makes scanning as quick, painless and productive as possible. With features like dynamic color preview (16 sec.), magnify in preview, proof in preview, savable scan settings, up to 400% scaling in 1% steps and up to 1600 dpi in 1 dpi steps—all in one pass. It's easy for the beginner and powerful for the advanced user. And it's Macworld's Editor's Choice.

| Color | Full | 1.8 | Normal | Precision
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>4.84</td>
<td>4.84</td>
<td>4.84</td>
<td>4.84</td>
</tr>
<tr>
<td>Height</td>
<td>4.72</td>
<td>4.72</td>
<td>4.72</td>
<td>4.72</td>
</tr>
<tr>
<td>Resolution</td>
<td>300</td>
<td>600</td>
<td>2400</td>
<td>4800</td>
</tr>
<tr>
<td>DPI</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

*Drive enclosures vary. Every drive also includes owners manual, necessary cables, Apple System software and a generous collection of shareware.

---

**The La Cie Advantage**

- Silverlining Disk Management Software
- Unlimited TOLL-FREE Technical Support
- 30 Day Money Back Guarantee
- All Drives Burned In and Tested
- Double Shielded SCSI Cables
- FCC, UL, TUV, VDE & CSA Approved
- Ready to Plug and Play
- Valuable Warranties

---

To order or for more information, call toll-free

**800-999-1735**

Mon.-Fri. 5 a.m.-7 p.m. & Sat. 8 a.m.-noon PST

International 503-320-9000 Fax 503-320-9100 (24 hrs.)

UK 0900-89-9525 Australia 0014-500-123-007

VISA, MasterCard, C.O.D. and approved purchase orders accepted.

---

CIRCLE 42 ON READER SERVICE CARD
Which printer will stand up to your toughest office challenges? MacUser Labs tests 21 hard-working candidates.

By Drew J. Cronk and Anita Epler

A good office printer meets a straightforward job description: to meet the diverse printing needs of a group of networked computer users and to do so reliably and cost-effectively. Yet, as simple as this task seems, the average office printer encounters some far-from-simple variables: multiple computing platforms, multiple networks, and multiple user needs.

To survive in such an environment, an office printer must be rugged, fast, reliable, and — perhaps most important — accommodating. An office printer should support PostScript, use laser or LED technology, be networkable, and have an 8-ppm or better engine.

Using these criteria, we rounded up 21 printers that should be capable of filling the bill. After running these candidates through a battery of objective tests — as well as our own brand of real-world usability trials — we identified some that are more capable than others. Some breeze through their required duties with grace and dignity; others are more likely to just sit there and whine.

The Two Types of Office Printers

Once we had all the printers in our lab, we divided them into two groups: workgroup printers and departmental printers. Workgroup printers are designed for groups of 5 to 20 users: Each has an engine speed in the range of 8 to 12 ppm, supports LocalTalk networks (and in some cases, Ethernet), and offers basic paper-handling capabilities. List prices for these printers are in the range of $1,500 to $5,700.

Everything workgroup printers can do, departmental printers can do too — bigger, better, and faster. Designed for use by groups of 20 or more, they have engine speeds of 15 ppm and up, can work
on either LocalTalk or Ethernet networks, and sport hefty paper-handling capabilities. List prices for these workhorses are bigger too: $3,700 to $20,000.

After spending numerous hours testing, tweaking, and inspecting all the printers, we discovered that the line between workgroup and departmental printers isn't always clearly defined. In some of our tests, the fastest workgroup printers outran several departmental ones. Overall, print quality between the two groups was comparable and price tags for the highest-cost workgroup printers edge up against those of the lowest-cost departmental printers.

Some of the biggest differences between the two groups were in their features, not their performance. For instance, departmental printers have more paper-handling options and heavier-duty print engines than workgroup printers. Departmental printers are also harder to set up and, in most cases, are too large for one person to move (most of these printers weigh 75 to 120 pounds).

Understanding Resolution
In days gone by, a 300-dpi laser printer provided the best possible output quality. Many of today's printers, however, have a resolution of 600 dpi. Thanks to the higher resolution, you'll see sharper text and line art and an increase in the number of gray levels that can be printed.

Some vendors add resolution enhancements to their printers that
The Bottom Line

SPEED AND OUTPUT QUALITY are the two most important factors when you're choosing an office printer. But because competition among the printer vendors has gotten tougher—and printer quality has improved—you may find that your decision is based on other factors too, such as connectivity options, paper-handling abilities, and customer service.

- • • • OUTSTANDING
- • • ACCEPTABLE
- • POOR

Workgroup Printers

HP LaserJet 4M Plus + + +This value-priced printer ($2,688 list, $2,220 street) has just about everything a good office printer should have: speed, high-quality output, good connectivity options, and a solid company behind it. Still, it lacks a SCSI port.

GCC SelectPress 600 Pro + + +For large-format output, the SelectPress 600 Pro ($5,499 list, $4,855 street) is the clear winner, offering reasonable speed and output quality well above that of its competitors. The base price, although not low, includes an internal hard drive and a built-in EtherTalk port.

Apple LaserWriter Pro 630 + + + +Apple LaserWriter Select 360 + + + +NEC Silentwriter 1097 + + + +QMS 860 Print System + + + +T1 microLaserPro 600 + + + +Digital DEClaser 5100 + + + +Lexmark IBM LaserPrinter 4039-10R + + + +Lexmark IBM LaserPrinter 4039-12R + + + +ALPS LSK-1000 + + + +Kyocera Ecosys FS-1500A + + + +

Departmental Printers

HP LaserJet 4Si MX + + + An easy printer to recommend, the LaserJet 4Si MX ($5,299 list, $4,615 street) offers outstanding output quality, excellent speed, and a good all-around feature set. Again, our only complaint is the missing SCSI port.

PrePress Solutions VT800 + + + +For those who need tabloid-sized printing, the VT800 ($4,595 direct) is a solid choice. As one of four nearly identical printers that use the same engine, the VT800 has a slight edge, thanks to an external hard drive, a built-in EtherTalk port, and a year of on-site service.

Apple LaserWriter Pro 810 + + + +Dataproducts LZR 2080 + + + +QMS 2025 Print System + + + +QMS 3225 Print System + + + +Lexmark IBM LaserPrinter 4039-16L + + + +PrePress Solutions VT820 + + + +QMS 1725 SLS + + + +

Listing is alphabetical within groups of equal mouse ratings.

JUDGING THE QUALITY OF TEXT AND LINE ART

to gauge each printer's ability to print crisp text, sharp line art, and rich blacks, we turned our jurors loose with sample output, their reading glasses, and a high-magnification loupe. Upon their bleary-eyed return, our jurors had reached a verdict: With few exceptions, all the printers received a thumbs-up.

WORKGROUP PRINTERS. Five units — the Apple LaserWriter Pro 630, Apple LaserWriter Select 360, Digital DEClaser 5100, GCC SelectPress 600 Pro, and HP LaserJet 4M Plus — tied for top honors. Six of the seven remaining workgroup printers produced perfectly respectable text and line art. In fact, only one printer — the Kyocera Ecosys FS-1500A — received the dreaded "Poor" stamp of disapproval. Each of our jurors commented that lines this printer produced were noticeably jagged — even when viewed at a normal reading distance.

DEPARTMENTAL PRINTERS. The HP LaserJet 4Si MX was clearly the favorite, receiving a perfect score from every juror. The QMS 1725 SLS, which uses the same type of Canon engine as the LaserJet 4Si MX, was a close second. We chalk the LaserJet 4Si MX's edge up to its proprietary RET.

Printouts from the Apple LaserWriter Pro 810, the Dataproducts LZR 2080, and the PrePress Solutions (formerly Varityper) VT800 and VT820, which all use the same type of Fuji/Xerox engine, were nearly identical. These four printers have true engine resolutions of 300 and 400 dpi and employ interpolation to boost the resolution to 600 dpi, thereby causing text to look less sharp than that produced.
Output Quality / how good they look

Sharp text and high-contrast gray-scale images — these are two signs of a high-quality printer. To test output quality, we first created a sample page that included a variety of type sizes and styles, delicate line-art drawings, and a detailed gray-scale image. We then assembled a jury of experts and asked them to rate the output of each printer for the sample page. First, the jury members rated each printer’s ability to create sharp text and lines. They examined text and lines both at standard reading distance and under a high-magnification loupe, looking for jagged edges and clean hairlines. We then asked the jury to rate each printer’s ability to produce gray-scale images. This time jurors looked for the amount of detail in light and dark areas of an image and how smoothly the printer could produce a transition from dark to light gray. Here are some examples of what they saw.

Workgroup Printers
The Good. Our judges found that five printers produced top-notch output, such as this from the Apple LaserWriter Pro 630. In the gray-scale image below, note the smooth gradations in the sky and the amount of detail apparent on the buildings. In the inset, note the crisp lines of the L and the triangle as well as the smooth shading.

Lorem ipsum...aliquam erat volut.

The Bad. A poor-quality printer produces output that is much less sharp. This came from the Kyocera Ecosys FS-1300A. In the gray-scale image, note the banding in the sky and the loss of detail in all areas. In the inset, note the jagged edges in the curves of the L and the top of the triangle. Also note that the shading is characterized by large dots.

Lorem ipsum...aliquam erat volut.

Departmental Printers
The Good. In general, the departmental printers produced output equal in quality to that of the workgroup printers. In this sample from the HP LaserJet 4Si MX, the banding in the sky is slightly worse than that in the best workgroup-printer image and there is a tad more loss of detail. The text, however, is every bit as sharp. Most standard business offices will be pleased with this level of print quality.

Lorem ipsum...aliquam erat volut.

The Bad. As with the workgroup printers, we found a couple of departmental printers that couldn’t quite make the grade. The Lexmark IBM LaserPrinter 4039-161, produced extremely dark gray-scale images (as shown here) with noticeable loss of detail. Text, however, is dark and crisp — jagged edges in the curve of the L and the top of the triangle are barely noticeable.

Lorem ipsum...aliquam erat volut.

by printers with true engine resolutions of 600 dpi. Members of our jury noted that, compared to the printer leaders, this quartet produced slightly thicker, fuzzier type and slightly more jagged line art — flaws that make these printers less than ideal choices for desktop publishers but do not automatically disqualify them from use in typical offices.

Because of a bug in the firmware of the QMS 2025 and 3225 Print Systems, we weren’t able to print our sample output in time for the formal jury. QMS later fixed the bug, and we printed the sample documents. Several jurors performed an informal evaluation and found the text and line-art quality from these printers to be about average.
JUDGING THE QUALITY OF GRAY-SCALE IMAGES

We made even more demands of the printers when it came to judging their ability to handle photographic images. Our gray-scale test page contained light areas, dark areas, gradations, and areas of fine detail. Flaws became more readily apparent when we had the printers produce this complex document.

WORKGROUP PRINTERS. Four printers — the Apple LaserWriter Pro 630, Apple LaserWriter Select 360, HP LaserJet 4M Plus, and GCC SelectPress 600 Pro — continued their winning streak by producing above-average output. The Digital DEClaser 5100, which was one of the top picks for text and line-art quality, ranked in the middle of the pack when it came to producing gray-scale images. And once again, the Kyocera Ecosys FS-1500A placed dead last; its 300-dpi print engine simply didn’t have the resolution to keep up with the rest of the pack. Kyocera claims that it will ship a 600-dpi Ecosys printer in early fall. Alas, although the Kyocera Ecosys FS-1500A may be easy on the environment (see the “Printing Green” sidebar), its output is far from easy on the eyes.

DEPARTMENTAL PRINTERS. The HP LaserJet 4Si MX once again took top honors, although this time around, jurors noted a few minor flaws, such as slight banding in smooth, gray areas of the image. The QMS 1725 SLS, which handled our text and line-art output so well, made a poor showing with the gray-scale image, barely achieving an “Acceptable” rating. Jurors complained of a loss of shadow and detail, banding in graded areas, and overly dark halftones.

The Apple LaserWriter Pro 810, the Dataproductions LZR 2080, and the PrePress Solutions VT800 and VT820 produced average gray-scale images, marred by toner spray on the page and overly dark halftones — flaws that, although minor for a typical business setting, could eliminate them as serious contenders in a graphics-intensive office. An informal evaluation of images from the QMS 2025 and 3225 Print Systems showed them to be of average quality as well.

Only the Lexmark IBM LaserPrinter 4039-16L received a “Poor” rating for gray-scale output. The photographic image appeared very dark. Shadowy areas lost all detail, and gray areas appeared muddy.

THE THEORY ABOUT SPEED

Just as there’s a theory about how engine resolution relates to output quality, there’s a theory about how a printer’s components relate to its overall speed. Conventional wisdom holds that there are four basic factors — engine speed, processor speed, the amount of installed RAM, and the interface used to communicate with the Mac — that dictate just how fast a printer can turn out a job. If a manufacturer gets this combination just right, great things happen; if not, then somewhere along the line, a time-consuming bottleneck occurs.

The ppm rating vendors give their printers can be misleading. In fact, this figure reflects only the speed of the print engine. Although the engine speed dictates how fast a printer can pull in a letter-sized page, slap some dots on it, and drop it out the other side, a lot of other action has to take place before the speed of the engine counts.

Most of this action occurs in the printer’s PostScript interpreter, or RIP (raster-image processor), which must first construct the image by interpreting the PostScript code received from the Mac and turning it into a bit map. A laser then draws the bit-mapped image onto the printer’s drum. The drum and toner combined put the image on the page.

WORKGROUP-PRINTER SPEED / CLEAR WINNERS AND LOSERS

It’s all in a day’s work. To find out how fast these printers will run in a typical office, we printed a variety of documents — some that would be produced by administrative staff and others that would be produced by designers. Some printers, such as the HP LaserJet 4M Plus, performed well no matter what the task, whereas others performed best for one type of task. The NEC Silentwriter 1097, for example, ranked higher for business tasks than for graphics ones; the QMS 860 Print System, on the other hand, whizzed through the graphics tasks more quickly than most of the other printers but was among the slower ones for the business tasks. The printers are listed in order of their overall speed.
See to it that the printer you choose today is the printer you'll use tomorrow.

Insist upon a printer with genuine Adobe "PostScript" software inside. It's the industry standard and the only way to guarantee that your printer will work with virtually every software application and hardware environment, today and tomorrow. Adobe PostScript software sets the standard for new color and network printers. In fact, leading printer manufacturers offer over 300 Adobe PostScript printers. Adobe PostScript is your assurance of the highest-quality output—every time—whether you're printing from DOS, Windows®, OS/2®, Macintosh®, or UNIX®. So if you're anyone from a small business owner to a professional publisher, an Adobe PostScript printer is the best long-term value for your company, today and tomorrow. For a free guide on how to choose a printer, call 1-800-833-6687, Dept E, Ext. 1106.


It's not just printing, it's Adobe PostScript printing.

Adobe, the Adobe logo, PostScript, the PostScript logo and the tagline, "It's not just printing, it's Adobe PostScript printing" are trademarks of Adobe Systems Incorporated which may be registered in certain jurisdictions. All other marks and trademarks are the property of their respective companies. ©1994 Adobe Systems Incorporated. All rights reserved.
The processor acts as the printer's director, controlling all actions. In a well-engineered printer, a fast processor, a fast RIP, and a fast engine will mean fast printing speed.

The amount of installed RAM also affects the speed of the printer, since RAM acts as a holding tank for the data the processor has interpreted. All the printers we tested ship with enough RAM to hold a full page, but that amount can be anything from 2 to 16 MB, because some printers use compression schemes to keep the amount of necessary RAM low and because large-format printers need more RAM. These schemes, although they help make a printer easy on your budget, can also slow it down. If you plan to print more than simple memos and spreadsheets, you should look for a printer that comes with at least 7 or 8 MB of RAM.

Finally, consider how long it takes data to get from your computer to the printer. Data going to a printer travels faster over Ethernet than over LocalTalk — with one caveat: The printer must be able to swallow the data at the same rate as the network is trying to feed it. If it can't keep up, it's the old hurry-up-and-wait syndrome.

The reverse is also true: If the printer has a fast processor, it needs a connection that allows for rapid data transfer; otherwise, the processor will be hampered by long waits for information from the Mac. Texas Instruments offers a $349 upgrade card, the PowerStep, that increases a printer's processor speed. If you buy this upgrade card, make sure you also upgrade your network interface to EtherTalk.

What Our Tests Reveal About Speed

Although you can use a particular printer's specifications as a guide to how fast the printer will perform, you can't assume they'll tell the whole story. For instance, the QMS 3225 Print System we tested had a 32-ppm engine, a 33-MHz RISC processor, 16 MB of memory, and an EtherTalk port. You'd expect it to be fast, and it was — faster than any other printer we tested.

Easy, huh? Well, let's try again. Which was faster: the Apple LaserWriter Select 360, with a 10-ppm engine, 16-MHz RISC processor, 7 MB of RAM, and a LocalTalk port, or the Lexmark IBM LaserPrinter 4039-10R, also with a 10-ppm engine and a 16-MHz RISC processor but with 8 MB of RAM and an EtherTalk port? The Lexmark IBM LaserPrinter 4039-10R, right? After all, it had an extra megabyte of RAM and a top-of-the-line network connection.

Sorry, but in our workgroup-printer speed tests, the Apple LaserWriter Select 360 was faster in every test than the Lexmark IBM LaserPrinter 4039-10R. No, we didn't make a testing error. And no, we aren't playing favorites. The truth is simply that good engineering can give a printer an edge over its competitors.

Connecting to Your Network

Speed issues aside, it's critical that your printer provide a port that matches the network you're going to be using. Nearly all the vendors equip their printers with a LocalTalk port. ALPS, Kyocera, and Lexmark, however, offer LocalTalk support only as an option (for about $200). Only a handful of vendors include an EtherTalk port built in to their printers. Most do, however, offer EtherTalk support as an option, at a cost of about $500. Those printers that don’t have an EtherTalk option — the ALPS LSX-1000, the Apple LaserWriter Select 360, and the NEC Silentwriter 1097 — can be connected to an Ethernet network via an external LocalTalk-to-Ethernet adapter, such as the Dayna EtherPrint or the Asanté AsantéPrint.

For a printer to be truly networkable, however, it needs more than just the proper port. The multipurpose office (one that has Macs as well as PCs) has an inherent language barrier that a networked printer must be able to handle. Many DOS applications use HP's PCL instead of PostScript as their page-description language. For you to print files from these applications, the printer must also support HP's PCL (or an emulated version of it).

All the printers we tested offer an all-ports-active feature. They can accept data through any port and can automatically discover whether the file is entering through the EtherTalk, LocalTalk, serial, or parallel port. But only those printers with both an all-ports-active feature and automatic emulation switching can identify and interpret incoming data, no matter whether it's a PCL file from a 486 computer or a PostScript file from a Mac. Those that lack automatic emulation switching — the Apple LaserWriter Pro 630 and the Kyocera FS-1500A — require you to change the emulation setting via software each time the source of the incoming file changes.
If Columbus Didn’t Have To Sail Off The Edge, Why Should You?

When it comes to oversized printing, ordinary laser printers simply fall short. But with the DesignXpress Series™ from NewGen Systems, you can print full 11x17-inch bleeds—complete with crop and registration marks—on up to 12x20-inch paper. ✰ With up to 1200 dpi resolution, the DesignXpress 12 is perfect for creating camera-ready art and pre-production proofs. Plus, the DesignXpress Series features a 16 page-per-minute print engine, powerful RISC processor and built-in PostScript Level 2 for the latest in high-performance printing technology. ✰ To find out more, call NewGen at 1-800-756-0556. And discover a new world of laser printing on your desktop. NewGen Systems Corporation, 17550 Newhope Street, Fountain Valley, California 92708. (714) 641-8600.

© 1994. All rights reserved. NewGen is a registered trademark of NewGen Systems Corporation. All other trademarks are property of their respective owners.

CIRCLE 48 ON READER SERVICE CARD

Old world 11x17-inch printers don’t even give you 11x17. About 12-inch worth of layout sails off the edge. And your crop marks? They’re history.

The DesignXpress Series’ oversized format allows you to navigate through serious publishing projects without having to guess about what lies beyond.
### Workgroup Printers / what you need to know

<table>
<thead>
<tr>
<th>Feature</th>
<th>AIPS LXS-1000</th>
<th>Apple LaserWriter Pro 630</th>
<th>Apple LaserWriter Select 360</th>
<th>Digital DEC Laser 5100</th>
<th>GCC SelectPress 600 Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>List price, base model</td>
<td>$1,499</td>
<td>$2,299</td>
<td>$1,599</td>
<td>$2,199</td>
<td>$5,699</td>
</tr>
<tr>
<td>List price as tested</td>
<td>$2,035</td>
<td>$2,299</td>
<td>$1,599</td>
<td>$2,199</td>
<td>$5,699</td>
</tr>
<tr>
<td>Street price as tested</td>
<td>$1,950</td>
<td>$2,070</td>
<td>$1,540</td>
<td>$2,285</td>
<td>$4,855</td>
</tr>
<tr>
<td>Engine speed</td>
<td>10 ppm</td>
<td>8 ppm</td>
<td>10 ppm</td>
<td>8 ppm</td>
<td>8 ppm</td>
</tr>
<tr>
<td>Interface as tested</td>
<td>EtherTalk</td>
<td>EtherTalk</td>
<td>LocalTalk</td>
<td>LocalTalk</td>
<td>EtherTalk</td>
</tr>
<tr>
<td>RAM (std./max.)</td>
<td>2 MB/3 MB</td>
<td>8 MB/32 MB</td>
<td>7 MB/16 MB</td>
<td>2 MB/66 MB</td>
<td>16 MB/16 MB</td>
</tr>
<tr>
<td>RAM (test config.)</td>
<td>6 MB</td>
<td>8 MB</td>
<td>7 MB</td>
<td>10 MB</td>
<td>16 MB</td>
</tr>
<tr>
<td>300-dpi resolution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>600-dpi resolution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolution enhancement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray-scale enhancement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LocalTalk port included</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EtherTalk port included</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCL 4 support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PCL 5 support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCSI port included</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal hard drive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PostScript Level 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tabloid-sized printing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Built-in duplexing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple active trays</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fax option</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toner recycling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Star compliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toll-free tech support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended warranty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Std. warranty</td>
<td>3 years</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
</tr>
</tbody>
</table>

* MacUser RECOMMENDS  * NEC does not publish list prices  * Offers interpolated resolution of 300 x 600 dpi  * Available at 300-dpi resolution only

---

### The Importance of Paper Handling

If you’re tempted to shrug off paper handling as unimportant, think again. If you frequently print lengthy reports or manuals, you’ll want a printer that can hold a large quantity of paper; maybe you’ll want one that can automatically print on both sides of the paper. Or if you regularly print large spreadsheets, brochures, or press proofs, choose a printer that supports large-format printouts.

Overall, departmental printers offer better paper-handling capabilities than workgroup printers. For example, although all the workgroup printers we tested accept letter-sized paper, only two - the GCC SelectPress 600 Pro and the QMS 860 Print System - accommodate 11-x-17-inch (tabloid-sized) paper. In contrast, all the departmental printers except three - the HP LaserJet 4Si MX, the Lexmark IBM LaserPrinter 4039-16L, and the QMS 1725 SLS - can handle tabloid-sized printouts.

Departmental printers also generally hold more paper trays than workgroup printers and the trays each hold more sheets of paper. Most workgroup printers come equipped with one paper tray that holds around 250 sheets of paper. Exceptions include the Digital DEC Laser 5100, GCC SelectPress 600 Pro, and TI micro Laser Pro 600, each of which comes with two 250-sheet paper trays.

Most departmental printers, on the other hand, come with two or three paper trays that can hold 250 to 500 sheets of paper each. The QMS 1725 SLS, for instance, comes with three paper trays that hold a total of 1,500 sheets of paper, and the Apple LaserWriter Pro 810 and the PrePress Solutions VT820 come with three 250-sheet trays. Again, the Lexmark IBM LaserPrinter 4039-16L is the odd printer out — it comes with only one, 500-sheet paper tray, giving it a capacity equal to that of the two-tray workgroup printers.

The hands-down paper-handling champs, however, are the two QMS behemoths: the 2025 and the 3225 Print Systems. These workhorses are designed to keep pumping out pages all day, every day — more like photocopiers than traditional office printers. For instance, the HP LaserJet 4Si MX has a duty cycle of 75,000 pages per month, but the QMS 2025 Print System can handle 100,000 pages per month and the 3225 Print System can spew out 200,000 pages per month before you risk overtaxing the printer. In addition, the 2025 and 3225 Print Systems offer features that no other departmental printer we reviewed does — collating, offset stacking, and signature printing. (Dataproducts has recently released two printers that...
provide competition for these QMS ones, the Typhoon 30 and the Typhoon 60; see New on the Menu, July '94, page 32.)

If you like the idea of printing on both sides of the paper — without stopping to flip the pages yourself — you should consider a printer that supports duplexing. As you might expect, QMS offers duplexing as an option for its 2025 and 3225 Print Systems. HP, Kyocera, and Lexmark also deserve points for giving you duplexing as an option on any of their printers.

If you regularly use different types of paper — say, letterhead and standard bond — consider a printer that has two (or more) active trays. With these printers, you can keep letterhead in one tray and plain paper in the other and select the desired paper tray directly from the Print dialog box. You might, for example, want to print the first page of a document from the tray that contains letterhead paper and the following pages from a tray that holds plain paper.

**Features We’d Like to See More Often**

Several printers have noteworthy features we’d like to see more frequently. Some have a SCSI port for attaching a font-filled external hard drive — a time-saver if you frequently print multifont and graphics-laden documents. A few vendors deserve kudos for including an internal hard drive (or at least a bay for one) as well.

The ALPS LSX-1000, Apple Laserwriter Pro 810, Dataproducts LZR 2080, NEC Silentwriter 1097, and PrePress Solutions VT800 and VT820 can combine two standard office functions — printing and fusing — in one box. You can add an optional fax card, thereby turning the units into plain-paper PostScript fax machines as well as printers.

We also appreciated the big, bright, 4-line/20-character LCD on the Lexmark printers. Other vendors, take note: If you’re going to make us play with your control panels, at least make them easy to read as well as to operate.

For those who are installing a departmental printer in a mixed-platform environment, the Dataproducts LZR 2080 and its clones — the Apple Laserwriter Pro 810 and the PrePress Solutions VT800 and VT820 — offer Virtual Printer Technology (VPT), a feature that’s especially useful for the PCs on the network. VPT provides PC users with much of the easy printer-management control that Macintosh users enjoy through the Chooser and the standard Print dialog box. Each printer on the network can be designated as multiple “virtual
## Departmental Printers / what you need to know

<table>
<thead>
<tr>
<th></th>
<th>Apple LaserWriter Pro 810</th>
<th>Dataproducts LZR 2080</th>
<th>HP LaserJet 4Si Mx</th>
<th>Lexmark IBM LaserPrinter 4039-16L</th>
<th>PrePress Solutions V1800</th>
<th>PrePress Solutions V820</th>
<th>QMS 1725 SLS</th>
<th>QMS 2025 Print System</th>
<th>QMS 3225 Print System</th>
</tr>
</thead>
<tbody>
<tr>
<td>List price, base model</td>
<td>$4,899</td>
<td>$5,415</td>
<td>$5,299</td>
<td>$3,698</td>
<td>$4,595</td>
<td>$4,595</td>
<td>$5,999</td>
<td>$12,995</td>
<td>$19,995</td>
</tr>
<tr>
<td>List price as tested</td>
<td>$4,899</td>
<td>$5,415</td>
<td>$5,299</td>
<td>$3,698</td>
<td>$4,595</td>
<td>$4,595</td>
<td>$5,999</td>
<td>$12,995</td>
<td>$19,995</td>
</tr>
<tr>
<td>Street price as tested</td>
<td>$4,540</td>
<td>$4,586</td>
<td>$4,615</td>
<td>$3,500</td>
<td>$4,595</td>
<td>$4,595</td>
<td>$5,830</td>
<td>$13,694</td>
<td>$20,694</td>
</tr>
<tr>
<td>Engine speed</td>
<td>20 ppm</td>
<td>20 ppm</td>
<td>17 ppm</td>
<td>16 ppm</td>
<td>15 ppm</td>
<td>20 ppm</td>
<td>17 ppm</td>
<td>20 ppm</td>
<td>32 ppm</td>
</tr>
<tr>
<td>Interface as tested</td>
<td>EtherTalk</td>
<td>EtherTalk</td>
<td>EtherTalk</td>
<td>EtherTalk</td>
<td>EtherTalk</td>
<td>EtherTalk</td>
<td>EtherTalk</td>
<td>EtherTalk</td>
<td>EtherTalk</td>
</tr>
<tr>
<td>RAM (test config.)</td>
<td>8 MB</td>
<td>8 MB</td>
<td>10 MB</td>
<td>8 MB</td>
<td>8 MB</td>
<td>8 MB</td>
<td>17 MB</td>
<td>16 MB</td>
<td>16 MB</td>
</tr>
<tr>
<td>300-dpi resolution</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>400-dpi resolution</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>600-dpi resolution</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>800-dpi resolution</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Resolution enhancement</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Gray-scale enhancement</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>LocalTalk port included</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>EtherTalk port included</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>PCL 4 support</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>PCL 5 support</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>SCSI port included</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Internal hard drive</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>PostScript Level 2</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Tabloid-sized printing</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Built-in duplexing</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Multiple active trays</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Fax option</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Toner recycling</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Energy Star compliance</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Toll-free tech support</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>On-site service included</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Extended warranty</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Std. warranty</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
<td>1 year</td>
<td>2 years</td>
<td>90 days</td>
</tr>
<tr>
<td>Extended warranty</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
</tbody>
</table>


printers,” with each one configured to take advantage of options such as different page-description languages, dpi settings, and the like.

The QMS printers also offer unique features that can best be appreciated in a busy network environment. For instance, thanks to QMS’ proprietary Crown architecture, these printers can perform various multitasking operations, such as interpreting a PostScript file while simultaneously downloading another print job. The Crown architecture also lets the printers handle four network interfaces (serial, parallel, LocalTalk, and either EtherTalk or token ring) simultaneously. Unfortunately, if you want to access all this power and still maintain fast printing speeds, you’ll need to load the printers with RAM. Overall, our tests revealed significantly shorter printing times for the QMS 1725 SLS with 17 MB of RAM than for the same printer with 13 MB.

The most unusual feature of the Crown architecture is the Software Loadable System (SLS), which allows you to upload new software to the printer whenever problems arise or the printer’s firmware is updated. Other printers require a technician to install a new logic board or ROMs when these types of changes are made. Unfortunately, we got a bit too much of a firsthand look at how this system works when we ran into several problems with the QMS 2025 and 3225 Print Systems. It took repeated visits from a QMS technician — and repeated software installation — before we could get these printers to work correctly.

### The Downhill Path of Tech Support

Tech support ain’t what it used to be. We made two rounds of telephone calls — one for workgroup printers and one for departmental printers — and the results in each case were dismal. For workgroup

---

**Figure 5**

MacUser RECOMMENDS...
Our new personal
Mac® laser printer lets
you say what you want
to say, exactly the way
you want to say it.

That's because the Silentwriter 640 is a true laser printer with
300 dpi resolution, our patented Sharp Edge Technology and
Microfine toner, for crisper character and richer, darker blacks.

And because it has 17 resident Adobe® Type 1 fonts, 35 professional TrueType® fonts and built-in
TrueType and Type 1 rasterizers.

Plus, Adobe PostScript® Level 2.

An AppleTalk® interface. And a
2-year limited warranty. All for
about $800. Interested? Call
1-800-NEC-INFO. For details via
fax, 1-800-366-0476, #79640.

Thank you. And you. And you.
Printing Green / recycle your toner cartridges

LOOK AT A TONER CARTRIDGE, and what do you see behind all that plastic? If you’re a pessimist, you see a solid-waste-disposal problem the size of Nevada. The 33.9 million laser-printer-toner cartridges Americans will use in 1994 could circle from Carson City to Las Vegas, due north to Jackpot, then south and west to Reno, and back to Carson City, round and round, for a half a mile.

But not everyone throws old toner cartridges in the trash. About one-quarter of those 30+ million assemblies will be refilled, recharged, or remanufactured. These and other solutions not only reduce waste but can also profit the environmentally conscious printer user — so there’s reason to be optimistic about stemming the flow of used toner cartridges to landfills. Here are several ways to help your printer and the planet:

Out with the old, in with the old. Send used cartridges to a remanufacturer. The Imaging Division of Dataproducts, for instance, accepts various printer cartridges, including those from Apple; Canon; Hewlett-Packard; NEC; QMS; and, of course, Dataproducts. At its Simi Valley, California, facility, Dataproducts removes unused toner, cleans all parts, replaces or rebuilds defective components, refills the cartridge with toner, and sends the remanufactured product to distributors. As an incentive to send in an old cartridge, Dataproducts includes a rebate coupon good for $2 to $20 with each new cartridge.

To complete the circle, buy remanufactured cartridges, which usually sell for 20 to 50 percent less than new ones. But beware: Sometimes these cartridges have a shorter life than new ones. More important, some companies merely refill the cartridge with toner and overlook maintenance that can make a difference between poor-quality and letter-perfect copies. Unfortunately, no truth-in-labeling laws yet exist to protect uninitiated consumers.

Everybody’s doing it. Recycling, that is. Toner cartridges made by Canon for Apple, Hewlett-Packard, and others come with a self-addressed, prepaid UPS label. If you send the used cartridge back, it goes to Canon’s Dalian, China, facility, where workers disassemble it for reuse. Some parts, such as screws, springs, and pins, are literally reused; plastic parts are melted down for use in new cartridges; and metal parts are sold as scrap. Less than 5 percent of the cartridge is not recyclable.

This approach does not save you any money, but handling the cartridge to a UPS delivery person takes little more effort than tossing it in the wastebasket. You can polish your halo with this knowledge: For each cartridge it receives, Canon donates 50 cents each to the National Wildlife Federation and The Nature Conservancy.

You can’t waste what you haven’t got. If you buy an environmentally friendly printer such as the Kyocera Ecosys, you can skip buying cartridges altogether. Because the drum, fuser, corona wire, and developer (often part of standard cartridges) are permanent fixtures, they don’t ever need to be replaced. All you do is add toner. Refills come in nontoxic, incineratable plastic packages. In a landfill the containers won’t disintegrate but will crumble, taking minimal space.

On an even greener note — like the kind in your pocket: A toner refill for the Kyocera Ecosys yields about 7,000 copies and lists for $49. Standard cartridges that print as many pages can cost three times as much. / Patty Ames

printers, only GCC and HP were able to answer all three of our questions. Vendors fared even worse when it came to departmental printers. The best of the lot was HP — and it managed to get only two answers right. (The answer to the third question was on the company’s automated telephone-tips service, however.)

Although we’re getting stricter in our methods of exposing flaky technical support (we now refuse to be submitted to more than 15 minutes of Muzak per question), the questions we posed were not difficult:

1. How come my fonts print out as jagged text? (The printer font is not installed properly.)
2. Why doesn’t the printer show up in the Chooser? (Either the wrong network option is selected in the Network control panel or the cable is plugged into the wrong port.)
3. Why is Excel printing the same pattern in bars of two different colors? (Make sure Color/Grayscale is selected in the Print dialog box.)

Granted, new products are appearing on the shelves faster than ever, but we’re beginning to wonder if some vendors have ever heard of the term training.

One positive trend among departmental-printer vendors is the availability of on-site service during the warranty period. In general, departmental printers are harder to set up and maintain than工作组 printers. They are also much larger and therefore harder to box up and send back to the vendor for maintenance or repair. All the vendors except Apple offer on-site warranties for their printers; all except QMS offer one-year warranties.

QMS offers a two-year, on-site warranty for the 1725 SLS. You’ll note, however, that QMS offers only 90 days of on-site support for the 2025 and 3225 Print Systems. At first, that might seem stingy — after all, these printers offer a multitude of configuration options and they are much too large (not coincidentally, about the size of a small copy machine) and too heavy (187 pounds) to send out for service. But the 90 days is enough to get the printer set up and configured correctly, using QMS’s tech-support lines. (If you want a QMS technician to install and configure the printer for you, however, it’ll...
Introducing the world’s only true 600x600 dpi desktop color laser printer.

The QMS® magicolor Laser Printer gives you output resolution that’s twice that of enhanced color inkjet and thermal wax transfer. Fast and networkable, the QMS magicolor™ Laser Printer also offers extremely low consumable usage and cost unmatched by any other printer in its price range, with new features for even less money. Here’s your chance to polish your image. For more information on how the QMS magicolor Laser Printer can make your work shine or the ColorSpecialist nearest you,
Call 800 392-7557 Dept. 4033.

QMS Reference Price: QMS ColorScript Laser 1000 $7,999 • QMS magicolor Laser Printer 12 MB $9,999 • QMS magicolor Laser Printer 28 MB $12,999
QMS, the QMS logo and magicolor are trademarks or registered trademarks of QMS, Inc. One Magnum Pass, Mobile, AL 36618, 205 633-4300
The MacUser Poll / our readers pick their favorite printer companies

A GOOD PRINTER IS INCONSPICUOUS. If you notice your printer at all, it's usually because something has gone wrong: a page is imperfect, output is slow to appear, paper jams. Our MacUser Poll of 10,000 subscribers indicates that most of our readers don't notice their printers very often. They report a high degree of satisfaction, especially with monochrome printers. Using a color printer is a bit less satisfying — slow printing times were most often cited as a cause for dissatisfaction.

We conducted our nationwide survey of printer users from October 1993 through February 1994. Working with the Ziff-Davis Research Department and Chilton Research Services (an independent market-research firm), we collected readers' opinions on top Mac printer vendors (not necessarily vendors whose printers are reviewed here). Of the 10,000 randomly chosen MacUser subscribers we surveyed, 4,500 provided opinions on as many as four printers they had used in the past two years. We ignored responses that did not indicate a specific manufacturer as well as those about vendors for which there were fewer than 50 responses each — samples too small to ensure statistical accuracy.

In the table below, the companies are ranked in order of how the survey respondents rated them on overall satisfaction. For each question we asked our readers, we also gave each company a satisfaction ranking of above average, average, or below average; the statistical method used to determine these rankings is explained in "Doing the Numbers," page 97, August '94. Detailed data on all the companies and how their rankings were decided is available on ZiffNet/Mac.

Hewlett-Packard dominated both the monochrome and the color-printer rankings, with a perfect above-average score bestowed by color-printer users and high marks in all but two of the monochrome categories: speed and print quality. Slippage here is understandable, because our results include responses from users of all types of monochrome printers: The venerable DeskWriter's less-than-ideal inkjet print quality and tepid printing speed (along with that of the now-defunct LaserJet II) may have influenced Hewlett-Packard's average and below-average rankings for these two categories.

Where Hewlett-Packard slipped, Dataproducts and LaserMaster emerged as our readers' choices for speed and print-quality honors. Again, there's no surprise here, as both companies have long labored for leadership in these areas — Dataproducts, whose printers were our readers' favorite monochrome speed demons, provides a line of high-output office workhorses, whereas LaserMaster has been a long-standing advocate of high-resolution printing.

People have strong opinions about Apple — both positive and negative. Its monochrome printers, for example, garnered only one average ranking; in all other categories, readers ranked them either above or below average. For example, no love was shown for either monochrome- or color-printer print quality, but readers expressed above-average satisfaction in the quality of Apple's technical support. In addition, it appears that our readers have long memories, as Apple was tagged with below-average warrantee scores — apparently a lingering aftereffect of Apple's long-abandoned 90-day warranty.

Despite this somewhat erratic showing, Apple's monochrome printers joined the color and the monochrome offerings from Hewlett-Packard to earn the only above-average overall-satisfaction rankings. However, the other printer vendors were not far behind — in fact, among monochrome-printer vendors, scores were so closely bunched that none fell below the statistically average range. Whatever their specific complaints about individual vendors and their products, it appears that Mac users are, on the whole, content with their printers — that is, until the next paper jam. / Rik Myslewski

### Results of Our Printer Poll

<table>
<thead>
<tr>
<th>Monochrome Printers</th>
<th>Overall</th>
<th>Construction</th>
<th>Service and Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hewlett-Packard</td>
<td>8.0</td>
<td>8.4</td>
<td>7.2</td>
</tr>
<tr>
<td>Apple</td>
<td>7.9</td>
<td>8.4</td>
<td>6.9</td>
</tr>
<tr>
<td>QMS</td>
<td>8.0</td>
<td>7.4</td>
<td>6.7</td>
</tr>
<tr>
<td>NEC</td>
<td>8.4</td>
<td>7.4</td>
<td>7.3</td>
</tr>
<tr>
<td>GCC</td>
<td>7.4</td>
<td>7.4</td>
<td>6.7</td>
</tr>
<tr>
<td>Texas Instruments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dataproducts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LaserMaster</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NewGen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average score</td>
<td>8.0</td>
<td>8.4</td>
<td>7.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Color Printers</th>
<th>Overall</th>
<th>Construction</th>
<th>Service and Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hewlett-Packard</td>
<td>7.5</td>
<td>8.2</td>
<td>7.4</td>
</tr>
<tr>
<td>Tektronix</td>
<td>7.5</td>
<td>8.0</td>
<td>7.3</td>
</tr>
<tr>
<td>Apple</td>
<td>7.4</td>
<td>8.0</td>
<td>6.8</td>
</tr>
<tr>
<td>QMS</td>
<td>7.4</td>
<td>7.4</td>
<td>6.7</td>
</tr>
<tr>
<td>Average score</td>
<td>7.5</td>
<td>8.0</td>
<td>7.3</td>
</tr>
</tbody>
</table>

We asked 10,000 MacUser readers to tell us, on a scale of 1 to 10, how satisfied they were with their printers' quality, reliability, and performance and with their vendors' service and support. We converted their responses into above-average, average, and below-average rankings for each company. In general, monochrome-printer users voice more satisfaction than color-printer users.
HOW TO IMPROVE NEXT QUARTER'S PROJECTIONS.

You want the ideal color printer. The one that will output powerful and persuasive slide-quality transparencies and prints.

Yet you don't want to blow your budget in the process. You want the KODAK COLOREASE PS Printer. Because this PC Editor's Choice award-winner comes fully loaded with everything you need to turn mission-critical presentations into missions accomplished.

We're talking complete compatibility with your MACINTOSH Computer or WINDOWS Software. True ADOBE POSTSCRIPT® Level 2 Language built in. A plug-in module for ADOBE PHOTOSHOP® Software. Optional Ethernet capabilities. And a one-year, on-site manufacturer's warranty.

Not to mention 16.7 million colors, 256 levels of gray, 300 ppi resolution, 35 resident fonts, simultaneous printing and processing. And ULTRACOLOR Software from Kodak, which gives you great color the first time. And every time. All from your desk top. At a price you can afford.

So call 800 344-0006 (800 465-6325 in Canada) today for a free output sample and dealer information. Never before has a color printer been able to do so much, so fast. For so little.
cost you $400. After that, you’ll want to purchase a maintenance contract, just as you do for your copier, to keep the printer running smoothly.

The Best of Each Bunch

**WORKGROUP PRINTERS.** For those who print mostly on letter-sized paper and use mainly the standard 35 PostScript fonts stored in the printer’s ROM, we recommend the HP LaserJet 4M Plus. Its top-ranked speed, excellent output quality, and reasonable price make this printer a winner. But if you need extra font storage, you should opt instead for the SCSI-equipped Apple LaserWriter Pro 630. This printer has many of the same features as the LaserJet 4M Plus, produces high-quality output, and also sports a lower price. It is slower than the LaserJet 4M Plus, though.

For offices that produce graphics-intensive or large-format documents, we recommend the GCC SelectPress 600 Pro. Although more expensive than many of the workgroup printers, the SelectPress 600 Pro produces tabloid-sized output, includes an internal hard drive, and is EtherTalk-ready.

We also consider the Apple LaserWriter Select 360 and the TI microLaser Pro 600 to be top-of-the-line contenders in the letter-sized-printer category. With street prices around $1,500 and $1,400, respectively, these printers are terrific bargains for small offices—or even for use as personal printers. The LaserWriter Select 360 is the faster of the two, but the microLaser Pro 600 can be configured with a SCSI port.

**DEPARTMENTAL PRINTERS.** Once again, HP takes top honors—this time with its LaserJet 4Si MX. This fast, reasonably priced printer produces top-quality output. Our only complaint is that it lacks a SCSI port. Kudos goes to four other high-quality printers—the Dataproducts LZR 2080 and its clones, the Apple LaserWriter Pro 810 and the PrePress Solutions VT800. If you need tabloid-sized output, these are the departmental printers to consider. We give the edge here to the PrePress Solutions VT800. This swift, 15-ppm printer comes with an 80- MB external hard drive, a SCSI port, LocalTalk and EtherTalk ports, and one year of on-site service. The VT800 is priced lower than its larger relative, the 20-ppm VT820, and offers comparable printing speed.

We couldn’t justify giving either the Lexmark IBM LaserPrinter 4039-16L or the QMS 1725 SLS more than an average rating. The 1725 SLS ranked below the HP LaserJet 4Si MX in our speed and output-quality tests, and its street price was $1,200 more than that of the HP printer when we factored in the cost of the 17 MB of RAM it needed to produce some of our more complex documents.

The QMS 2025 and 3225 Print Systems turned out to be eye-openers. These high-end specialty printers are designed for heavy-duty document production. Everything from their paper-handling abilities to their duty cycles to their price and service options are based on this assumption. And we found these printers to be quite a good fit for their market. But don’t plan to trade in your paper-jamming copier for a QMS 2025 or 3225 and have an easier time of it. These complex printers require much more attention and care than your run-of-the-mill business printer.

All things considered, we’re pleased to announce that quality, speed, and resolution are all up—and price is down. In fact, our choices in the workgroup-printer category arc both improved versions of last year’s winners, confirming once again that there is no substitute for experience—as well as showing that there is always room for improvement. So keep up the good work, folks.

Due to schedule restrictions, we were unable to complete testing of two printers: the Sharp JX-9660PS and the NewGen ImagingPlus 6. Preliminary review revealed that these printers produce quality output and include solid features. Ed.]

Drew J. Cronk spent numerous hours testing, poking, and prodding printers. Coauthor Anita Epler, a project leader at ZD Labs, managed the testing for this report. Brian Flies, Martin Wong, and Raymond Zhou also contributed to the testing.

You can download more-detailed data from our MacUser Poll in the MacUser Forum on ZiffNet/Mac (GO MACUSER). See page 4 of this issue for instructions on accessing ZiffNet/Mac.

### Directory / vendors of printers tested

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALPS Electric (USA)</strong></td>
<td>San Jose, CA 800-825-2577</td>
</tr>
<tr>
<td></td>
<td>408-432-6000</td>
</tr>
<tr>
<td></td>
<td>408-432-8337 (fax)</td>
</tr>
<tr>
<td><strong>Apple Computer</strong></td>
<td>Cupertino, CA 800-538-9696</td>
</tr>
<tr>
<td></td>
<td>408-996-1010</td>
</tr>
<tr>
<td></td>
<td>408-974-2483 (fax)</td>
</tr>
<tr>
<td><strong>Dataproducts</strong></td>
<td>Woodland Hills, CA 800-980-0374</td>
</tr>
<tr>
<td></td>
<td>818-887-8000</td>
</tr>
<tr>
<td></td>
<td>818-887-8084 (fax)</td>
</tr>
<tr>
<td><strong>Digital Equipment</strong></td>
<td>Maynard, MA 800-777-4343</td>
</tr>
<tr>
<td></td>
<td>508-493-5111</td>
</tr>
<tr>
<td></td>
<td>508-493-8780 (fax)</td>
</tr>
<tr>
<td><strong>GCC Technologies</strong></td>
<td>Bedford, MA 800-422-7777</td>
</tr>
<tr>
<td></td>
<td>617-275-5800</td>
</tr>
<tr>
<td></td>
<td>617-275-1115 (fax)</td>
</tr>
<tr>
<td><strong>Dataproducts</strong></td>
<td>Santa Clara, CA 800-752-0900</td>
</tr>
<tr>
<td></td>
<td>800-387-3867 (Canada)</td>
</tr>
<tr>
<td></td>
<td>800-333-1917 (fax)</td>
</tr>
<tr>
<td><strong>Kyocera Electronics</strong></td>
<td>Somers ett, NJ 800-232-6797</td>
</tr>
<tr>
<td></td>
<td>908-560-3400</td>
</tr>
<tr>
<td></td>
<td>908-560-8380 (fax)</td>
</tr>
<tr>
<td><strong>Lexmark International</strong></td>
<td>Lexington, KY 800-358-5835</td>
</tr>
<tr>
<td></td>
<td>606-232-3000</td>
</tr>
<tr>
<td></td>
<td>606-232-2380 (fax)</td>
</tr>
<tr>
<td><strong>NEC Technologies</strong></td>
<td>Boxborough, MA 800-632-4636</td>
</tr>
<tr>
<td></td>
<td>508-264-8000</td>
</tr>
<tr>
<td></td>
<td>508-264-8673 (fax)</td>
</tr>
<tr>
<td><strong>PrePress Solutions</strong></td>
<td>East Hanover, NJ 800-443-6600</td>
</tr>
<tr>
<td></td>
<td>201-887-8000</td>
</tr>
<tr>
<td></td>
<td>201-887-4300 (fax)</td>
</tr>
<tr>
<td><strong>QMS</strong></td>
<td>Mobile, AL 800-523-2696</td>
</tr>
<tr>
<td></td>
<td>205-633-4300</td>
</tr>
<tr>
<td></td>
<td>205-633-4866 (fax)</td>
</tr>
<tr>
<td><strong>Texas Instruments</strong></td>
<td>Temple, TX 800-848-3927</td>
</tr>
<tr>
<td></td>
<td>817-774-6660 (fax)</td>
</tr>
</tbody>
</table>
WHAT OUR ENGINEERS HAD IN MIND WHEN WORKING ON OUR NEWEST SCANNER.

Introducing the Agfa StudioScan II.

Push a button, make a scan. Is it really that simple? With the new Agfa StudioScan II, it can be.

That's because StudioScan II was designed for simple operation. Two levels of scanning software are built in — easy-to-use Agfa FotoSnap and comprehensive Agfa FotoLook. Plus, our exclusive, 42-page Introduction to Digital Scanning will guide you through the scanning process.

What's more, every StudioScan II comes complete with Agfa FotoTune color management software and our IT-8 reference target, along with Adobe Photoshop LE and OmniPage Direct OCR software. All in a 400 x 800 ppi, 30-bit, one-pass scanner. And all for about $1,000.

So if you want an easy way to bring a scanner into your office, all it takes is the new StudioScan II. And your finger. Call 1-800-685-4271 to find out more information on Agfa's new scanners.

AGFA and the Agfa thymus are registered trademarks. Photoshop is a trademark of Adobe Systems Incorporated, which may be registered in some jurisdictions. OmniPage Direct is a trademark of Canoe Corporation.

CIRCLE 52 ON READER SERVICE CARD
Here's the recipe. It begins with nine scanned images of restaurants, tables, chairs, a waiter, picture frames and a dinner to die for. Background layer ① holds master image. On another layer ②, sections of two restaurants complete overall scene. Layer Masks are used to hide unwanted portions of image. Wine bottle shadow ③ is extended using airbrush on Fade setting. Replace Color feature ④ changes color of wine from red to white. Lighting Effects filter ⑤ is used to reduce ambient light and add highlights that reflect multiple light sources. Color Range feature ⑥ isolates waiter (originally shot against textured wall), and he is placed in the scene. Mirror images ⑦ are copied to multiple layers where they are scaled, composed and further manipulated. Clouds filter ⑧ creates window to outside world. Original photographs by Robert Mizono.

Adobe Photoshop, the world's leading photo design and production tool, now offers what everyone has been craving: a banquet of unlimited creative possibilities and remarkable production control. With support for multiple layers, Version 3.0 gives you the freedom to compose and experiment with ease. Add graphics, text and special effects to any layer without altering images on other layers. A redesigned interface with totally customizable floating palettes puts just what you want where you want it. New Lighting Effects, Dust and Scratch removal filters, and Color Range masking are only the beginning of the latest offerings. Improved color production control includes CMYK preview, Gamut Warning, Selective Color Correction and a Sponge Tool that saturates or desaturates color areas. This latest version supports your current operating system on Macintosh™ or Windows® and even takes advantage of Power Macintosh™ and Windows NT®. A Deluxe CD-ROM is also included.


If you can dream it, you can do it.
GOT PHOTOSHOP? GET COLLAGE.

Familiar page-layout tools make Collage easy to use. Features like rulers, guides, alignment tools, and image grouping let you easily create complex compositions.

Special effects like drop shadows and feathering are only a mouse click away. Collage is object-oriented, so if you move an image its shadow automatically moves with it!

The Information Palette gives you complete numerical control over the layout of your images.

The Element Palette lets you change the layering of your images at any time. When you edit an image in Photoshop, Collage automatically updates your composition.

Collage and Photoshop work together to create high-resolution composites. Photoshop provides the image editing power while Collage accelerates the layout. You can now create your images faster and with less RAM and hard drive space!

The Image Composition Tool for Adobe Photoshop

Specular Collage and Photoshop work together to accelerate the composition of high-resolution images. Collage's intuitive page-layout interface allows you to quickly combine your Photoshop images into stunning compositions.

Images of any size can be manipulated rapidly thanks to Collage's innovative proxy system. Your high-resolution files are represented by screen-resolution proxies, which makes image manipulation flexible and fast. When you are ready for a high-resolution composite, Collage accesses the original files and produces your finished piece.

See why MacWEEK calls Collage "a valuable tool that should be on the shelf of anyone who manipulates images on the Macintosh!"

Call Specular at 1-800-433-7732 for more information and a Free Poster of this image and other Collage artwork.

VERSION 2.0
NATIVE FOR POWER MACINTOSH,
Supports CMYK Color, and
Handles Images up to 53" x 53"
PAINT PROGRAMS /

PAINTER PUTS ON A NEW FACE

CRAMMING IN more effects while simplifying the interface was Fractal Design's goal with the new native PowerPC version of Painter. On top of that, X2's multiple-floating-selection capability is now built in.

Painter's look is less fussy in version 3.0, thanks to new floating palettes and smaller icons. Borrowing from its entry-level program, Dabbler, Fractal has collapsed tool sets into logical collections that expand when selected. A new control palette reflects your options as you switch tools.

By harnessing QuickTime technology, Painter 3.0 offers some of the features of an animator's paint box. You can paint on an imported movie (known as rotoscoping) or create animations with its onionskinning capability, a technique akin to painting on layered acetate sheets. You can use QuickTime movies as a brush source, so you have the unique ability to paint with a movie.

Painter's new brush technology makes these special effects possible. Other special effects include image warping, multicolor gradients, and selective color replacement.

Pricing not set at press time. 408-688-5300. / Scan J. Safreed

ClarisDraw Seeks to Outsmart the Competition

DRAWING AN ERA to a close, Claris ends MacDraw's reign as the illustration tool for the rest of us. ClarisDraw, its cross-platform replacement (available now for 680x0 and Power Macs and in early 1995 for Windows), sports new features and "smart" tools.

Priced at $399, ClarisDraw is aimed directly at casual graphics users, yet it doesn't skimp on capabilities. Standard shapes and drawing tools are included, as are 2,400 pieces of clip art. For designing with words, ClarisDraw has savvy features such as text on a curve, text conversion to outlines, and linked text blocks. Two new additions extend ClarisDraw's reach: A simple 24-bit paint program lets you enhance or tweak an imported graphic, and a presentation module lets you create graphics-rich slide shows.

New Smart Connectors allow you to attach two objects that stay connected no matter how you manipulate them, and the PointGuide and Guideline ease the tedium of aligning objects, by indicating when the cursor's close to an endpoint or aligned with the top of an object. Upgrade, $89. 408-987-8227. / SJS

SCANNERS /

Polaroid Takes on Instant Scanning

INSTANT IMAGE acquisition is Polaroid's claim to fame, so it's not surprising that the company has designed a fast, compact slide scanner that it says can record an image at 2,700 dpi in about 30 seconds. At $2,495, the SprintScan 35 is attractively priced.

The key to the scanner's speed is a CCD that captures the light signal with extreme sensitivity and a set of three custom ASICs that handle color correction, sharpening, interpolation, and other duties. The ColorSync-compatible unit captures 35mm slides or negatives at 10 bits per color and then converts the scanned image to 24 bits. A 3.0 dynamic range results in good shadow detail.

In addition to a Photoshop plug-in that lets you scan directly from Photoshop, the SprintScan 35 includes its own software for controlling resolution, setting crop areas, and more. 800-662-8337 or 617-386-2000. / Pamela Pfiffner

TYPOGRAPHIC TOOLS /

Make Your Own Fonts

BORED WITH BODONI? If the usual cast of characters doesn't thrill you, make your own with Font-o-atic, from Altsys. Font-o-atic is best described as silly, but that's what makes it charming. With this $59.95 utility, you can apply any of 16 effects — individually or in combination — to any PostScript or TrueType font — a single letter or an entire alphabet — in your system. Spike a T with cactus thorns, take a bite out of a B, or dapple an M with cow spots — just the thing for zingy initial caps. Effects such as Rotate, Skew, and 3D have more-sober applications but retain the program's wit by giving sliders settings such as Gilligan Skinny. Save your mangled masterpieces as fonts or EPS files. 214-680-2060. / PP

DTP from Soup to Nuts

SHAMELESS PLUG notwithstanding, How Desktop Publishing Works (Ziff-Davis Press) is an illustrated overview of the publishing process, from metal-type origins to modern direct-to-plate technologies. Written by MacUser senior editor Pamela Pfiffner (ahem) and contributing editor Bruce Fraser, this guide also answers such questions as What is a halftone? and How do printing presses work? $24.95. 800-688-0448 or 510-601-2000.
It's a 17" Trinitron®
It's $849.00*
It's from Optiquest

And you thought nothing good ever cost less than expected.

If you assumed that Trinitron quality had to cost at least a thousand, think again. With an estimated street price of just $849*, the Optiquest 17" 4000TC+ Trinitron color monitor is over $150 less than other competitive Trinitron models. But you sacrifice nothing in terms of quality. Featuring vivid Trinitron color technology in a vertically flat, square-cornered screen format, the 4000TC is fully VESA®-DPMS™ and MPR-II energy compliant. Ergonomic and performance features include advanced color management, super-fine 0.25mm stripe pitch, Microprocessor Digital Controls, PC and Macintosh® compatibility and super sharp 1280 x 1024 non-interlaced resolution. So when you decide to go with the quality of Trinitron, choose the Optiquest 4000TC and save. For more information on the full line of Optiquest products, call 1-800-THE-OPTI.
Some for the Books

Ordering pages correctly for assembly into bound books and newsletters — what's called imposition — can be confusing. Here's some software that lets you turn your pages into simple pamphlets or sophisticated tomes. By Brian P. Lawler

It's as frustrating as opening a puzzle box: You're producing a 16-page booklet that will be printed on folded 11-x-17-inch paper, and you're trying to figure out which page should go across from page 4. Is it 5? Although that's the correct reading sequence, that's not how pages are printed. Actually, page 13 is printed across from page 4.

The process of pairing and moving pages of a publication into the correct position for printing is called imposition, and it's no longer just the realm of ink-stained pressmen. Anyone who's reproduced a folded, multipage document on a photocopier has wrestled with imposition. No matter what your project, a variety of tools exists today that can help you create imposed spreads.

What Is Imposition?

Electronic documents are created in reader's page order: 1, 2, 3, and so on. But in reproduction, those pages are moved into what are called printer's companion pages, or printer's spreads (see figure 1). Most commercial presses print large sheets of paper with multiple pages grouped into signatures, which are folded, bound, and trimmed to size after printing. A publication often consists of multiple signatures bound together to form the complete printed product. Once a signature has been folded, bound, and trimmed, the pages are back in reader's page order.

Depending on the size of the paper, pages can be imposed two-up, as in the previous example of pages 4 and 13, of four-up, in which pages 5 and 12 sit across another fold from pages 4 and 13, respectively. Presses capable of printing four, eight, or more pages on a single sheet of paper also use the term head-to-head imposition, in which the tops of pages join at a fold line but are again in the correct orientation after folding (see figure 2).

Traditional imposition is done on a light table in the prepress department of a printing company. In the high-tech world of electronic publishing, the process of imposition can move upstream from the light table to a service bureau or all the way to a production artist at a computer. On the Mac, a variety of imposition options are available, including a few that can be helpful — and profitable — to publishers large and small.

The benefits of imposition to desktop publishers are numerous. Imposing small-scale projects makes in-house publication easier by eliminating the need for paste-up. With the growing popularity of PostScript laser printers that can print on tabloid-sized paper, page imposition makes sense for many in-house publications. By preparing two-page pairs for output on 11-x-17-inch paper, these publications are then ready for reproduction with no additional manual work.

The cost savings from electronic imposition can also be impressive. For a typical eight-page, four-color print job, the cost of assembling four sets of two-page pairs as imposed-page films can be less than half the cost of assembling the same pages as eight individual negative sets. Notable savings also accrue when you're printing pages on an imagesetter, where the price for a two-page negative is typically one-third less than the price of two single-page negatives (for example, two letter-sized pages cost $14 each, or $28 total, whereas one tabloid-sized negative accommodating those same two pages costs only $20).

If you're planning a job for commercial printing and want to do the printer's pairs yourself, be sure to communicate, early and clearly, with the printer. The details of page positioning are very important and must be correct for this approach to work to your advantage.

Printers have a special vocabulary for the processes and problems in production, and in the world of imposition, you encounter a handful of novel terms such as saddle-stitched, perfect-bound, grind-off, and creep.

Saddle-stitching, in which thread or staples pierce the fold, or spine, of the publication, is the most common binding technique desktop publishers use. Documents to be saddle-stitched need different precautions from those that use perfect binding.
the process of making glued-back paperback books. Most perfect-bound books require an extra margin in the gutter fold for grind-off when the signatures are glued together. If you generate your own printer's spreads for this process, you must know the size of these margins that go between pages for correct binding.

The most significant concern is the issue of page creep, the effect of pages getting farther and farther away from the spine of the booklet as the number of pages — and the collective thickness of the booklet — increases (see figure 3). To compensate for creep, a film assembler moves each page a tiny bit left or right to allow for the effect of the cumulative thickness in binding. Usually this correction means moving the outer pages in the signature away from the gutter fold. Correcting for creep on a light table is nightmarish work.

In electronic imposition, however, precise creep compensation is easy to accomplish. Most of the page-imposition products on the market provide an allowance for creep, whose value you usually enter in terms of total spine thickness. To find the correct amount of compensation, make a dummy booklet — or have a printer make one for you — and then measure the thickness of the spine. This measurement is your creep-compensation value. Creep occurs in both saddle-stitched and perfect-bound binding, since most perfect-bound books are made up of multiple saddle-stitched signatures bound together. In perfect-bound publications, each of the signatures must have compensation for creep as well as for grind-off.

Differences of style exist here. If your software requires the creep value to be entered in .001-inch increments, simply enter the total value in inches. If your software requires the entry of the creep value in printer's points (1 point = 1/12 inch, or .0138 inch), calculate the value in points by dividing the measurement in inches by .0138 to get points and then round up to the nearest whole number.

You can also estimate the amount of creep compensation needed by ascertaining the paper thickness. Measured in thousandths of an inch, a paper's caliper is published in catalogs from paper merchants and can be determined by your printer. Ask your printer to "mic" (measure with a micrometer) the paper you're using for your project.

Multiply the caliper by the number of sheets to get the thickness of each signature (some squeeze takes place at the binding edge, but for most projects, this small variation can be ignored). The paper in this magazine, for example, has a caliper of .002 inch. (Magazine papers are very thin; most commercial printing papers have a caliper of .003 to .005 inch.) If you were to produce a 32-page brochure on the same magazine paper, the total signature thickness would be .032 inch (16 sheets x .002 inch), or 2.31 points. Entering this creep-compensation value in the imposition software will correct for the effects of paper thickness on the gutter width.

Tools for Imposition

Imposition is easy on the Mac if you use Aldus PageMaker or QuarkXPress. There are also low-end programs that let you do quick-and-dirty imposition. For complex jobs that require head-to-head imposition or grind-off allowances, print professionals need more-sophisticated software. Here's a quick survey of the total range available:

Print Utilities. Specialized utilities such as BookMaker's ClickBook and Peirce Software's Peirce Print Tools let you print multiple-page booklets from any application on a laser printer.

ClickBook installs as a control panel. You simply activate it from the Page Setup dialog box and print. The ClickBook dialog box appears, from which you choose 1 of 20 standard layouts, including side-by-side and four-up book for folded sheets and four-up tiled in portrait or landscape orientation (see figure 4). Another possibility is printing on both sides of the paper. A customized version of ClickBook is sold as Make-A-Booklet through the mail-order paper company Paper Direct, which includes preformatted templates designed for use with Paper Direct's preprinted papers.

Peirce Print Tools is a general printing utility that's optimized for Apple's soon-to-be-released QuickDraw GX (Peirce bundles the QuickDraw GX extension with the package). This collection of printing extensions includes Pamphlet, which lets you make simple printer's spreads on letter-sized paper, and DoubleSider, which lets you print on both sides of the paper.

PageMaker Additions. For producing publications of only one signature, Aldus provides the Build Booklet Addition in PageMaker 5.0. After you've completed your publication, you select Build Booklet, under Additions on the Utilities menu, and get a dialog box that provides options for simple page impositions (see figure 5). This Addition is useful for generating printer's spreads for impositions in saddle-stitched and perfect-bound publications. But it lacks head-to-head imposition ability, printing pages only two-across, three-across, and four-across in a side-by-side arrangement — useful mainly for making folded brochures. It does let you delete pages or add blank pages to make the total number of pages divisible by 4, which is necessary for imposed signatures.

When activated, Build Booklet creates a new PageMaker document and then moves the document elements into printer's pair order. In the process, it changes automatic page numbering to fixed numbers. Creep compensation is taken care of by the precision positioning of page elements on the new two-page document pages.

QuarkXPress XTensions. For those who are
Should the New MiniCad 5 be your CAD Program?

Take the Quiz.

I want a full-featured, proven market leader which can handle any job: 2D, 3D, cost estimation and client presentations.

I want a program that runs on both the 68K-based Macintosh and the Power Macintosh. At no extra charge!

I want a CAD program that is tailored to my needs, with specialized tools for architecture, mechanical engineering and design.

I want an expandable CAD program which can be customized for specific solutions easily and inexpensively.

I don’t want to spend a lot for training or experience an enormous learning curve.

I want an established company with constant R&D funding, so that my investment stays safe.

3 Free Application Specific Modules
Mechanical, Architectural, & Advanced Design

MiniCad 5 offers all of the above and more. The award-winning software that has been hailed as the “features champion” by Macworld Magazine (March, 1993). Further, Graphisoft is dedicated to aggressive investment in CAD R&D. Graphisoft customers stay more productive than their competitors because Graphisoft supports both the latest technology and evolving user needs. MiniCad has long been the price/performance leader in Macintosh CAD. Don’t be steered away from MiniCad by VARS who want you to buy high-priced CAD products that are hard to learn and only do a few things well. The VARS won’t tell you that MiniCad 5 ships with a multi-media training CD, or that you receive 18 months of free technical support with Graphisoft products or upgrades. In short, MiniCad keeps more of your money in your pocket. Buy MiniCad 5 and save!

MiniCad 5 also includes: speed increases up to 100% even on 68K-based Macintoshes, a Claris CAD conversion program including a $495 upgrade price, a Claris CAD translator, and a helpful conversion guide, translators for importing and exporting to the other major CAD products, an upcoming Windows version, multi-media training CD 18 months of free technical support and a no-hassles 30-day money-back guarantee through authorized dealers. Contact Graphisoft today for detailed literature. To order immediately, call MacWarehouse, MacConnection, or your local dealer. Demo: $19.00Buy MiniCad 5 and save!

Azimuth
The ultimate map creation tool, including nine cartographic projections and more! Used by US News & World Report. 4 mice

Diehl Graphsoft Inc.
10270 Old Columbia Road, Suite 100, Columbia Maryland 21046 Ph:410-290-5114 Fax: 410-290-8050

Blueprint
Full-featured 2D drafting. Experience ease of use, high precision and an affordable price. 4 mice. MacWorld Editor’s Choice!
working in QuarkXPress, the simplest tool for creating companion pages is Printer’s Spreads, an XTension you purchase separately from Corder Associates. As with PageMaker’s Build Booklet Addition, you complete a document and then select Printer’s Spreads from QuarkXPress’ Utilities menu. A dialog box asks you to enter a creep-compensation value in points. The program then converts automatic page numbers into fixed text elements and repositions the page elements to create printer’s pairs of pages. This XTension can impose a 32-page booklet in a matter of minutes.

Another alternative for QuarkXPress is DK&A’s INposition Lite (see figure 6). This XTension adds a series of functions to the new Print Signatures window, which you reach via QuarkXPress’ File menu, letting you print two-up and four-up impositions in 32-page signatures. INposition Lite, the less expensive younger sibling of the professional product INposition, can automatically adjust margins, depending on the number of pages and type of binding.

**Professional Tools.** There is a raft of high-end imposition products, each of which answers the need for imposing signatures of four or more pages on each side of a printed sheet and for imposing more-complex publications that require multiple signatures. The complexity and the price of these high-end products make them inappropriate for most users yet well suited to service bureaus, printers, and prepress operations, where a large imagesetter generates full-signature film, with its page components and printer’s marks in precise position.

These products include Impostrip, from Ultimate Technographics; Aldus PressWise; Island Graphics’ Imposition Publisher; and ScenicSoft’s Preps. Each offers precise control over page position and printer’s marks and can impose many pages for printing presses capable of large signatures. Two XTensions — INposition, from DK&A, and Impress, from XTend — address the needs of high-end QuarkXPress users.

**Caveat Imposer**

As with any software, you get what you pay for. The low-cost imposition products have some problems of which you should be aware. For example, both Printer’s Spreads in QuarkXPress and Build Booklet in PageMaker fail when you’re imposing designs that have elements that bleed off the page or elements that cross over from one page to the next. With the PageMaker utility, the crossover element stays with the left page of the spread it crosses. Printer’s Spreads behaves similarly, except the lower-numbered page always gets the placed item. In each case, this creates situations that require either repair after imposition, redesign to eliminate such elements, or use of one of the high-end imposition products.

With this in mind, it’s best to consider your imposition needs carefully. If you’re making a relatively straightforward booklet or newsletter, by all means use one of the simple utilities. If your job is a complex, many-paged affair, you may be better off letting the pros handle it. As with many other prepress functions, it’s imperative that you communicate with your printers to get clear instructions before forging out into their territory. The cost and efficiency benefits of electronic imposition accrue only if the job is done right the first time.

Brian P. Lawler is a graphic arts consultant, writer, and lecturer who works from a hot air balloon basket in San Luis Obispo, California.

---

**figure 5** PageMaker’s Build Booklet allows compensation for page creep and offers the ability to add or delete pages to make the total number of pages divisible by 4.

**figure 6** DK&A’s INposition Lite, a QuarkXPress XTension, lets you preview the front and back of printer’s spreads and automatically sets press marks and margins.
Buy one, get eight free.

Finally, all the business graphics tools you need in one integrated solution: ClarisImpact.

Why buy your graphics programs one by one when you can get them all in one? New ClarisImpact™ software lets you automatically create timelines, calendars, flow charts, data charts, and org. charts, or draw free-form graphics—all with one consistent interface, all in just minutes. And it's the only solution that has integrated presentation and word processing capabilities that let you combine your graphics with text without leaving your document.

Best of all, ClarisImpact and its built-in native Power Macintosh version can be yours for a special introductory suggested price of just $149.*

See it today at your Claris dealer. Or call us for a free demo.

CLARIS®
Simply powerful software.
Let's talk scanned image quality.

**Test 1**

**COLOR REGISTRATION ACCURACY**

Before you lay down your hard-earned bucks for a single-pass color desktop scanner, here’s a simple test you can perform to see for yourself how well it handles color registration.

Scan black and white line art in RGB color mode. Then enlarge and examine the results.

If the colors are properly aligned — or “registered” — the lines will look black. If you see dots of red, green or blue at the edge, the scanner’s color registration leaves something to be desired.

**SEE FOR YOURSELF:**

In a recent direct comparison between the Hewlett-Packard ScanJet IICx and the Microtek ScanMaker II Spit, the ScanMaker clearly shows superior color registration. The H-P ScanJet IICx, well, leaves something to be desired. And because poor registration is only one factor that causes inaccurate color, it further degrades color quality when accuracy problems already exist. So color registration is only one of the quality checks you should be making if you want the best scanner for your money.

Another is color accuracy — how close does the color of the scanned image come to the color of the original? The Microtek ScanMaker II Spit uses an award-winning system called Dynamic Color Rendition (DCR) which automatically calibrates and...

---

**Before You Buy Any Scanner, Take a Good, Hard**

The scanner to ask for, Microtek’s ScanMaker II Spit, comes complete with Adobe Photoshop LE for Windows or Macintosh and the DCR color calibration/correction system including software and an IT-8 calibration target. Or ask for the ScanMaker II Spit with the full-version of Adobe Photoshop. Scanner shown with optional Transparent Media Adapter. Optional Automatic Document Feeder also available.
Color accuracy is important in most of the images we scan. To test color, we scanned color swatches from an industry standard color-matching system. Once again, Microtek’s ScanMaker IIISP easily outclassed the well-known ScanJet. The disparity is even more apparent when the Transparent Media Adapter is used. H-P’s stationary “light table” light source results in uneven accuracy, while Microtek’s moving light source gives consistently more accurate color.

LOOK AT REGISTRATION AND COLOR ACCURACY.

corrects colors to make them virtually indistinguishable from the original.

To prove it, we scanned a 100% magenta color swatch on the ScanJet IIcx and the Microtek ScanMaker IIISP. The results, as you can see, show the ScanMaker IIISP’s color accuracy is superior to H-P — or anyone else. In fact, in a scanner comparison published in the February 8th edition of PC Magazine, the editors said, “...the ScanMaker IIISP’s color output was clearly the best of any scanner in our survey.”

SOMETHING ELSE H-P CAN’T SAY.
Hewlett-Packard makes some great printers. They also make computers and a host of other electronic equipment.

Microtek makes scanners. Period. In fact, Microtek pioneered desktop scanners. So our history with scanners is longer and deeper than anyone else you can name. Including H-P.

DON’T BUY A SCANNER UNTIL...
If you’re considering a scanner — anybody’s scanner — don’t write the check until you’ve seen the Microtek ScanMaker IIISP. For your free copy of The Scanned Image (an easy introduction to scanners), more information or to find out where to see the IIISP for yourself, call us at 800/654-4160 or fax a request to 310/297-5050.

Before you buy a scanner, let’s talk.
800/654-4160
For many, a 17" monitor represents a step up in size, but not necessarily a step up in image quality. Unless you are stepping up to the new Nokia 447X.

First there is the crispness of its .25 mm aperture grill. At its maximum resolution of 1600 x 1200, you can enjoy a working environment of phenomenal clarity. And with a maximum refresh rate of 110 Hz, you possess a screen so stable it appears frozen in time.

Select Nokia's exclusive MicroEmission™ option, and this glorious display represents the most user-sensitive 17" monitor in the world—easily surpassing the rigorous criteria of TCO*, and sparing your eyes the strain of hours spent in front of a lesser system.

You will also be acquiring conveniences like on-screen display adjustments including FullScreen™ borderless display, and free Macintosh* options for changing resolutions. If you are migrating up to a Power Macintosh™, you definitely owe yourself a monitor this exquisite.

Call 1-800 BY NOKIA for the dealer nearest you. And see the latest in European eye care.
COLOR IS CRUCIAL to the emotional impact of a design, but some colors work together better than others. By using a wheel that maps simple color relationships, you can learn how to choose color combinations that successfully communicate your intent. Create new and striking combinations by rotating the pointers around the wheel, keeping in mind the desired relationship between colors. As these examples show, applying various color pairs or groups to a simple black-and-white design yields very different results. The pointers on the wheel next to each example indicate which colors were used. You can employ the same principles in a graphics program by establishing a color palette and combining various hues and tints.

Janet Ashford is the coauthor, with Linnea Dayton, of Adobe Illustrator: A Visual Guide for the Mac (Graphic-Sha/Addison-Wesley).
In the cockpit of every Delta Air Lines jet you'll find something absolutely critical to safe, legal, and efficient air travel: a FrameMaker document. It's called a Minimum Equipment list, and it's also available on-line, for access via radio from dispatchers on the ground. It's one of many operational, technical, and administrative manuals that Delta writes and publishes in FrameMaker.

Because FrameMaker gives Delta the functionality and flexibility they need to create, update, and consolidate their extensive documentation. Particularly attractive were features like automatic indexing, superior graphics handling, multiplatform capabilities for file compatibility across PCs, Macintoshes, and UNIX systems. And of course, on-line document distribution, complete with automatic hypertext links, through FrameViewer. So don't just settle for any old publisher — fly first class with FrameMaker 4. Call 1-800-U4-FRAME Ext. 021 today for our comprehensive Guide To Document Publishing. And watch your publishing department really take off with FrameMaker 4. Frame

CIRCLE 140 ON READER SERVICE CARD
What's Your Preference?

Using the right preferences settings can make your publishing application function more efficiently and increase your productivity. BY BOB SCHAFFEL AND CHUCK WEGER

Feel like your publishing work puts you on the bleeding edge of technology? In this new column, two noted publishing professionals provide hands-on help and offer expert tips on using publishing software and hardware, from how to set up your system to the best ways to work with prepress tools.

What's the first thing you should do after you install a new program? (Hint: If you said, "Use it to produce my rush 16-page color catalog," you should seek medical attention, now.) The answer is, Check the preferences! Preferences are settings in obscure dialog boxes that are usually buried under the File or Edit menu. Some preferences affect how the application functions. Others make a critical difference in how your files output. Some help you work more efficiently. And there are those that are a matter of taste — or preference, as it were.

Most applications store preferences settings as files in the Preferences folder, in the System Folder. Some preferences files are found elsewhere, however: Check the Aldus folder for FreeHand preferences and the Quark folder for QuarkXPress preferences, for instance. Aldus' PageMaker's preferences, on the other hand, are stored in the application, so there's no separate file.

If an application suddenly behaves oddly — slowing to a crawl or refusing to launch without bombing — its Preferences file may be corrupted. If you've ruled out a general system error or an extension conflict as the cause of this behavior, try checking the Preferences file; the application will generate a new one automatically. (Of course, then you'll have to reset all of your preferences in the new file.)

Mac publishing applications abound with preferences, ranging from three in Aldus PageMaker 5.0 (File: Preferences: Editor) to a whopping nine in Adobe Photoshop 2.5.1 (we'll devote a later column to this important application). You will each have your own list of favorites, but here's our hit parade of productivity-enhancing preferences:

**Type Greeking.** To save tedious screen-redraw time in your page-layout program, change the point size at which type is greeked so that a larger range of type is grayed out. For example, if your application is set so that anything smaller than 6 points/pixels is greeked, change the setting to 12 points/pixels. You can also greek pictures in QuarkXPress (Edit: Preferences: General) and gray out graphics in PageMaker (File: Preferences: Graphics) — real time-savers.

**Document-Scrolling Speed.** QuarkXPress' application preferences let you control how fast the program scrolls; FreeHand allows you to turn off redraw (File: Preferences: Display) so you can scroll without it, and in Photoshop (File: Preferences: General) you can choose Faster rather than Smoother for displaying CMYK composites. You can select off-screen redraw in QuarkXPress (Edit: Preferences: Application) and in FreeHand (File: Preferences: Display; Buffering Drawing), which is usually faster, although you may run into memory problems with off-screen buffering if you don't have enough RAM.

**Auto Save and Auto Backup.** These two QuarkXPress features (Edit: Preferences: Application) work very well — assuming you have enough disk space — and can help protect you against random crashes (not that the Mac ever does that, of course).

**Smaller File Save.** This PageMaker feature (File: Preferences: Save Option) keeps garbage from building up in the document's file structure. The time penalty over using the Faster option is minimal.

**Undo Levels.** Some programs, such as FreeHand (File: Preferences: Editing), allow you to store more than one undo in RAM until you close your document. Keep in mind, though, that speed decreases as the amount of RAM reserved for undos increases. You don't really have to undo 100 steps now, do you? Save the RAM for speed: Try 10 undo steps instead.

**Point Definitions.** You probably think there are 72 points to the inch, but some high-end publishing systems employ the traditional measurement of 72.28 (1 point = .013835 inch). If you have a tight-fitting layout and are sending your files through a prepress system, this can be a gotcha. QuarkXPress (Edit: Preferences: Application) and Photoshop (File: Preferences: Units) allow you to define how many points are in an inch.

**QuarkXPRESS Trapping.** If your service bureau uses a high-end trapping program such as Aldus TrapWise, IslandTrapper, or Scitex FullAutoFrames, turn off Quark's trapping, by entering 0 for Auto Amount and Indeterminate (Edit: Preferences: Trapping). Otherwise, try these settings for normal offset printing: a trapping value of .25 point for printing 150-line screens or .3 point for 133-line screens.

Bob Schaffel is technology director of the Professional Prepress Alliance, a trade organization of pioneering service providers. A former service bureau manager with more than 20 years' hands-on graphic-arts experience, he now consults, teaches, and writes about new technologies. Chuck Weger is an independent consultant and publisher of the Photoshop Monitor newsletter; he was formerly manager of advanced technology for a top prepress comapny.
This is how E-mail should be. Totally complete, ready to go, right out of the box. Chock full of everything you need to make the connection with virtually anyone, anywhere. And so intuitive, so highly automated, you won't have to spend half of your life with a user's manual.

New QuickMail™ 3.0 delivers everything you need to communicate across the hall and around the world. So you can exchange messages and files with co-workers, no matter what kind of computer they're working on. With more than 150 third-party gateways and bridges, QuickMail connects you to pagers, Newton™, fax systems and even other mail systems. And you can access AppleLink™ MCI Mail, CompuServe®, the Internet and more.

QuickMail has always been the Mac user's #1 choice. It was the first E-mail system specifically made for Mac networks. It's now being used by more than one million people and almost 50% of all Macintosh® users.

And even before this latest upgrade, QuickMail was also the choice of the experts. As Macworld proclaimed, "...with its combination of excellent user and administrator features, its ease of use in a mixed environment, and its improved remote access abilities, QuickMail retains its superiority in an increasingly competitive E-mail market."

If you happen to be stuck using one of those other LAN-based systems QuickMail is superior to, now you can make the switch to QuickMail and save with our special $12 per user upgrade offer.

Because we think everyone should be able to have the best choice in E-mail: QuickMail.

YES, I'M READY TO SWITCH TO QUICKMAIL FOR JUST $12/USER!
FAX (515) 221-1806. OR CALL 1-800-523-7638 DEPT. CE 440

NAME _______________________
TITLE _______________________
COMPANY _____________________
ADDRESS ______________________
CITY/ST/ZIP ___________________
PHONE ( ) ____________________ FAX ______________________
CURRENT E-MAIL SYSTEM ______

NEW! Powerful Search capability lets you locate filed messages in seconds.
NEW! MailManager™ can automatically reply, forward, file, print and even delete messages for you.
NEW! Built-in Spell-Checker for error-free messages.
Easy-to-install server and administration software gets you up and running fast.
Clients for Mac™, Windows™ and DOS users, all with the same look and feel.
QM Forms™ an application to create your own custom electronic forms.
QM Remote™ for sending and receiving messages anywhere.
QuickConference™ for communicating in "real-time" on screen.
Gateways and bridges Included FREE!

#1 choice. It was the first E-mail system specifically made for Mac networks. It's now being used by more than one million people and almost 50% of all Macintosh® users.

And even before this latest upgrade, QuickMail was also the choice of the experts. As Macworld proclaimed, "...with its combination of excellent user and administrator features, its ease of use in a mixed environment, and its improved remote access abilities, QuickMail retains its superiority in an increasingly competitive E-mail market."

If you happen to be stuck using one of those other LAN-based systems QuickMail is superior to, now you can make the switch to QuickMail and save with our special $12 per user upgrade offer.

Because we think everyone should be able to have the best choice in E-mail: QuickMail.

NEW! MailManager™ can automatically reply, forward, file, print and even delete messages for you.
NEW! Built-in Spell-Checker for error-free messages.
Easy-to-install server and administrative software gets you up and running fast.
Clients for Mac™, Windows™ and DOS users, all with the same look and feel.
QM Forms™ an application to create your own custom electronic forms.
QM Remote™ for sending and receiving messages anywhere.
QuickConference™ for communicating in "real-time" on screen.
Gateways and bridges Included FREE!

#1 choice. It was the first E-mail system specifically made for Mac networks. It's now being used by more than one million people and almost 50% of all Macintosh® users.

And even before this latest upgrade, QuickMail was also the choice of the experts. As Macworld proclaimed, "...with its combination of excellent user and administrator features, its ease of use in a mixed environment, and its improved remote access abilities, QuickMail retains its superiority in an increasingly competitive E-mail market."

If you happen to be stuck using one of those other LAN-based systems QuickMail is superior to, now you can make the switch to QuickMail and save with our special $12 per user upgrade offer.

Because we think everyone should be able to have the best choice in E-mail: QuickMail.

YES, I'M READY TO SWITCH TO QUICKMAIL FOR JUST $12/USER!
FAX (515) 221-1806. OR CALL 1-800-523-7638 DEPT. CE 440

NAME _______________________
TITLE _______________________
COMPANY _____________________
ADDRESS ______________________
CITY/ST/ZIP ___________________
PHONE ( ) ____________________ FAX ______________________
CURRENT E-MAIL SYSTEM ______

NEW! Powerful Search capability lets you locate filed messages in seconds.
NEW! MailManager™ can automatically reply, forward, file, print and even delete messages for you.
NEW! Built-in Spell-Checker for error-free messages.
Easy-to-install server and administration software gets you up and running fast.
Clients for Mac™, Windows™ and DOS users, all with the same look and feel.
QM Forms™ an application to create your own custom electronic forms.
QM Remote™ for sending and receiving messages anywhere.
QuickConference™ for communicating in "real-time" on screen.
Gateways and bridges Included FREE!

#1 choice. It was the first E-mail system specifically made for Mac networks. It's now being used by more than one million people and almost 50% of all Macintosh® users.

And even before this latest upgrade, QuickMail was also the choice of the experts. As Macworld proclaimed, "...with its combination of excellent user and administrator features, its ease of use in a mixed environment, and its improved remote access abilities, QuickMail retains its superiority in an increasingly competitive E-mail market."

If you happen to be stuck using one of those other LAN-based systems QuickMail is superior to, now you can make the switch to QuickMail and save with our special $12 per user upgrade offer.

Because we think everyone should be able to have the best choice in E-mail: QuickMail.

NEW! MailManager™ can automatically reply, forward, file, print and even delete messages for you.
NEW! Built-in Spell-Checker for error-free messages.
Easy-to-install server and administrative software gets you up and running fast.
Clients for Mac™, Windows™ and DOS users, all with the same look and feel.
QM Forms™ an application to create your own custom electronic forms.
QM Remote™ for sending and receiving messages anywhere.
QuickConference™ for communicating in "real-time" on screen.
Gateways and bridges Included FREE!

#1 choice. It was the first E-mail system specifically made for Mac networks. It's now being used by more than one million people and almost 50% of all Macintosh® users.

And even before this latest upgrade, QuickMail was also the choice of the experts. As Macworld proclaimed, "...with its combination of excellent user and administrator features, its ease of use in a mixed environment, and its improved remote access abilities, QuickMail retains its superiority in an increasingly competitive E-mail market."

If you happen to be stuck using one of those other LAN-based systems QuickMail is superior to, now you can make the switch to QuickMail and save with our special $12 per user upgrade offer.

Because we think everyone should be able to have the best choice in E-mail: QuickMail.

YES, I'M READY TO SWITCH TO QUICKMAIL FOR JUST $12/USER!
FAX (515) 221-1806. OR CALL 1-800-523-7638 DEPT. CE 440

NAME _______________________
TITLE _______________________
COMPANY _____________________
ADDRESS ______________________
CITY/ST/ZIP ___________________
PHONE ( ) ____________________ FAX ______________________
CURRENT E-MAIL SYSTEM ______

NEW! Powerful Search capability lets you locate filed messages in seconds.
NEW! MailManager™ can automatically reply, forward, file, print and even delete messages for you.
NEW! Built-in Spell-Checker for error-free messages.
Easy-to-install server and administration software gets you up and running fast.
Clients for Mac™, Windows™ and DOS users, all with the same look and feel.
QM Forms™ an application to create your own custom electronic forms.
QM Remote™ for sending and receiving messages anywhere.
QuickConference™ for communicating in "real-time" on screen.
Gateways and bridges Included FREE!

#1 choice. It was the first E-mail system specifically made for Mac networks. It's now being used by more than one million people and almost 50% of all Macintosh® users.

And even before this latest upgrade, QuickMail was also the choice of the experts. As Macworld proclaimed, "...with its combination of excellent user and administrator features, its ease of use in a mixed environment, and its improved remote access abilities, QuickMail retains its superiority in an increasingly competitive E-mail market."

If you happen to be stuck using one of those other LAN-based systems QuickMail is superior to, now you can make the switch to QuickMail and save with our special $12 per user upgrade offer.

Because we think everyone should be able to have the best choice in E-mail: QuickMail.
CROSS-PLATFORM E-MAIL / FILE ENCLOSURES CROSS BOUNDARIES

ENCLOSE FILES with Internet e-mail — or with e-mail to PC and UNIX-machine users on LANs — with help from version 3.0 of Mail*Link SMTP for QuickMail or Mail*Link SMTP Microsoft Mail ($2,995 each; upgrade pricing varies), from StarNine (510-649-4949). These Mac-based gateways link the two Mac mail products to UNIX-based mail systems running SMTP (Simple Mail Transport Protocol). Support for the MIME (Multipurpose Internet Mail Extensions) standard enables the gateways to deliver binary-file attachments — including text, images, sound, and video — among different mail systems.

Other new features aid compatibility with SMTP-based PC mail systems. Mac-to-PC file mapping assigns the appropriate DOS file extension to an enclosed file. For PC-to-Mac enclosures, the gateway adds the appropriate type and creator information.

Administrators will appreciate a new feature that lets them configure enclosure-handling methods for outgoing messages addressed to a specific destination. Plus, administrators can now forward incoming mail to any address on the LAN, the SMTP backbone, or the Internet, and they can set up multiple mail addresses for a user. Another addition, Apple's Threads Manager, lets the gateway connect to — and process concurrent messages from — five different SMTP hosts. / John Rizzo

HIGH-SPEED WANS / ATM Data Blast for Macs

MAC NET MANAGERS looking at high-bandwidth LANs, take note: This fall, Fore Systems (412-772-6600) will introduce the first Mac ATM (asynchronous-transfer mode) card. The $1,700-to-$1,900 NuBus NTA-200 will allow data transfer at 100 or 155 Mbps (depending on the version) — fast enough to transmit full-screen, live video.

It must connect to an ATM switch, which gives each Mac the full bandwidth. ATM switches use fiber-optic cable and cost $30,000 to $60,000 each, but Fore expects to have a much cheaper copper-cable switch when it releases the card. / JR

ETHERNET CARDS / Focus Escalates Price War

ETHERNET-CARD PRICES KEEP DROPPING, as evidenced by the $74.99 EtherLAN card, from Focus Enhancements (617-938-8088). Its SMC 91C92 controller chip uses a unique packet-processing algorithm intended to speed data transfer. The 7-inch card, available for NuBus and the LC's PDS, is SNMP-compatible and includes a utility that measures file-transfer speed. The EtherLAN autosenses the presence of a 10BASE-T or thinnet connection. It uses a Focus driver instead of Apple's standard EtherTalk driver, giving network managers one more driver to worry about updating. / JR

NETWORK SECURITY / Shielding the LAN

LOCK OUT INTRUDERS OR VIRUSES — or both — with the help of four new software packages. Three specialize in securing network data, whereas the other focuses on stopping viruses.

For ironclad network security, check out ultraSECURE with ultraCOMMAND ($239 per Mac, $479 for admin software), from usrEZ Software (714-756-5140). It offers security features that meet Department of Defense security standards, such as double-DES file encryption, and also offers remote password protection for folders, files, disks, the Apple menu, control panels, and the desktop. ultraSECURE can also automatically scan for viruses at startup. For less beefy security, usrEZ offers ultraSHIELD with ultraSECURE ($149 per Mac, $389 for admin software), which provides only single-DES encryption and no DOD intruder-warning banner.

For similar features, minus the protection from viruses, at a lower price ($129.95 per Mac), you can buy FolderBolt Pro, from Kent Marsh (800-325-3587 or 713-522-5625). For volume encryption, you need to add NightWatch ($39).

If protection from viruses is your main concern, however, look at Virex Administrator, from Datawatch (919-549-0711). It lets you automate extensive virus scans on a network as large as hundreds of Macs. According to Datawatch, not only can you perform speedy scans on all network Macs that have Virex installed but you can also delay scans until convenient times and update Virex remotely to repair infected Macs and prevent viruses.

Virex Administrator is pricey — the administration software starts at $200 for a 25-node network, plus you must install Virex on each machine ($950 for 25 Macs) — but it can save you hours of work. / Nancy Peterson
Wireless LAN for Macintosh

The New Network Option from Digital Ocean

- Remote Access to the Network
  Access critical data on your wired LAN even while you are away from your desk.
  Utilize network printers, modems and CD ROMs.
  Attach "hard-to-reach" peripherals.
- Instant Network Expansion
  Establish immediate connectivity for new and growing networks.
  Extend or bridge existing networks.
- Adhoc Networking
  Create spontaneous work groups in or out of the enterprise structure.

30 Day Money Back Guarantee!

Check-It-Out!

- Robust Communication
  Grouper communicates through walls and long distances.
- Long Battery Life
  Rechargeable battery lasts from 5 hours to several days.
- Transparent Operation
  Grouper requires no additional network operating software and fully supports AppleTalk protocol services.
- LocalTalk and Ethernet Connectivity
  Access LocalTalk or Ethernet networks with Digital Ocean's Starfish access point.*
- Secure Transmission
  Grouper supports 3 levels of security as well as all AppleShare security mechanisms.

*Available 04 1994

To learn more about Digital Ocean's wireless technology and receive our FREE Wire-Free Networking With Grouper booklet call 1.800.345.FISH
Network Help
How to foil rogue routers, build a network-address book, and maintain Ethernet collision detection among buildings.

BY KURT VANDERSLUIS

Going to Seed Routers Q. Is it a good idea to use nonseed routers? If some of my routers are nonseed, how many seed routers should I designate on the network? David Ward Los Angeles, CA

A. In general, I recommend using all seed (or preconfigured) routers, even though it requires more work on your part to maintain such a system. However, if you have tight control over your network, using nonseed routers can help reduce your administrative burden.

When you use nonseed routers, it’s easier to manage administrative changes such as redefining network addresses. On a backbone network containing five routers, for example, you can designate one of the routers as a seed router and have the other four be nonseed. To change the network address of that backbone, you need only configure the one seed router and then turn off all the nonseed routers and turn them back on. I recommend that you have all five routers be seed routers, but then you need to configure all five to change the backbone’s address.

The big disadvantage of nonseed routers becomes apparent when a misconfigured, or rogue, router makes its way onto your network (for example, when someone installs a Novell NetWare server without realizing that it’s also functioning as an AppleTalk router — and hence doesn’t coordinate network addresses and zone names). Incorrect routing information from the rogue router can propagate more quickly through your network if you have nonseed routers, which get their routing information from any router already in service when they’re turned on or restarted. Typically, a nonseed router begins service by broadcasting the question, What is the identity of this network? and accepting the response of the first router that replies. If that first responding router is configured properly, all is well. If it’s not, however, its incorrect information will spread to the nonseed router newly in service.

If you use seed routers exclusively, you may still get the occasional rogue router, but the incorrect routing information from rogue routers has less opportunity to spread to your other ones.

Hunting for Addresses Q. When we moved to Ethernet, we didn’t record anyone’s Ethernet address. Now we’d like to have a list of all the Ethernet devices on our network, for troubleshooting and inventory purposes. Is there an efficient way to make a table that shows each person’s name, Ethernet address, AppleTalk address, and IP address? John Morin Richardson, TX

A. If you have GraceLAN Network Manager, this is very easy to do for the Macs on your network. You need to make a custom layout to see the IP addresses (which the GraceLAN responder reads from the Mac’s MacTCP control panel) in the same table, but the GraceLAN layout editor is easy to use. Unfortunately, GraceLAN Network Manager can’t build such a list for AppleTalk devices that are not Macs.

To build a list of network addresses for all of your AppleTalk devices — including printers, routers, and non-Mac file servers — you have to use a protocol analyzer and a network-management program, such as GraceLAN Network Manager or Apple’s Inter-Poll, that can build a list of network devices.

Here are the steps to follow:
1. From a Mac workstation, use the network-management program to build a list of the devices on your network.
2. Use your protocol analyzer to monitor the network activity during the list-building process. To make the task easier, set up a filter so you’re capturing only the traffic to and from the Mac on which the list is being built.
3. Use the protocol analyzer to open and decode the Name Binding Protocol (NBP) Reply packets; they contain the name of the replying device, its AppleTalk address, and its Ethernet address, as shown in figure 1. (IP addresses won’t appear unless an application that uses MacTCP is open.)

![NBP Reply Packet](image)

4. Copy the device addresses and the names displayed in the decoded packets, and paste them into your protocol analyzer’s name-mapping editor. Having addresses mapped to device names in your protocol analyzer will make troubleshooting easier later on. (This is more important to do for Ethernet addresses than for AppleTalk addresses, which can change.)
5. If you want to format the list or combine it with another one (say, if you’ve already made an address list for the Macs, using GraceLAN Network Manager), you can export it from the protocol analyzer in tab-delimited format and import it into a word processor or spreadsheet program.
No Mac Is An Island.

MacUser technical editor John Rizzo tackles the full spectrum of Macintosh connectivity options. He covers everything from basic telecommunications to full-blown networks, showing you how to master and extend the built-in connectivity power of the Macintosh.

Available at fine bookstores, or call 1-800-688-0448 ext. 212

ISBN: 1-56276-056-4  Price: $27.95

MacUser Guide to Connectivity
John Rizzo

BREAKING THE RULES / far-apart Ethernet nodes

Q. Our Ethernet network has a main building containing a large hub connected to our outlying buildings via FOIRL (Fiber optic Inter Repeater Link). The farthest of these buildings is 1,700 meters away from the main building, which is less than the maximum distance for FOIRL, but many of the users in these outlying buildings have trouble communicating with each other. Why is this?

Karl Bergeman
Rochester, NY

A. Although 1,700 meters is an acceptable segment length (distance between Repeaters) for the situation you describe, the overall span of your network (the maximum Ethernet length between two nodes, including repeaters) may be too long for Ethernet's collision detection to work properly.

The span must be short enough that the jam signal resulting from a detected collision will make it back to both sending nodes while they're still sending the packets that collided. If the jam signal arrives after that, the nodes will not find out about the collision. Worse, if one of the nodes has already begun sending a second packet when it receives the jam signal, it will interpret the collision as having occurred in the second packet instead of the first. As a result, it will retransmit the wrong packet. If this happens often, your network can be plagued by slowdowns and faulty communication.

So how short does your span need to be? A good rule of thumb for copper-and-fiber networks (many component manufacturers provide formulas for calculating a more precise guideline) is 2,500 meters — and I'd guess at least two of your outlying buildings are farther apart than that. I recommend that you place a bridge or a router between the main building and the outlying buildings, so that each outlying building is like a separate network from the standpoint of collision detection. Then you need to consider only the distance between each node and the bridge or router when calculating span lengths. Bridges and routers have independently functioning ports, each with its own collision-detection function — so collision detection will work properly and all of your users will be able to communicate.

If the span of your Ethernet network (the maximum Ethernet length between two nodes, shown in yellow in the top figure) is too long — say, over 2,500 meters in a copper-and-fiber network — collision detection may not work properly. Adding a bridge or router divides the large network into smaller spans (shown in green and red in the bottom figure) for more-manageable collision detection.
Low Prices. No Compromises.

True Value From A Trusted Source.
Most computer vendors would lead you to believe that value is nothing more than a low price. At Mirror, we don't compromise quality to give you a great price.

Expert Engineering You Can Rely On!
From hard drives to video cards, scanners to monitors, every Mirror product is designed from the ground up to give you the performance you demand and reliability you deserve. For a price that leaves our competition scratching their heads in wonder.

Critical-Acclaimed Value!
Time and time again, Mirror amazes the toughest critics in the computer press. In November of 1993, MacUser reported that the Mirror Coolscan is "an impressive slide scanner that compares favorably with scanners costing considerably more." That same month, Macworld awarded the Mirror Color Scanner its coveted Editors' Choice award calling it "a bargain." In awarding Mirror an Editors' Choice for our Full-Page Display, Macworld made note of Mirror's "excellent value" (May, 1993).

Toll-free Technical Support.
What makes our low prices and expert engineering even more of a value is our toll-free technical support number. Whether it's before or after your purchase, we're here to answer any questions you have. And the phone call is on us—toll-free.

Exceptional selection... award-winning engineering... unbeatable prices... top-notch service... toll-free technical support. There's only one place to get value like this: Mirror.

Famous 30-Day Money-Back Guarantee!
You'll find the same caliber of engineering and value in every product we sell. We'll prove it, too. Simply call Mirror and place your order today. In 30 days, if you aren't standing alongside the industry critics and applauding our value, simply return your order for a full refund.

No questions asked.

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
<th>Storage</th>
<th>Int</th>
<th>Ext</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-Page</td>
<td>$399</td>
<td>170 MB (Q)</td>
<td>$199</td>
<td>$249</td>
</tr>
<tr>
<td>Two-Page Monochrome</td>
<td>$499</td>
<td>340 MB (Q)</td>
<td>$309</td>
<td>$369</td>
</tr>
<tr>
<td>Two-Page Grayscale</td>
<td>$699</td>
<td>520 MB (F)</td>
<td>$549</td>
<td>$629</td>
</tr>
<tr>
<td>14” Color</td>
<td>$394</td>
<td>540 MB (Q)</td>
<td>$519</td>
<td>$599</td>
</tr>
<tr>
<td>14” Trinitron</td>
<td>$499</td>
<td>1.1 GB (I)</td>
<td>$799</td>
<td>$849</td>
</tr>
<tr>
<td>15” Color Portrait</td>
<td>$799</td>
<td>1.1 GB (Q)</td>
<td>$929</td>
<td>$989</td>
</tr>
<tr>
<td>17” Trinitron</td>
<td>$999</td>
<td>1.1 GB (F)</td>
<td>$999</td>
<td>$999</td>
</tr>
<tr>
<td>20” Color</td>
<td>$1299</td>
<td>1.1 GB (S)</td>
<td>$869</td>
<td>$929</td>
</tr>
<tr>
<td>20” Trinitron</td>
<td>$1999</td>
<td>1.9 GB (S)</td>
<td>$1549</td>
<td>$1649</td>
</tr>
<tr>
<td>ProView 21” Color</td>
<td>$2099</td>
<td>2.1 GB (I)</td>
<td>$1459</td>
<td>$1529</td>
</tr>
<tr>
<td>Tornado Graphics Card</td>
<td>$699</td>
<td>2.4 GB (S)</td>
<td>$1549</td>
<td>$1649</td>
</tr>
<tr>
<td>ChargeCard Accelerator</td>
<td>$599</td>
<td>2.4 GB (S)</td>
<td>$1899</td>
<td>$1999</td>
</tr>
<tr>
<td>Tornado &amp; ChargeCard</td>
<td>$1199</td>
<td>3.4 GB (S)</td>
<td>$2149</td>
<td>$2249</td>
</tr>
<tr>
<td>600 dpi Color Scanner</td>
<td>$799</td>
<td>CD-ROM</td>
<td>n/a</td>
<td>$299</td>
</tr>
<tr>
<td>800 dpi Color Scanner</td>
<td>$999</td>
<td>128 MB Optical</td>
<td>n/a</td>
<td>$799</td>
</tr>
<tr>
<td>1200 dpi Color Scanner</td>
<td>$1499</td>
<td>2.1 GB DAT</td>
<td>n/a</td>
<td>$799</td>
</tr>
<tr>
<td>Coolscan Slide Scanner</td>
<td>$1999</td>
<td>Removable Drives</td>
<td>Call</td>
<td></td>
</tr>
</tbody>
</table>
One of these is a color proof and one is output from our new printer. We forgot which is which.

We paid $70 and waited three days for one of these. The other popped out of our new Tektronix Phaser 480 in minutes. Pull out your loupe and start guessing. And while you’re down there staring, note our output’s phenomenal color. PANTONE®-approved, it’s perfect for matching those tricky product colors, logos and skin tones. You might also notice the full 11" x 17" print area. Yes, Virginia, there are tabloid-sized full bleeds. And it shares easily: the Phaser 480 is a work group printer for Macs, PCs or workstations. Plus, it boasts a powerful RISC processor and true Adobe® PostScript™ Level 2. Spread-sized bleeds? Reprint quality comps? Pre-film proofing right at your desk? Welcome to preproduction heaven. So head down to your nearest Tektronix dealer to see for yourself. And by the way, our guess is that the one on the bottom is ours.

For a free print sample or dealer location call 800/835-6100, Dept. 32A.

Phaser is trademark of Tektronix, Inc. All other marks are trademarks or registered trademarks of their respective companies.
Which Windows Wins?

How to choose the best way to run Windows on your Mac — when the available options for doing so are changing just about as fast as we can test them. By John Rizzo

A popular bit of advice about the weather in some locales goes like this: If you don't like it, just wait for an hour. I'm tempted to say something similar about Apple's Windows-compatibility product strategy.

Recently, the forecast looked bright and sunny for those of us who want to run Windows (and DOS, of course, since Windows is DOS-based) on a Mac. Apple offered its fast, RISC-based Power Macs in bundles with Insignia Solutions' native version of SoftWindows (available separately from Insignia Solutions [415-694-7600] for $499), providing a major leap in speed for the software-only Windows emulator (SoftPC, Insignia's earlier version of this product, runs applications more slowly than they run on even low-end PCs). Orange Micro (714-779-2772) introduced the Series200 models of its OrangePC coprocessor card (available in configurations priced from $999 to over $2,000), which let you put a fast Intel processor into any Mac that had a 12-inch NuBus slot. And Apple provided its own hardware alternative (although only for the Quadra 610) to the OrangePC card: the $399 DOS Compatibility Card. I couldn't wait to test and compare them.

Then, like a midwestern tornado, Apple unleashed an announcement that it wasn't producing any more Quadra 610s and DOS Compatibility Cards. But, it said, not to worry — it was thinking about replacing the DOS Compatibility Card with another product. Sometime. Maybe.

At MacUser Labs, we tested the DOS Compatibility Card anyway. As it turns out, the card in a Quadra 610 runs Windows applications faster than does SoftWindows on a $5,000 Power Mac. Lucky Quadra 610 owners who can still find a DOS Compatibility Card anyway. As it turns out, the card in a Quadra 610 runs Windows applications faster than does SoftWindows on a $5,000 Power Mac. Lucky Quadra 610 owners who can still find a DOS Compatibility Card in the distribution channels should grab it — it's a bargain.

For high-end-PC-type performance on your Mac, the only game in town is still the OrangePC card. We tested the OrangePC Card in a Quadra 610, which costs $2,388 and sports Intel's hot 486DX4/100 processor. It also has a 128K cache and 1 MB of video RAM and is plenty fast enough for all but those users who insist on panting after Pentiums.

Which of these Windows options is right for you — and whether you should wait for something else to come along — depends on what capabilities you need as well as what you can afford to pay.

Features Versus Finance

SoftWindows and the DOS Compatibility Card are each aimed at the same audience: users who have limited budgets and who don't need full PC expansion capabilities.

Memory-Setup Tips / Configuring Memory to Maximize Speed

To get the speed we did with these products, be careful how you configure system memory. All three products work best with lots of memory, mainly because Windows and its applications are memory hogs. Plan to have at least 8 MB of RAM on top of what your Mac already has.

Orange Micro's OrangePC card is the easiest product to configure correctly, since it uses RAM on the card — a single 16-, 32-, or 64-MB SIMM. The OrangePC application uses only 512K of the Mac's memory at most. Apple's DOS Compatibility Card has a SIMM slot too, but it can accept no more than 32 MB of RAM; beyond that, it can share memory with the Mac, but you'll get a 25- to 40-percent speed reduction with this method, according to Apple.

If you're mainly interested in using DOS, you can run SoftWindows on an 8-MB Power Mac, but Insignia recommends 16 MB for SoftWindows in general. I recommend having 24 MB if you want to run multiple Mac and Windows applications simultaneously. To supplement your Mac's real RAM, you can use the Power Mac's virtual memory, but use it sparingly — although it works better than the virtual memory in 680x0 Macs, using it is still much slower than using real RAM.

You should always increase the Minimum memory setting in SoftWindows' Get Info box. Insignia recommends a minimum setting of 12,000K for a 16-MB Power Mac and 18,000K for a 24-MB Power Mac. If you can't devote this much to Windows, try to increase SoftWindows' minimum-memory setting by 1,152K for every 1 MB of PC memory you want to use.

To run the maximum possible number or size of PC applications, you'll also need to increase the PC extended memory (choose PC Memory in SoftWindows' Setup menu) — the current way to get around the 64K memory limit in DOS (using expanded memory was the old way). However, don't bump up the extended memory as high as you can; increasing extended memory will decrease the size of the DeltaCache, a space SoftWindows reserves in RAM for storing frequently used application code. Leave at least 1 MB for the DeltaCache; a smaller DeltaCache will significantly slow SoftWindows.

For any of these products, keep the expanded memory set to 0 unless you want to run older PC applications that require expanded memory. Windows applications will slow down if expanded memory is not 0.
Introducing Mini EtherPrint. Up To 8 LocalTalk Connections, New Compact Size.

Connecting LocalTalk printers and other devices to Ethernet has never been easier or less intrusive. The reason? Dayna, the very company that pioneered the technology with EtherPrint, has made a small improvement that promises big benefits.

It's called Mini EtherPrint, and it's the ideal way to provide a simplified Ethernet connection for as few as 1 or 2 LocalTalk printers to as many as 8 LocalTalk devices of any variety.

Mini EtherPrint connects to your printer with no set-up routines or start-up sequences. Just plug and print. For easy trouble-shooting, we've included power, activity and link status lights, as well as a handy reset switch. And if there's a power outage, Mini EtherPrint will restart and restore its connections automatically. We also include Seclink protection software to prevent unauthorized access to network modems, color printers or other LocalTalk devices.

Mini EtherPrint may be the smallest connector around, but it offers the biggest cost advantages. A competitive price per connection, Lifetime Warranty and simplified Ethernet connection for as few as 1 or 2 LocalTalk devices, Mini EtherPrint offers up to 8.

Prove to yourself that the challenge of connecting more LocalTalk devices to your Ethernet is smaller than you thought. Choose Mini EtherPrint from Dayna. For more information, call 800-443-2962 ext. 537 or use our 24-hour FAX Response System.

FAX Response: 801-269-7340, Doc.#1303

EtherPrint, Mini EtherPrint and No Boundaries, No Limits are trademarks of Dayna Communications, Inc. All other product names are the trademarks of their respective holders.

©1994 Dayna Communications, Inc., Sorenson Research Park, 849 West LeRoy Drive, Salt Lake City, UT 84123
(slots for connecting PC peripherals) or speed beyond that of a low-end 486 machine. The OrangePC card is more like having a PC inside your Mac; it can provide the expansion capabilities of a real PC and costs about as much.

SoftWindows is the easiest of the products to install. The SoftWindows installer program copies both DOS and Windows to your Mac, along with the SoftWindows application. Insignia's DOS and Windows software contains actual Microsoft code, so it looks and acts like the real thing. It also lets you connect to a NetWare server.

The two 486 cards come with DOS, but if you want to run Windows, you need to supply your own copy. The OrangePC card also comes with an application (now in version 3.01) that launches you into DOS. Once DOS has been launched, however, all the processing occurs on the OrangePC card, not on the Macintosh.

When you order an OrangePC card, you can choose among several models with different Intel 486 processors and other options. Like previous versions of the OrangePC card, the Series 200 cards include PC parallel and serial ports as well as optional expansion slots to let you connect PC peripherals. For the expansion-slot option, Orange Micro has replaced the AT-bus slots of older models of the card with the more flexible PCMCIA slot, which you can use for credit-card-sized network cards, modems, additional memory, or cards that provide other functions. You also get a SIMM slot for RAM as well as support for the Super VGA PC graphics standard.

By comparison, Apple's DOS Compatibility Card is plain-vanilla. This 7-inch PDS card has no expansion slots or PC ports for connecting to devices such as printers, although you can print through your Mac's printer port. The 486SX/25, which is relatively slow, is your only processor choice. You access DOS and Windows through the PC Setup control panel (see figure 1) — not nearly as convenient a method as those provided by SoftWindows and the OrangePC application. In addition, you can't have Mac and DOS or Windows applications on one monitor's screen simultaneously, as you can when you use SoftWindows or the OrangePC card. There's one big plus, though: At $399, Apple's card is much cheaper than the OrangePC.
and tasks in popular Windows applications
(see figure 2). We also ran two standard Ziff-
Davis PC benchmark applications, Win-
Bench 4.0, for Windows (results not shown),
and PC Bench 8.0, for DOS. We ran Soft-
Windows on a Power Mac 8100, used the
Apple DOS Compatibility Card in a Quadra
610, and used the OrangePC 290 in a Quadra
650. The two PCs we used were a 486SX/25
Compaq DeskPro and, for a higher-end ref-
erence, a 486DX2/66 Dell OptiPlex.

For SoftWindows on the Power Mac, our
results were similar to those on our first look
in May (see "The Corporate Power Mac," page 133) — the combo was slightly slower
overall than a low-end 486 PC (the 486SX/
25-based Compaq DeskPro) but faster than
you would expect a 386 to be. The SoftWindows/Power Mac setup was slower than the
DOS Compatibility Card/Quadra 610 system,
which closely matched the speed of the
486SX/25 PC for most tests. A 486SX/25
PC provides acceptable speed, but it’s cer-
tainly not a power user’s machine.

The one unusual result we saw for the
SoftWindows setup was in the WinBench
graphics test, which showed the Soft-
Windows system’s color display to be faster
for 8-bit color (256 colors) than for 4-bit
color (16 colors) — the opposite behavior
from the other tested systems; Insignia con-
A Win-Win Situation / Windows-on-Mac systems perform well against real PCs
firmed that it had optimized the product for
8-bit color.

Operations with the OrangePC card in the
Quadra 650 were slightly slower than with the
486DX2/66-based Dell OptiPlex PC, a
fairly typical power user’s PC. You might
expect the OrangePC-based system to be faster,
since the version of the card we tested
contained a 486DX4/100 chip — a faster
one than a 486DX2/66. I suspect that the
OrangePC-based system wasn’t as fast as a
real PC with a 486DX4/100 chip because
the former uses VGA on top of the Mac’s video
system. In fact, PC Bench showed signifi-
cantly lower video scores for both the
OrangePC-card and the DOS Compatibility
Card setups than for the SoftWindows one
or the real PCs. PC Bench also reported a
lower processor score for the OrangePC set-
up, possibly due to the limits of NuBus.
Apple’s DOS Compatibility Card fits in the
Quadra 610’s PDS, which usually allows
faster data transfer than NuBus.

What Wouldn’t Work
The compatibility issues with SoftWindows
haven’t changed since last May — it still has
no 386 Extended Mode, which means you
can’t install or run the newer versions of
some Windows software, such as the most
recent Quattro Pro, on a Power Mac running
SoftWindows. (Check with the vendors of
software you want to use to see if their appli-
cations require 386 Extended Mode.) An
upgrade to SoftWindows planned for later

Real PC Speed
To see how running DOS and Windows ap-
lications on a Mac with these products
compared to running them on real PCs, we
tested a variety of common DOS operations
for comparing the three Windows-on-Mac
intosh products that we tested. Our tests
included some standard PC benchmark tests
and timings of file-management as well as ap-
plication-based tasks. Overall, the hardware-
based options — the OrangePC card and the
the speed of the higher-end PC system.

Lotus 1-2-3 for DOS
The time it takes for a macro to recalculate and sort data in a spreadsheet (4-bit display only).

Access Search
The time it takes to conduct a Boolean search on a database that includes three fields (averaged for 4- and 8-bit displays).

DOS Compatibility Card — won the speed tests, with the OrangePC card approaching the speed of the higher-end PC system.

The Whether Report
Whether to buy one of these products over the others is a less tricky question than whether to wait for future developments.

Overall, in our tests of the current offerings, the hardware-based options won the speed contests. To approximate the computing power and connections of a higher-end PC, installing an OrangePC card in your Mac is the way to go.

For those whose speed and PC-connectivity needs are less rigorous, the DOS Compatibility Card is a good deal. It lets you run Windows applications on a Macintosh slightly faster than SoftWindows does, and it doesn't have any compatibility problems. The biggest problem is that you may not be able to find a DOS Compatibility Card to buy — and that it fits only in the Quadra 610, which is also being discontinued.

Why did Apple create this situation? The company now claims that it always intended the DOS Compatibility Card to be a limited-quantity product, although it doesn't say why and it certainly didn't go out of its way to publicize this limited availability when it introduced the card (I haven't found any material from Apple that mentions the limitation in writing). Abandoning the product after making it available only for a single Mac model smack of a failed marketing experiment, as with the MacTV, although Apple denies this is the case. Perhaps the card was discontinued because Apple wasn't making enough profit on it or because its low price meant that it competed with SoftWindows, with whose maker Apple has a strategic partnership.

Should you wait for Apple's next 486 card for 680x0 Macs? Predicting when or if such a product will arrive is a gamble. If it does, I doubt that we'll see the bargain-basement $399 price tag again.

Meanwhile, Insignia won't be sitting on its hands while Apple decides how best to provide Windows capability on 680x0 Macs. In addition to incorporating 386 Enhanced Mode, to eliminate incompatibilities, Insignia is working on speed improvements. The company may also be working on a "SoftChicago," an emulated version of Microsoft's next-generation Windows 4, scheduled to ship in the middle of next year. As for a "SoftNT," don't expect to see such a thing unless the demand for Windows NT itself increases.

On the hardware side, the big question is, Can Orange Micro put a Pentium on an OrangePC card? Not the current Pentium, which by itself exceeds the NuBus power limits of many Macs. Intel will be producing a less power-hungry Pentium, but having one in a Mac is probably a year off. NuBus may also be too slow for a Pentium, but a PCI (Peripheral Component Interconnect) bus in next year's Power Macs could provide a possibility.

Will anyone else enter the Windows-on-Mac market in the near future? Despite rumors of such developments at press time, I don't think so. As Yogi Berra said about another market, "Nobody goes there — it's too crowded."

Before you consider a third party external drive, look at what we've brought to the party.

Introducing Apple® External Hard Drives. Now you can add reliable external storage to your Mac with all the quality you expect from Apple, at prices that will surprise you.

Apple External Hard Drives are bundled with everything you need to begin safely storing your data right away, including a power cable, a SCSI cable, and a terminator. Convenient front-panel SCSI ID and power controls make it easy to power up and change your SCSI address — whether you set the drive up vertically or horizontally.

The new Apple drives are available in four convenient storage capacities, 160Mb, 230Mb, 500Mb and 1000Mb, and are manufactured exclusively by La Cie, Ltd., a Quantum Company. And right now we’re celebrating the Apple Drive debut by loading each drive with powerful hard disk management software, handy utilities and much more.

Look for the Apple Drive at your local dealer soon. For more information and the name of a participating reseller or Quantum distributor, call La Cie.

Now you can safely store your work outside your Mac without leaving the Apple family.

That’s cause for celebration.

For All The Facts Call: 800-999-0499

© 1994 La Cie, Ltd. All rights reserved. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc., registered in the United States and other countries worldwide. LACIE is a registered trademark of Lacie Technology, Inc. Limited Editions of the Apple Drive are available. Please call for details.
HANDS ON

Mobile Office

STORAGE / PORTABLE PCMCIA FOR MACS

THE PROMISE OF PORTABILITY offered by PCMCIA technology — credit-card-sized storage, modems, and memory — became a reality sooner for PCs than for Macs. True, Apple is providing a PCMCIA option for the PowerBook 500 series, but if you want PCMCIA now and a PowerBook 500 isn’t in your budget, take a look at the PowerCard ($495), a portable PCMCIA reader/writer from Software Architects (206-487-0122).

As diminutive as a desktop modem and weighing only 1.5 pounds (power supply included), the PowerCard hooks to your Mac via a SCSI connection and functions with many PC-compatible PCMCIA cards. Its software allows you to use Type I, II, and III SRAM; flash-RAM; and hard-disk cards. At press time, Software Architects was negotiating with modem vendors about developing drivers for modem cards.

For fast data transfer, the PowerCard uses a SCSI-2 connection and works with SCSI Manager 4.3, which is Power Mac-compatible. And to simplify Mac-to-PC file transfer, the PowerCard lets you create partitions for Mac as well as DOS data on your PCMCIA cards — but you have to supply your own DOS-translation software. / Nancy Peterson

BATTERIES / Add-on Power for 500s

FOR SOME POWER-HUNGRY users of the PowerBook 500 series, even two internal batteries are not enough. Such users will appreciate Battery Technology’s SlimPack500 ($299.95), the first external battery pack for the 500s. Battery Technology (213-728-7874) promises as much as nine hours of power on a single charge from the 2.5-pound SlimPack500, which measures 11 x 6.5 x 5 inches and attaches to a PowerBook with an included mounting kit.

The SlimPack500 can’t communicate with the PowerBook 500’s internal battery-management circuitry, but it can share charge-capacity information with you via a five-LED indicator. / Jim Shatz-Akin

500-SERIES MEMORY / Stick to Slim SIMMs on RAM Cards

IF YOU’RE BUYING MEMORY for your 500-series PowerBook, be cautious. At press time, we were receiving reports about users buying SIMMs that caused problems in their PowerBook 500s because the SIMMs didn’t fully meet Apple’s specs. Here’s what to look out for:

Although the general specs on 500-series memory are similar to those for other PowerBooks, the component-height specification is not. Because space inside the 500-series PowerBooks is at a premium, Apple has specified that chips on either side of the 500-series RAM cards must not rise more than 1.5 millimeters from the board. RAM-expansion cards exceeding this specification can interfere with internal modems or cause the PowerBook keyboard to bow upward.

Confusion arises because two SIMM-chip designs are used for Mac memory cards — SOJ (small-outline J-lead) chips, which are 3.66 millimeters high, and the more expensive TSOP (thin small-outline package) chips, which are 1.20 millimeters high. Some RAM-expansion cards have both types of chips on a single card. The only way to ensure that your RAM card meets Apple specs for PowerBook 500s is to make sure it uses only TSOP chips. / JSR

New for the Newton

APPLE’S PERT PDA continues to evolve into a useful tool. With version 2.0 of the Newton Connection Kit ($99 from Newton dealers; upgrade free), Newtons can share information with more Mac or PC applications than ever. Apple’s StarCore software-publishing group (800-708-7827 or 408-966-1010) also offers some new Newton software.

The Newton Solution ($199) consists of a 2-MB flash-RAM card available in three versions: the Professional Idea Manager, the Executive Productivity Manager, and the Mobile Sales Manager. Each version has two applications intended to meet the needs of the targeted user, plus Notion (a comprehensive list manager) and Jigsaw Strategy Game. Another new business-oriented StarCore offering for the Newton is TapWorks ($119), which integrates four modes: text processing, spreadsheet, drawing, and graphing. New leisure-oriented StarCore titles include Zagat Guide to Top U.S. Hotels & Restaurants ($99.95), Maltin Film Guide ($69.95), Hugh Johnson Wine Guide ($119.95), and DietLog ($119). / NP
Announcing OCR that's so accurate, anything else is simply pointless.

Introducing OmniPage® Professional 5.0 from Caere, the leader in OCR.
We'd like to make our point perfectly clear.
OmniPage Professional sets the standard in OCR. Offering more accuracy, more power, and more flexibility than ever before.
In fact, it offers the most advanced OCR technologies in the industry—technologies that Caere has pioneered.
Only Professional helps you spend more time using scanned information instead of correcting it. Its breakthrough 3D OCR feature recognizes grayscale information during document scanning to greatly improve recognition of poor quality documents.
That's not all. Professional recognizes a broader range of documents, reading the most difficult characters and symbols with ease. A feat made possible thanks to its exclusive Language Analyst neural network and fax recognition capabilities.

Professional also allows you to easily edit both text and graphics with its new Text Editor and 24-bit color image editor. And for maximum ease of use and flexibility, there's a new click-and-choose interface, too.

So get OmniPage Professional 5.0 for your Mac today. See your local Caere dealer or call for more information on the complete family of OmniPage products at 1-800-535-SCAN. If you own a competitive product, ask about our “Step up to OmniPage” program.
For superior performance, it's your best shot.

OmniPage Professional 5.0 is Accelerated for Power Macintosh.
PowerBook Tips

From cleaning your PowerBook's trackball to keeping your phone bills low, readers share their tips for ultimate PowerBook use. Compiled by Joseph O. Holmes

Cheaper Faxing
To save money when you're sending faxes long-distance, eliminate the cover sheet and incorporate the information into a 1- or 2-inch header on your fax documents. If that's not possible, use as simple a cover sheet as possible. Any type or graphics takes extra time to send. My company sends hundreds of faxes a day throughout Europe and to the U.S., and by eliminating cover sheets, we have saved more than $6,000 a year on our phone bill.

Nathan Keith
Waldbrunn, Germany

More-Visible Ports
Annoyed that the markings for your PowerBook's rear-panel connectors are gray-on-gray, tiny, and hard to read? Add some contrast by filling in the molded markings with white. Rub a white crayon gently across the labels to fill them, and then use a paper towel to rub off the excess. (A little isopropyl alcohol on the towel helps.)

Andy Baird
Hightstown, NJ

AutoRemounter
Apple's AutoRemounter 1.0, a System 7.1 control panel that automatically remounts PowerBooks onto a network, did not work with the PowerBook 140 or PowerBook 170.

Good news: The newest version, 1.2, does work on all PowerBooks. It's part of the System Software Update 2.0.1, which is available as SYSUPD.SIT in Library 14 (Apple Software) of ZiffNet/Mac's Download & Support Forum.

Joanne Bonnano
Wycoff, NJ

CompuServe on the Road
To find a local CompuServe number anywhere in the U.S., use a telecom application to have your modem call 800-346-3247. At the prompt, press Return and type Phones as your user name. This method gives you only two numbers for any selected connect speed, but if you want more, just sign on again — there's no need to hang up and call back. If you use CompuServe Navigator, save the numbers in its phone listing for use the next time you're in the same town.

Bob Spargo
Boca Raton, FL

Floppyless Installations
Here are two methods for installing software onto any PowerBook that lacks a floppy drive. Both methods require access to a second Mac and work only with software that uses the Apple Installer, such as Microsoft Word 5.x and QuickKeys 3.x.

Networking method. Copy your master floppy disks onto the root level of the hard disk of a Mac that will be networked with your PowerBook. Now make a network connection between your PowerBook and that Mac and, from your PowerBook, access the desktop Mac's hard disk via file sharing and launch the Installer application. From here, the installation should proceed normally. (Don't install system software via this method. Doing so may crash the PowerBook and corrupt the existing system software.)

SCSI method. If you have an external hard drive, connect it to a desktop Mac and use Apple's Disk Copy to save disk images of the floppy disks. (FastCopy, part of Central Point Software's MacTools Deluxe 3.0, can perform the same function as Disk Copy.) Then connect the external drive to your PowerBook, use the freeware MountImage control panel to mount each virtual floppy, and proceed with the installation. Dues require a SCSI adapter such as an Apple MiniDock or a SCSI dock from Lapis or Newer Technology.

Disk Copy is available from ZMac's Download & Support Forum, in Library 14 (Apple Software), under the name DICOPI.SIT; MountImage is in Library 3 (Extensions), as MOUNT.CPT.

Jeff R. Harmon
Toonerville, WA

[There are conflicting reports on whether these system-installation methods work. Several readers have told us they work fine, but proceed with caution.—Ed.]

MOBILE OFFICE

PowerBook Tips

Cheaper Faxing
To save money when you're sending faxes long-distance, eliminate the cover sheet and incorporate the information into a 1- or 2-inch header on your fax documents. If that's not possible, use as simple a cover sheet as possible. Any type or graphics takes extra time to send. My company sends hundreds of faxes a day throughout Europe and to the U.S., and by eliminating cover sheets, we have saved more than $6,000 a year on our phone bill.

Nathan Keith
Waldbrunn, Germany

More-Visible Ports
Annoyed that the markings for your PowerBook's rear-panel connectors are gray-on-gray, tiny, and hard to read? Add some contrast by filling in the molded markings with white. Rub a white crayon gently across the labels to fill them, and then use a paper towel to rub off the excess. (A little isopropyl alcohol on the towel helps.)

Andy Baird
Hightstown, NJ

AutoRemounter
Apple's AutoRemounter 1.0, a System 7.1 control panel that automatically remounts PowerBooks onto a network, did not work with the PowerBook 140 or PowerBook 170.

Good news: The newest version, 1.2, does work on all PowerBooks. It's part of the System Software Update 2.0.1, which is available as SYSUPD.SIT in Library 14 (Apple Software) of ZiffNet/Mac's Download & Support Forum.

Joanne Bonnano
Wycoff, NJ

CompuServe on the Road
To find a local CompuServe number anywhere in the U.S., use a telecom application to have your modem call 800-346-3247. At the prompt, press Return and type Phones as your user name. This method gives you only two numbers for any selected connect speed, but if you want more, just sign on again — there's no need to hang up and call back. If you use CompuServe Navigator, save the numbers in its phone listing for use the next time you're in the same town.

Bob Spargo
Boca Raton, FL

Floppyless Installations
Here are two methods for installing software onto any PowerBook that lacks a floppy drive. Both methods require access to a second Mac and work only with software that uses the Apple Installer, such as Microsoft Word 5.x and QuickKeys 3.x.

Networking method. Copy your master floppy disks onto the root level of the hard disk of a Mac that will be networked with your PowerBook. Now make a network connection between your PowerBook and that Mac and, from your PowerBook, access the desktop Mac's hard disk via file sharing and launch the Installer application. From here, the installation should proceed normally. (Don't install system software via this method. Doing so may crash the PowerBook and corrupt the existing system software.)

SCSI method. If you have an external hard drive, connect it to a desktop Mac and use Apple's Disk Copy to save disk images of the floppy disks. (FastCopy, part of Central Point Software's MacTools Deluxe 3.0, can perform the same function as Disk Copy.) Then connect the external drive to your PowerBook, use the freeware MountImage control panel to mount each virtual floppy, and proceed with the installation. Dues require a SCSI adapter such as an Apple MiniDock or a SCSI dock from Lapis or Newer Technology.

Disk Copy is available from ZMac's Download & Support Forum, in Library 14 (Apple Software), under the name DICOPI.SIT; MountImage is in Library 3 (Extensions), as MOUNT.CPT.

Jeff R. Harmon
Toonerville, WA

[There are conflicting reports on whether these system-installation methods work. Several readers have told us they work fine, but proceed with caution.—Ed.]

TIP OF THE MONTH

Trackball Cleaning Pen
Cleaning pens marketed for cleaning CDs or laser printers (such as the LaserKleen pen, from Paper Direct) are great for cleaning the trackball mechanism inside a PowerBook. They have a firm, angled, lint-free tip and are filled with isopropyl alcohol. The pens, about the size of a Magic Marker, are more expensive than a cotton swab and rubbing alcohol but are much more convenient for traveling.

Kay Hall
Cocoa Beach, FL

Write to PowerBook Tips

c/o MacUser
950 Tower Lane
18th Floor
Foster City, CA 94404

You can also send your tip to Joseph Holmes (72241.731) on ZiffNet/Mac, MacUser's on-line service (include a daytime phone number). We pay $25 for every undocumented tip we print, and the Tip of the Month earns $100; see page 4 for more details.
Introducing Delrina Fax PRO® for Macintosh. You’ll wonder how you ever faxed without it.

Now you can use your Mac to send, receive and manage faxes – thanks to new Delrina Fax PRO for Macintosh. With Delrina Fax, sending faxes is as easy as printing a document – and you can fax directly from any Mac application. Simply select Delrina Fax in your File menu, type in a name and number – or drag and drop a name from the built-in address book – then click on the “Send” icon and your fax is quickly on its way.

Don’t try this with a fax machine.

Delrina Fax also delivers stunning 16-shade gray-scale sharpness and clarity on-screen, as well as to any fax machine or printer. And, since it works in the background, you can send and receive faxes without leaving the application you’re working in and designate faxes to print automatically on receipt.

Delrina Fax automatically keeps a detailed log of all the faxes you send and receive, and it has built-in Optical Character Recognition (OCR) that lets you easily convert your faxes with text into documents that are ready to be edited. There’s even a custom scheduling feature that allows you to schedule long distance faxes when phone rates are lower.

Support that can’t be beat.

Delrina Fax supports all fax modems for the Mac, as well as all Powerbook Express™ modems and AV GeoPort Telecom™ adapters. And installation is virtually automatic.

With over 4 million fax products sold worldwide, and industry-acclaimed tech support, Delrina is the leader in the fax software market. To put this experience to work for you, call the number below and order Delrina Fax PRO for Macintosh today. Once you do, you’ll wonder how you ever faxed without it.

Delrina and Delrina Fax PRO for Macintosh are trademarks of Delrina (Canada) Corporation. Macintosh is a registered trademark of Apple Computer, Inc. All other product names are trademarks of their respective owners. © 1993-1994 Delrina (Canada) Corporation. All rights reserved.

CIRCLE 80 ON READER SERVICE CARD
PowerBook SCSI Wizardry

Voodoo. Witchcraft. Black art. When SCSI setups work — especially SCSI setups involving PowerBooks — it's usually attributed to luck. Here's how to get lucky. BY SHARON ZARDETTO AKER

WAY BACK WHEN SCSI ports were introduced, with the Macintosh Plus, there was an unsuccessful movement to pronounce the acronym with a vowel sound between the S and the C instead of between the C and the S — sexy instead of scuzzy — just to be different from the PC world. Well, the art of SCSI connections and termination may not be sexy, but it can be dark and dangerous — especially when you're not up on the PowerBook's particular SCSI concerns: special cables and connectors; slightly unusual termination approaches; and most models' ability to become a SCSI device in themselves when connected to another Macintosh, for fast file transfers and other such operations.

Cable Cabalas

The cramped I/O panel on the back of the PowerBook called for a new kind of SCSI connector: the HDI-30. HDI stands for high-density interface, and 30 is the number of spaces for pins. But that doesn't mean a cable needs 30 pins to fit — in fact, the basic SCSI connection uses only 29 pins. You may even see cables and adapters described as HDI-29 connectors; they'll fit perfectly with your HDI-30 port.

Apple provides two basic SCSI cables for PowerBooks — cables that are similar enough in name and appearance to cause some confusion. The Apple HDI-30 SCSI System Cable is designed for connecting external SCSI devices to the PowerBook. It's platinum-colored and has a 29-pin HDI connector at one end and a 50-pin male connector at the other. The other cable, the Apple HDI-30 SCSI Disk Adapter, is meant for using the PowerBook's internal hard-disk drive as a SCSI drive for another Macintosh. It's shorter and dark gray, with a 50-pin female connector at one end and a full complement of 30 pins in the HDI-30 connector (the 30th pin puts the PowerBook into SCSI Disk mode).

Using either SCSI cable with a PowerBook Duo is more complicated, since Duos don't provide a SCSI connection. If the Duo in question isn't in a Duo Dock, you need an attachment that contains an HDI SCSI connector. There's one in Apple's MiniDock, and most third-party attachments include the SCSI port. But if SCSI is all you need, check out a SCSI-only dock, such as Newer Technology's $139 SCSI MicroDock (800-678-3726 or 315-685-4904).

POWERBOOK SECRETS / when you blow a fuse

IT'S A CONFOUNDING SITUATION: Your PowerBook runs on AC power but won't run from the internal battery, even if it's fully charged. And you can't charge the battery while it's in the PowerBook.

A blown motherboard fuse is the likely culprit. The most common cause is a defective AC adapter, but an errant paper clip shorting the AC terminal can also blow the fuse. For those who can't get this problem fixed under warranty, many dealers will cure the situation with a $400 motherboard — for a fuse that costs about $1. But if you've fiddled with electronics and can handle a soldering iron, you can probably fix it yourself. You'll need to disassemble the PowerBook and remove the motherboard to make the repair.

On the PowerBook 100, the fuse is mounted on the upper side of the motherboard, near where the battery connects; it's labeled F1 5A in gigantic letters. On PowerBooks in the 140-to-180c range, the fuse is surface-mounted, colored white, and labeled 5A 125V.

Unfortunately, direct-replacement fuses can be hard to find. You can try calling Digi-Key (800-344-4539 or 218-681-6674) to get one. Or you can opt for a clever substitution: Since there's a substantial amount of room where this fuse is affixed, just whip out your soldering iron and mount a fuse holder for a standard 5-amp 5-x-20-millimeter minifuse. You'll need to use two clips, one to hold each end of the fuse. There's still plenty of clearance after insertion of the standard fuse — and this setup allows for easy replacement if you're unlucky enough to need to do it again. / Richard Wolfson
Attaching SCSI Devices

To connect a SCSI device — an external disk drive, for example, or a scanner — to a PowerBook, you need an HDI-30 system cable. The HDI connector plugs in to the PowerBook; the other end is a 50-pin male connector that fits the back of most external SCSI devices. Or you might instead consider the $19 SCSI Boy adapter, from APS Technologies (800-846-9948 or 816-483-6100), a 3-inch adapter with an HDI-30 connector at one end and a 25-pin female connector at the other. Plug it in to the PowerBook, and you wind up with the equivalent of a normal back-of-the-Mac 25-pin female SCSI connector that accommodates a standard SCSI system cable. Since most hard drives come with such a cable, you won’t have to buy anything else — and if you usually carry an HDI-30 system cable around “just in case,” you’ll find the SCSI Boy much easier to pack.

If you have a 25-pin connector at the back of the external device, however, things are not so simple. The HDI-30 cable ends in a 50-pin male connector, and a 25-to-50-pin SCSI cable has a male connector at each end. Once again, the SCSI Boy provides a good solution, along with a standard 25-to-25-pin SCSI cable. Or you can use a 50-to-50-pin gender changer to connect the male ends of the HDI cable and the 25-to-50-pin SCSI cable.

PowerBooks as SCSI Drives

Most PowerBooks (all but the PowerBook 140, 145B, and 170) are capable of working in SCSI Disk mode — that is, they’re capable of connecting to another Macintosh as an external hard drive.

Before we get to the how, here’s a brief mention of the why. After all, it’s a cinch to connect the PowerBook to your desktop Mac and use file sharing to send things back and forth. But a SCSI connection provides significantly faster data transfer than an AppleTalk connection. Also, you can work directly on a document that’s stored on the PowerBook’s hard disk, without copying it to the desktop Mac’s hard disk. You can even run an application from the PowerBook’s hard disk (try that across AppleTalk!) or install software on it, using the desktop Mac’s floppy drive.

In order to set up the PowerBook’s hard drive as a SCSI drive, plug the 30-pin end of Apple’s HDI-30 SCSI Disk Adapter in to your PowerBook’s HDI port; the other end is a 50-pin female connector like those on most SCSI devices, so you can connect it to the desktop Macintosh with a standard 50-to-25-pin SCSI system cable. Or you can use the S39 APS SCSI Doc, a 3-inch adapter that plugs in to the PowerBook’s HDI port and provides a 25-pin female connector, enabling you to connect the PowerBook to your desktop Mac as you would a SCSI device with a 25-pin connector, using a 25-to-25-pin SCSI cable. The SCSI Doc may sound

PLUG A SCSI BOY IN to the PowerBook, and you get the equivalent of a normal back-of-the-Mac 25-pin female SCSI connector that accommodates a standard SCSI system cable. Since most hard drives come with such a cable, you won’t have to buy anything else.

like the SCSI Boy, but there’s a significant difference. The SCSI Doc does more than just provide a standard SCSI connection; flip a switch, and its 30th pin (well, it’s actually pin 1) is activated so that the SCSI Doc serves as a SCSI-drive adapter.

But before you plug in the cables, you have to check one more thing. The PowerBook’s drive defaults to a SCSI ID of 1. If you have another SCSI device with that ID number attached to the desktop Mac, you have to change one of the IDs (use the PowerBook control panel to set the SCSI ID number of the PowerBook’s drive). With the ID set, shut down both the PowerBook and the desktop Mac before attaching any cables. Once you’ve attached the cables, start the PowerBook first and then the desktop Mac. Remember: When in SCSI Disk mode, the PowerBook drive and screen never sleep, so don’t expect to run in SCSI Disk mode too long if you’re using battery power.

Termination Frustration

Did anybody notice I haven’t mentioned termination yet? That’s because it’s one of the most hex-prone aspects of this whole scuzzy business. As with desktop Macs, there are termination guidelines but no hard-and-fast rules. If you’re connecting an external device to a PowerBook, the guidelines are generally the same as for a desktop Macintosh: Terminate the last device in the chain, since the internal drive is terminated. But Apple recommends that you also add termination before the first device in the chain for optimum performance. Therefore, even a simple chain consists of the PowerBook, an HDI-30 SCSI system cable, a pass-through terminator, the external device, and that device’s terminator.

If you’re connecting one of Apple’s SCSI printers, particularly a Personal LaserWriter SC or a LaserWriter II, be aware that the SCSI connection for these printers can be problematic — apparently a fuse in the printer interferes with the termination power that should be supplied to the chain. There is a fix available, so check with an Apple tech-support person.

When the PowerBook is being used as an external drive, it has to be the last device in the chain. Once you have a SCSI cable going in to it, there’s no place for one coming out. Also, the PowerBook’s drive is internally terminated and so provides the end-of-chain termination. PowerBooks supply no termination power to the chain, but this isn’t an issue unless you’re connecting one to a Mac Plus, which also doesn’t supply termination power, meaning that connections can be flaky. A Duo’s MiniDock, though, does supply termination power, so it should hook up to a Plus with no problem.

One More Gizmo

I’ll end by recommending one more gadget from the APS folks. The SCSI Sentry checks and regulates the SCSI signal on a chain and can even provide termination power if needed (for a Mac Plus/PowerBook setup, for instance). At only twice the size of a terminator, it’s another easy-to-pack, just-in-case item. In fact, it’s almost as indispensable as the one item no traveling practitioner of SCSI voodoo should be without: a wax PowerBook (and 29 pins, of course).

Sharon Zardolet Aker has temporarily abandoned her PowerBook to work on the layout of her new book, The Mac Almanac, which will be coming from Ziff-Davis Press any day now. Rich Wolfson is about ready to give up his PowerBook 100 and go for a Duo.

150 MacUser / September 1994
No one knows optical disk technology like Panasonic. After all, we created it. And with our new line of optical disk drives, we've created something even better. Unlike magneto-optical technology, Phase Change technology directly overwrites data in a single pass, completely bypassing the erase cycle. And setting a new record for speed in the process. When it comes to storing data, Panasonic takes up less space while giving you more space. Our LF-7300A is half the size of other drives, yet it delivers an astounding 1.5GB capacity. And all this storage won't take a byte out of your budget: Panasonic has one of the lowest media costs of 12c per megabyte. To fit into your working environment, Phase Change optical disk drives are MS-DOS, OS-2, Macintosh, Novell and Unix compatible. They read and write existing media one generation down. And Panasonic's new generation of multifunction drives provide true WORM and rewritable media support, with a seek and access time that's twice as fast as our earlier models. Panasonic's multifunction line of jukebox drives, media and interface kits give you more speed, more space, and, with features like automatic lens cleaning, more reliability in a half height drive bay format, than we have ever offered. Discover Panasonic's Phase Change. It's a change for the better. For more information, call 1-800-742-8086.


Now, from the leader in network printing, comes an exceptional 8 ppm laser printer offering unmatched performance, high-resolution graphics and expandability. The new DEClaser™ 5100. Designed to handle anything with an all-star line-up of features. Like a RISC processor, graphical coprocessor and Digital's Intelligent Printing System to deliver the fastest first page in the industry. Standard 600 dpi, upgradeable to true 1200 dpi for superb image quality. Simultaneously active serial, bi-directional parallel and AppleTalk® ports, and a built-in network interface slot for multiprotocol Ethernet or Token Ring connectivity. Two PCMCIA Type II slots and a user-installable optional hard disk for additional fonts and forms. Plus EPA “Energy Star” compliance to save you energy and money. How can you get network printing’s MVP on your team? Just call 1-800-777-4343 to order your DEClaser 5100 today, or for the name of your local reseller. Outside the U.S., contact your local Digital Sales Office.

DEClaser 5100 includes:
- 8 ppm, 600 dpi (1200 dpi optional)
- Adobe PostScript® L2 (73 fonts)
- PCL® 5E support (47 fonts)
- RISC and graphical processors

Network Printers From Digital. Designed To Handle Anything.

Serial, parallel and AppleTalk hot ports
- EPA “Energy Star” compliant
- 2 PCMCIA Type II slots
- Optional Ethernet card
- Optional internal hard disk
How Does The L.A. Times Manage Its Storage Jungle?

Open FWB's ToolKit.

It's a jungle out there, particularly at the deadline-driven L.A. Times. That's why they chose FWB's ToolKit family of Disk Management Software. According to Senior Systems Analyst, Greg Williams, who manages that jungle: "It was a critical decision. We have hundreds of Macs of every kind, and hundreds of storage devices from dozens of manufacturers. They must all deliver 'round the clock, or the Times can't."

It started with FWB's Hard Disk ToolKit. Says Greg: "It has the three things we need every day. One, assured compatibility in a chaotic world of storage brands and technologies. Two, powerful tools that guarantee top drive performance and provide easy and efficient control over those drives. And three, compatibility with Apple's new Power Macintosh, because ToolKit software is fully SCSI Manager 4.3 compliant."

Greg also uses RAID ToolKit to convert his existing drives into high-speed disk arrays on a number of Quadra 950s, taking advantage of RAID 0 data striping and RAID 1 mirroring capabilities. And he just installed CD-ROM ToolKit to increase power and performance for the Times' CD-ROM drives.

Your deadline may be approaching. So whether it's one drive, or thousands, do what the L.A. Times did: Open FWB's ToolKit. Call 415.474.8055 for the reseller nearest you.
Painless Laser Printing

DON'T LET PRINTING PROBLEMS perplex you. This guide can tell you what's wrong and how to fix it.  

BY ROMAN VICTOR LOYOLA AND NANCY PETERSON

Believe it or not, many laser-printer problems aren't hard to handle. In most cases, all it takes is a little software adjustment, or cleaning or replacing a printer part (inkjet-printer problems are even easier to fix — see the "My Handsome Prints" sidebar). The key is to match the symptoms of the problem with the appropriate solution, starting with the most frustrating symptom of all.

The Unresponsive Printer

If your printer just sits there like a lump after you've sent it a Print command and you've checked for the most obvious causes — a loose connector, a wrong printer selection in the Chooser, a door ajar on the printer — and you've even tried resetting the printer (with the Reset button or by turning it off and on), look for more-obscure causes. If you print a file in an emulation language — an emulated version of HP's PCL, say — check on the control panel on the printer to see if your printer supports that emulation. If it does, you may need to switch to that emulation manually, by selecting it on the control panel (be sure to switch back to the printer's usual mode after you've printed).

Interminable Hang-ups

If a "preparing data" or "processing job" message stays on-screen forever, meaning your printer hasn't received the Print command from your Macintosh, you may have a software bug or a damaged file. The most likely culprits in each case are the printer driver, the print spooler, and the application you're printing from. Try reinstalling each of these programs from the original disks to replace possibly damaged files. If the problem is a bug, you'll have to wait for an update from the software vendor.

Complex pages that contain complicated graphics or numerous fonts may also confound your Mac, so that it can't successfully send a Print command. Try simplifying your document or printing just one page at a time. If you're using many nonresident fonts, select Unlimited Downloadable Fonts in a Document in the Options window of the Page Setup dialog box.

The Missing Printer

If you get messages saying your Mac can't find the printer, make sure AppleTalk is active in the Chooser. Next, make sure you have the right version of the printer driver for the system software you're using. For instance, a System 7.x printer driver probably won't work if you're running System 6. If you're running System 7, make sure your printer driver is up-to-date.

Fonts You Don't Want

If an unexpected font shows up on the page, your printer driver was probably unable to find the right outline-font files. All you have to do is move those files into the correct folder in your System Folder. Which folder is correct depends on the system-software version. With System 7.1, store outline- and bit-mapped-font files in your Fonts folder. With System 7.0, store outline fonts in the Extensions folder and bit-mapped fonts in the System file. In the event that you need to use printer-driver versions earlier than 7.1.2 with System 7.1, store outline-font files in the Fonts folder and put aliases of them into the Extensions folder.
**Jaggy Type**

If type doesn't look smooth and you're using ATM (Adobe Type Manager), make sure the ATM control panel is turned on. Then, make sure you have both parts of ATM installed: the control panel and the ATM 68020/030/040 file, which sits at the top level of the System Folder.

If that's not the problem or if you aren't using ATM, you're probably getting jaggy type because your driver can't find the PostScript-outline-font file for the font you are using. Make sure that file is in your System Folder. Turn on Font Substitution in the Page Setup dialog box so that the driver won't use a screen version of the font the next time it can't find the right outline-font file.

**Fuzziness and Fade-outs**

If text and large areas of black are light or splotchy but you're not out of toner — and you've already tried shaking the toner cartridge to stir up settled toner — try turning up the print density. Some printers have knobs for adjusting print density; others use physical control panels or software utilities.

If that doesn't work, try cleaning the corona wire, usually located under the drum or the toner cartridge. Some printers have special tools for cleaning this wire; a cotton swab moistened with isopropyl alcohol works fine as well.

Fade-outs can also occur if you've recently replaced the printer drum. The drum requires a few rotations before it can evenly distribute the electrical charge from the printer. To help it along, print 10 to 20 completely black pages.

If all these techniques fail, try replacing the printer drum or the toner cartridge.

**Unwanted Vertical Lines**

If your pages have extra lines running vertically down the page, it may mean that the fusor wand has accumulated dried toner. Consult your printer's documentation to find out how to replace the wand.

If the fusor wand isn't the problem, you'll have to spend a bit more money to replace the toner cartridge, which may contain a scratched drum. The next step is to have a repair shop replace the fusion rollers if they're scratched.

**My Handsome Prints / inkjet-printer tips**

When you're trying to figure out why your inkjet printer is messing up, follow some sage French advice (slightly fractured here): *cherchez le papier*. You'd be surprised how many inkjet-printing problems — glitches such as ink bleeding, paper curling or warping, paper jams, feeding of multiple sheets simultaneously (or no sheets at all) — result just from the use of laser paper or other nonoptimal stock. You can fix all these problems by switching to a specialty paper. The kind to use depends on the type of problem you're having and on the output quality you want.

If your inkjet printer won't feed paper correctly, try a different weight of paper. If the paper warps or the ink bleeds, try thicker or coated paper. Coated paper minimizes bleeding and also makes inkjet printing look sharp and vibrant. Many printer vendors, such as Apple Computer (800-776-2333 or 408-996-1010), Hewlett-Packard (800-752-0900 or 208-323-2551), and Canon Computer Systems (800-848-4123 or 714-438-3000), and paper vendors, such as Paper Direct (800-272-7377 or 201-507-5488), sell coated paper for around 10 cents per sheet.

But if you need really high-quality output, check out the new inkjet-printer medium from Apple and Canon: Back Print film. It works only with specific printers, but if yours is one, you can get the very best inkjet-printer output. As the name suggests, the printer prints to the back of the paper — you reverse the printed image through software. The front of the paper is waterproof, so it's not subject to warping or ink bleeding. Back Print Film should be available now, but you have to pay for such high quality — around $1 to $2 per page. / Nancy Peterson

**Unsightly Stains and Dots**

If your pages are marred by embarrassing stains and dots, the culprit may be the same as with the vertical-line problem: a dirty fusor wand that needs replacing. It's also possible the drum isn't being properly cleared by the eraser lamp, leaving a tiny electrical charge. To remedy this, you can replace the cartridge if it contains the drum, but first try touching the metal contacts of the cartridge to a grounding wire.

**Paper Jammin'**

You can solve most paper-jam problems without spending a dime. Always check for the following likely causes: a door on the printer that's not shut tight, a too-full paper cassette, improper paper loading (so that the corners of the paper sheets aren't under a metal clip in the paper tray), or a damaged sheet of paper. If the paper is getting damaged, make sure you're storing it in a dry area so that the pages don't curl. You can additionally experiment by using paper that's less coarse or less shiny (but be sure that the paper's weight meets your printer vendor's recommendations).

**Postscript**

Even if these techniques don't solve every one of your printer problems, mastering them is sure to make your life easier. Plus, there's a great side benefit: You will have garnered a new reputation as printer wiz extraordinaire.

Roman Victor Loyola is a MacUser Labs project leader, and Nancy Peterson is a MacUser associate editor.
Get Power Macintosh Memory From Us And We'll Let You In On A Little Trade Secret.

Trade In Your Memory For Big Discounts.

It's no secret what makes TechWorks the leader in memory products. Exceptional quality and Outrageous Customer Service. And we're bringing this same commitment to our new line of Power Macintosh memory. Now for a limited time you can trade in your old memory when you upgrade your Macintosh. So give us a call for details. And learn how this little trade secret can save you big money.

TechWorks
Call! 1-800-934-4019

Circle 128 on Reader Service Card
This new wireless network will have you bouncing off the walls instantly and effortlessly.

Plug and play takes on new meaning with the Photonics COOPERATIVE™ Transceiver. Using the latest in wireless infrared technology, it lets you create a portable network. So you can instantly access all your network resources — share files, synchronize calendars, print documents, send e-mail, whatever — without the hassles of hard-wiring. You can even use our access unit to bridge to an existing Ethernet network.

COOPERATIVE uses diffuse infrared signals that bounce off walls, ceilings, furniture, and floors to instantly "connect" Macs, PowerBooks, Newtons, and peripherals like Hewlett-Packard Deskjet, and Apple Laser-Writers. There's no problem with signal blockage. No need to "aim." It's totally secure. Incredibly power-efficient. And it's so safe, there are no FCC or global restrictions on its use. COOPERATIVE is transparent to AppleTalk and LocalTalk so there's no software to install or figure out. You can set up anytime, anywhere. It's ideal for mobile users, for use in conferences, classrooms and shared offices, or for creating temporary networks — even on airplanes. And you can easily access wired LocalTalk and Ethernet networks.

Call Photonics at 1-800-628-3033 today for your free wireless networking white paper and find out how COOPERATIVE can get you connected instantly and effortlessly.

© 1991 Photonics Corporation, 2940 North First Street, San Jose, CA 95134. Co-operative and the Photonics logo are trademarks of Photonics Corporation. Other brand and product names are trademarks of their respective holders.

CIRCLE 16 ON READER SERVICE CARD
**Help Folder**

Stop software piracy on networks, settle font disputes, and give Microsoft Word a feature it should have had all along. **By Andy Ihnatko**

**ANDY**: in a computer lab without letting them copy the applications onto a floppy disk or external drive?

Owen Legare
via CompuServe

**ANDY**: It's next to impossible to prevent people from copying applications, if they're so inclined. But there is a way to disable pirated applications.

KeyServer ($30 to $55 per user), from Sassafras Software (603-643-3351), does just that and, in my opinion, is the best network-security software around. It won't let applications launch until they fetch a "key" from the network Mac on which KeyServer resides, so once you've assigned keys to your applications with KeyServer, no one will be able to open them unless they are installed on Macs in your lab network. (KeyServer does let you create a temporary "portable key" so someone can load an application on a PowerBook for a road trip.)

You can also control how many copies of an application can run at one time on a network — useful if your site license numbers the limit of users for an application.

**BOB**: KeyServer sounds like a good, low-cost way to secure applications. But if you need a program that has more-extensive security features, try a higher-end product, such as ultraSHIELD, from usrEZ (714-756-5140). It will put an end to your software-piracy concerns by letting users access aliases to open an application but not allowing them inside the folder containing the real application icons. It's more expensive — $149 per computer, with discounts for multipacks — but it gives you a powerful set of security controls.

usrEZ also has a new product out (so new that we haven't tested it yet) for network administrators: ultraCOMMAND. ultraCOMMAND lets you administer security and handle general management tasks, such as software updates or backups, from one computer for all the computers in a network. Pricing depends on the number of Macs in your network.

**Them's Fightin' Fonts**

**Q**: My Type 1 and TrueType fonts with similar names seem to be conflicting. When they're both installed, the inch numbers on the ruler in Microsoft Word are twice as big as normal. When I remove the TrueType font, the problem goes away. How can I get rid of the conflict and keep all of my fonts?

**Eric Wirth**
New York, NY

**BOB**: It sounds as if the fonts with similar names are using the same internal font-ID number. All you have to do is renumber the fonts, using a font-management utility such as Suitcase, from Symantec (800-441-7234 or 408-253-9600), or MasterJuggler, from AIssoft (800-257-6381 or 713-353-4090).

You can also renumber fonts by using a font-manipulation program such as Fontographer, from Altsys (214-680-2060), or a font-conversion program such as FontMonger, from Ares (800-783-2737 or 415-578-9090).

Finally, you may want to use Apple's ResEdit to tackle renumbering fonts, but you'll need a good reference to guide you through the process. If you decide to go this route, I strongly suggest you work with backup copies of your fonts rather than with the originals.
ANDY: I'm not convinced that your problem is caused by font conflicts. It could be any number of minor-league system problems, or it could be a problem with Word.

Try reinstalling Word. If that doesn't fix the vexed ruler, reinstall your system software too. Pristine copies of Word and the system software may clear up the problem.

**New Word Order**

**Q.** How do I get Microsoft Word to include a total page count in the footer? I want the footer to read "Page XX of YY," but I don't want to have to change YY every time the page count changes.

Mary Fenestra
Rye, NY

**ANDY:** Shame on Microsoft for not including a page-count option in Word.

Allow me to offer a workaround until the company gets around to adding one. Place the cursor at the end of your document, and from the Glossary dialog box, select Page Number and click on the Insert button. Select the page number that appears at the end of your document; copy it; go to the Character dialog box; check Hidden, to hide the page number; and click on OK. Now open the header or footer, type Page, insert a space, click on the page-number icon in the upper left corner of the window, insert another space, type . , insert another space (see figure 1); and choose Paste Special from the Edit menu. In the Paste Special dialog box, choose Picture, and then click on the Paste Link button.

That ought to do it. Whenever you open the document, Word will fetch the page number of the last page from that hidden text and stick it into all the headers or footers.

If Page Count isn’t a glossary item in the next release of Word, I’m going to Seattle to knock over all of Bill Gates’ garbage cans.

**BOB:** The best time to use this trick is when holding down Command-Option-Escape does allow you to quit and save it. If too many portions of the program were wiped out by whatever caused the crash, your Mac calls in the expert snipers so the program won’t hit any innocent passersby in its fall to the sidewalk.

**Give Your Mac a Rest**

**Q.** Is it harmful to turn the monitor on and off without turning off the computer when I’m not working on my Mac? Or is it better to turn them off together?

Harry Olsen
Auburn, CA

**BOB:** There’s no danger in turning the monitor on and off and leaving the computer on. In fact, it makes sense, because the monitor is the bigger energy hog of the two. But to save energy, the best strategy is to turn everything off, including the printer and any storage devices.

If you have several external devices, check out PowerKey ($119), from Sophisticated Circuits (800-827-4669 or 206-485-7979), a nifty hardware/software combination that lets you turn multiple devices on by pressing the Power On button on your keyboard and...
Philips Brilliance™ 15” Monitors Display Multimedia Applications With Clarity And Built-In Audio.


Only a world leader in performance and quality can offer you a professional 15” monitor with so many features for the money.

Philips Brilliance™ gives you a built-in stereo amplifier, stereo speakers, headphone jack and adjustable volume control so you can easily add sound to multimedia projects.

Image quality is excellent with resolution up to 1024 x 768. Our exclusive FastRefresh™ redraws your screen image up to 72 Hz in 1024 x 768* for a stable, flicker-free picture.

A flat square CRT with invar shadow mask and a 0.28mm dot pitch, provides for excellent image quality needed for professional PC and Macintosh® users. Low emission specifications comply with MPR-2 standards.

For more information, please call toll-free 1-800-835-3506. In Canada, call 1-800-387-0564.

Another First From Philips

PHILIPS
turns those devices off automatically when you shut down.

ANDY: Now that saving energy has become a semihot issue in the computer industry, the Environmental Protection Agency has developed a set of specifications, called Energy Star, for “green” computing. To be Energy Star-compliant, a monitor must automatically switch off its picture tube when the Mac is resting. It works sort of like a screen saver — don’t touch the keyboard for a few minutes, and — boom — off goes the monitor. Move the mouse, and it comes back to life. A neat idea, and once I get a piddling extra couple of thousand dollars for new hardware, I intend to give it my personal support.

Newton Memory Lapses

Q. It seems like I can’t do anything interesting on my original Newton MessagePad without having to restart because memory is low. Is there a way to fix this?

Edward Ghuyan
via the Internet

ANDY: Don’t give up on your MessagePad — there were problems with the Beatles during their first year too.

Even the original MessagePad has enough system memory for 99.44 percent of the cool stuff out there. However, it can become bloated with useless bits of data from the programs you use.

The proper way to clear all this detritus out of memory is to use a utility such as the freeware RemoveIt!, available from almost all on-line entities. A simpler method is to clear the memory by performing a complete backup, either onto a card or onto your Mac, and removing both the battery pack and the backup battery. When you do a restore, your low-memory warnings will probably vanish.

Alarming Question

Q. Help! A little blinking book, or something like that, has suddenly replaced the Apple symbol in the upper left corner of my screen. What’s going on?

Cass Mitchman
Gurnee, IL

BOB: It sounds like another case of a power user playing tricks; in this case, someone must have turned on your Alarm Clock DA. The alarm notifies you by flashing a little clock (it’s not a book) in place of the Apple on your Apple menu. All you need to do is shut the alarm off, by choosing Alarm Clock from the Apple menu, clicking on the expand icon to the right of the time, clicking on the alarm icon, and clicking on the on/off-switch icon. The alarm is off when the switch is up.

ANDY: The flashing-icon question has been a popular one since the early days of Macs. Here’s another pointer along these lines: If you see a flashing icon in place of the application icon in the upper right corner, it means the system is notifying you that a background application wants to show you an alert, such as when your printer’s been hosed by another user. Click on the flashing icon, or click on the icon and scroll down the pop-up list, to bring the message to the front.

Wasted Time?

Q. When I point to the QuickTime extension, with Balloon Help turned on, the following words appear: “Time n. A nonspatial continuum in which events occur in apparently irreversible succession from the past through the present to the future.” What does this mean? And what does it have to do with my QuickTime extension?

Nick Chalmov
Milwaukie, OR

BOB: It means that things in the past have happened already, things in the present are happening, and things will happen in the future, in that order.

And it has nothing whatsoever to do with your QuickTime extension. It’s an Easter egg, a whimsical “extra” deposited inside a piece of software by programmers with too much time on their hands and well-developed senses of humor.

ANDY: No, no, no. Time is “a great legalizer, even in the field of morals,” according to H. L. Mencken. Time is in the laughter of schoolchildren, in the smile of your grandmother as she takes a pie out of the oven to cool. Its scent wafts through the air as a red-shirted concessionaire walks toward you in Fenway Park with his insulated box full of hot dogs. Time is in the shriveled souls of the wicked and in the screams of the damned and dying as they join the infinite march toward the pits of Hell. “Whimsical,” indeed!

BOB: OK, OK already.

ANDY: Oh, and check out the Balloon Help for MacsBug too.

TIPS / Microsoft Word

VIEWING GRAPHICS

You can use CE Software’s QuickKeys and Microsoft Word to create a slide show for easy viewing of graphics files.

To do so, first place the graphics you want to view in one folder. Open Word; select Find File, on the File menu; and open the folder containing your graphics. Leaving the Find File window open, create a QuickKey sequence that contains a three-second User/Timed Pause and an Alias keystroke for the down-arrow cursor, name the sequence Browse, and leave the keystroke unassigned. Close this QuickKey, and create a Repeat Extension. Select the Non-Sequence function, check the box that causes the Repeat dialog box to appear, type Browse in the Play the Shortcut blank, and enter 5 for the number of times you want Browse to repeat. Now enter a keystroke to initiate your QuickKey, and close the window.

When you type the QuickKey keystroke, your graphics will appear on-screen with a three-second pause between them.

Credit and the usual MacUser tip-writer fee go to Mark Aitken, of Concord, California, for reminding me about Word’s viewing feature.

Christopher Breen
Contributing editor, MacUser

WORD AND ON-LINE TEXT

If you collect lengthy sections of text while searching through on-line services or Internet-surfing, here’s a way to organize your selections, using Microsoft Word.

Copy a section of text while on-line, open Word, and type a bullet character (Option-8) before pasting the text. When you’re off-line and ready to read your selections, use Word’s Find command to search for the bullet character. Since this character doesn’t appear in the copied text, the Find quickly takes you to the beginning of each copied entry.

Charles E. Carter
Atlanta, GA
Introducing the only simple Ethernet upgrade for LocalTalk.

Your network can blaze 44 times faster at 10Mbps.

All on simple phone cord—no complicated wiring.

So inexpensive and easy to connect anyone can do it.

Make the Silver Streak™ Connection!

If your Macintosh® network is still lumbering along with LocalTalk™ at 230Kbps—get ready for the rush of the Silver Streak connection! Silver Streak delivers blazing 10Mbps Ethernet, that's 44 times faster than LocalTalk. Fast and affordable, Silver Streak uses standard telephone cord. So if you're on PhoneNET™, you're all set to upgrade. Simply unplug your PhoneNET connectors and replace them with Silver Streak's. Plus, because Silver Streak is Ethernet, it works perfectly with all other Ethernet networks like 10BaseT. Get Silver Streak—and bring your LocalTalk network up to speed!

Run to your phone and find out about our special LocalTalk upgrade offer!
Dial 1-800-998-4888

Tut Systems, Inc. • 2446 Estand Way • Pleasant Hill, CA 94523

© 1994 Tut Systems, Inc. Silver Streak is a trademark of Tut Systems, Inc.
All other brand and product names are trademarks or registered trademarks of their respective owners.

CIRCLE 40 ON READER SERVICE CARD

See us at MacWorld Expo Booth #661, Bayside.
It's true more than ever before!
Because the new version of SNA-ps™ is ready to ship now. Ready to connect your Mac® to your IBM host today. Direct from the leader in desktop-to-host connectivity software.

Wall Data.

SNA-ps opens your Mac to your IBM mainframe or AS/400 to let you access information from your host...but in the friendly, familiar Mac environment. In fact, SNA-ps is the one complete Mac-to-IBM-host connectivity solution.

And Apple Computer has selected Wall Data to carry on this award-winning technology. So if you've been looking for SNA-ps, you need to look to us.

What's more, we're offering you a tasty 100% discount on an upgrade to the latest SNA-ps release. Just call our toll-free number and we'll fax you a registration form. Fill it out and send it back. If you purchased an Apple® version, the Wall Data upgrade is yours. At absolutely no charge.

Of course, if you simply want more information on SNA-ps you can call the same 800 number. The information is free, too.

But the one point we want to make is that SNA-ps is here. Right now. And that makes Mac-to-IBM-host connectivity...well...a snap.

1-800-48-RUMBA
WALL
11769 NE 78th Place Redmond, WA 98052-4892. Tel: 206-883-4777

© 1994 by Wall Data Incorporated. All rights reserved
Mac® and Apple® are registered trademarks of Apple Computer, Inc. SNA-ps™ is a trademark of Apple Computer, Inc. used under license by Wall Data Incorporated. All other product names and trademarks are the property of their respective owners.

CIRCLE 110 ON READER SERVICE CARD
You may be organized, but are you doing First Things First?

Feel like you're swimming upstream? Drowning in details? Sure you're busy, but are you moving in the right direction, or just treading water? The secret of success is not getting more things done—it's getting the right things done!

Introducing FIRST THINGS FIRST® PROACTIVE

FTF Pro is the first fully integrated time management program. Organizers and calendar programs take a bass-ackwards approach to time management by reacting to your busy schedule, rather than allowing you to manage how your time is used. First Things First® Proactive is the only program that integrates planning, prioritizing and scheduling with simple drag-and-drop ease, so you can focus on getting the right things done.

Planning, Prioritizing and Scheduling Made Easy

Use FTF Pro outlines to quickly set down goals, ideas and action items. Drag the items to re-order and prioritize them and you've got a plan. Drag them onto the calendar and you've got a schedule based on a plan. Flip from any calendar view to outline view and back again. Launch any file you need, including the contact manager of your choice, directly from your plan or your schedule, or even a pop-up reminder. FTF Pro is that simple—and that flexible. In fact, there's nothing like it.

Managing & Delegating More Efficiently

When you're ready for action, FTF Pro makes it easy to manage and delegate over the network. Share lists of deadline tasks with your workgroup. View multiple schedules over the network in a single calendar view. Create your own easy-to-use templates for recurring projects to automate those things you do over and over. You can print any view—multiple calendars to a page, lists of things to do, plans, any kind of list or agenda. Easily customize printing to fit your appointment book so you stay on track no matter where you are.

Get your bass in gear and be proactive!

Call 1-800-877-1832 today to order your copy of First Things First® Proactive. Special Introductory Offer just $99 (SRP $149.95). Competitive Upgrade* only $59. You have to act soon! This special offer expires August 30, 1994.

© 1994 Visionary Software Incorporated, 1820 SW Vernon, Suite A, Portland, Oregon 97219. First Things First is a registered trademark of Visionary Software. All other trademarks belong to their respective holders.

*Competitive upgrade applies to Now Up-To-Date, More, DayMaker, and In Control. FTF Pro requires System 7 or greater.

CIRCLE 56 ON READER SERVICE CARD
For many of you, mail order is your primary means of purchasing Macintosh products and services. That's why MacUser has put together the following special section.

It's what you've been demanding—a convenient place to quickly find the products you need from the vendors you want to buy from. MacUser's Direct Line to products is just one more reason to turn to MacUser for relevant information aimed at the serious user.
SUMMER SALE!
The Hottest, Lowest Prices Anywhere!

ONE MONTH ONLY!

NEW!

200MB
5.25" Removable Hard Drive
$449

The 200MB drive will read and write 200, 88 and 44MB cartridges, but will not format 44 or 88MB cartridges.

88MB
5.25" Removable Hard Drive
$299

The 88MB drive will read and write 88 and 44MB cartridges, but will not format 44MB cartridges.

SyQuest

270MB Cartridges
$69
105MB Cartridges
$59

270MB
3.5" Removable Hard Drives
$479

105MB
$299

FORMATTED
SyQuest Cartridges

88MB
44MB
200MB

$69
$59
$89

Any quantity!

MacLand

1-800-333-3353
4685 S. Ash Ave., Suite H-5 • Tempe, AZ 85282

24 HR. FAX
(602) 345-2217

Products subject to availability/Prices subject to change.
Megahaus is your #1 source for Quantum drives.
- Low price guarantee on all Quantum Drives!
- Same day shipping on most orders!

<table>
<thead>
<tr>
<th>Speed</th>
<th>RPM</th>
<th>Buffer</th>
<th>Warranty</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>17ms</td>
<td>360</td>
<td>32K</td>
<td>2yr</td>
<td>ELS170S</td>
<td>$179</td>
<td>$239</td>
</tr>
<tr>
<td>12ms</td>
<td>450</td>
<td>128K</td>
<td>2yr</td>
<td>LPS270S</td>
<td>$254</td>
<td>$314</td>
</tr>
<tr>
<td>9.5ms</td>
<td>450</td>
<td>512K</td>
<td>2yr</td>
<td>EMP540S</td>
<td>$280</td>
<td>$340</td>
</tr>
<tr>
<td>9.5ms</td>
<td>450</td>
<td>512K</td>
<td>2yr</td>
<td>EMP1080S</td>
<td>$299</td>
<td>$359</td>
</tr>
<tr>
<td>9.5ms</td>
<td>450</td>
<td>512K</td>
<td>2yr</td>
<td>EMP1440S</td>
<td>$900</td>
<td>$990</td>
</tr>
<tr>
<td>9.5ms</td>
<td>450</td>
<td>512K</td>
<td>2yr</td>
<td>EMP2160S</td>
<td>$1199</td>
<td>$1299</td>
</tr>
</tbody>
</table>

Megahaus is your #1 source for Syquest drives.
• Low price guarantee on all Syquest drives!
• 1 FREE cartridge with each drive!
• 2 year warranty on drive and easel
• 5 year warranty on all cartridges!
• Same day shipping on most orders!

<table>
<thead>
<tr>
<th>Speed</th>
<th>RPM</th>
<th>Buffer</th>
<th>Warranty</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>20ms</td>
<td>44MB</td>
<td>88MB</td>
<td>2yr</td>
<td>SQ5110C</td>
<td>$59</td>
<td>$68</td>
</tr>
<tr>
<td></td>
<td>105MB</td>
<td>105MB</td>
<td>2yr</td>
<td>SQ31055</td>
<td>$68</td>
<td>$76</td>
</tr>
<tr>
<td></td>
<td>200MB</td>
<td>18ms</td>
<td>2yr</td>
<td>SQ5200C</td>
<td>$64</td>
<td>$72</td>
</tr>
<tr>
<td></td>
<td>270MB</td>
<td>13.5ms</td>
<td>2yr</td>
<td>SQ3270B</td>
<td>$69</td>
<td>$77</td>
</tr>
</tbody>
</table>

Megahaus is your #1 source for Pioneer drives.
- No more changing disks over and over.
- Low price guarantee on Pioneer!
- Requires only 1 SCSI ID number.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Speed</th>
<th>Transfer</th>
<th>Buffer</th>
<th>Warranty</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>200ms</td>
<td>200MB</td>
<td>330KB/sec</td>
<td>256K</td>
<td>1 Year</td>
<td>XM3401</td>
<td>$349</td>
<td>$409</td>
</tr>
<tr>
<td>195ms</td>
<td>450MB</td>
<td>450KB/sec</td>
<td>256K</td>
<td>1 Year</td>
<td>CRDS10</td>
<td>$429</td>
<td>$459</td>
</tr>
<tr>
<td>150ms</td>
<td>600KB/sec</td>
<td>1MB</td>
<td>1 Year</td>
<td>4PLEX</td>
<td>$569</td>
<td>$629</td>
<td></td>
</tr>
</tbody>
</table>

Megahaus is your #1 source for Maxtor drives.
- Requires 1 tape, and cables. OPTIMA DeskTape Software mounts DAT on desktop $289.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Speed</th>
<th>Brand</th>
<th>Cache</th>
<th>Feature</th>
<th>Warranty</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>2MB</td>
<td>23ms</td>
<td>Maxoptix</td>
<td>4MB</td>
<td>MultiFunction</td>
<td>N/A</td>
<td>$249</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1-800-786-1191

MegaHaus HARD DRIVES

MegaHaus HARD DRIVES

MegaHaus 1800 786-1191

MegaHaus OPTICAL DRIVES

MegaHaus OPTICAL DRIVES

Optical drives
- High performance optical drives.
- Ask for your free "Dare to Compare" specification brochure.
- Includes SCSI Manager 4.3 compliant driver, cables, and 1 free disk.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Speed</th>
<th>Model</th>
<th>Buffer</th>
<th>Warranty</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>44MB</td>
<td>31K</td>
<td>Maxtor</td>
<td>256K</td>
<td>1 Year</td>
<td>MQ1100</td>
<td>$459</td>
<td>$529</td>
</tr>
<tr>
<td>88MB</td>
<td>64K</td>
<td>Fujitsu</td>
<td>256K</td>
<td>5 Years</td>
<td>FJ1000</td>
<td>$919</td>
<td>$1069</td>
</tr>
<tr>
<td>105MB</td>
<td>450K</td>
<td>Seagate</td>
<td>256K</td>
<td>5 Years</td>
<td>HPG1000</td>
<td>$1649</td>
<td>$1799</td>
</tr>
<tr>
<td>200MB</td>
<td>88MB</td>
<td>Micropolis</td>
<td>256K</td>
<td>5 Years</td>
<td>MP1000</td>
<td>$1969</td>
<td>$2099</td>
</tr>
</tbody>
</table>

MegaHaus CD-ROM DRIVES

MegaHaus CD-ROM DRIVES

CD-ROM drives
- Includes formatting software and cables. We stock multiple bay enclosures for custom configurations.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Type</th>
<th>Brand</th>
<th>Transfer</th>
<th>Buffer</th>
<th>Warranty</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>250MB</td>
<td>540MB</td>
<td>HPDS40</td>
<td>330KB/sec</td>
<td>256K</td>
<td>1 Year</td>
<td>XM3401</td>
<td>$349</td>
<td>$409</td>
</tr>
<tr>
<td>105MB</td>
<td>105MB</td>
<td>PHDS40</td>
<td>450KB/sec</td>
<td>256K</td>
<td>1 Year</td>
<td>CRDS10</td>
<td>$429</td>
<td>$459</td>
</tr>
</tbody>
</table>

MegaHaus POWER HD

MegaHaus POWER HD

Power HD
- Hard Drives fine tuned specifically for Power Macintosh computers.
- Includes SCSI Manager 4.3 compliant driver for best performance.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Speed</th>
<th>Brand</th>
<th>Type</th>
<th>Transfer</th>
<th>Buffer</th>
<th>Warranty</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>105MB</td>
<td>19ms</td>
<td>Maxtor</td>
<td>7MB/min</td>
<td>256K</td>
<td>1 Year</td>
<td>MQ1100</td>
<td>$439</td>
<td>$529</td>
<td></td>
</tr>
<tr>
<td>200MB</td>
<td>14ms</td>
<td>Fujitsu</td>
<td>88MB</td>
<td>1 Year</td>
<td>FJ1000</td>
<td>$919</td>
<td>$1069</td>
<td></td>
<td></td>
</tr>
<tr>
<td>530MB</td>
<td>13.8ms</td>
<td>Micropolis</td>
<td>88MB</td>
<td>5 Years</td>
<td>MP1000</td>
<td>$1649</td>
<td>$1799</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MegaHaus MICROPOGS

MegaHaus MICROPOGS

MICROPOGS
- New AV series hard drives are specifically designed for enhanced digital video and audio performance in applications such as multimedia, desktop publishing, and video editing.
- We will beat any advertised MicroPog price.

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Speed</th>
<th>Brand</th>
<th>Type</th>
<th>Transfer</th>
<th>Buffer</th>
<th>Feature</th>
<th>Warranty</th>
<th>Model</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000MB</td>
<td>17ms</td>
<td>Hewlett Packard</td>
<td>512K</td>
<td>MultiFunction</td>
<td>N/A</td>
<td>$239</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13GB</td>
<td>23ms</td>
<td>MicroPog</td>
<td>4MB</td>
<td>MultiFunction</td>
<td>N/A</td>
<td>$249</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Includes formatting software, 1 disk, and cables. 256MB Fujitsu and 650MB HP models also in stock.

1-800-786-1191

1100 NASA Rd. 1 8306
Houston, Texas 77058

Press and specifications subject to change. Some specifications may apply to price guarantee. All drives are returned in like new condition, and may be subject to pre-sales test. Shipping is not available. Personal checks and credit cards accepted.

CIRCLE 160 ON READER SERVICE CARD
Get Your Hands on Our New Apple Products Catalog!
Call 1-800-876-3467 today for your FREE copy

- **Scanners**
  - UMAX
    - UMAX UC 1260 Color Scanner: $1099
    - UMAX UC 630LE Color Scanner: $599
    - UMAX UC 480 Color Scanner: $889

- **Software**
  - MacUser94/4
  - Adobe Photoshop v.2.5.1: $549
  - Aldus PageMaker v.5.0: $454
  - SoftWindows v.1.0 for PowerPC: $285
  - Aldus PageMaker v.5.0 for PowerPC: $545
  - Microsoft Office v.3.0: $455
  - Connectix Ram Doubler: $55

- **Printers**
  - Dataproducts 1560 Toner: $219
  - Dataproducts 960 Toner: $35
  - Supra FAXmodem 144LC (ext): $135
  - Supra 144PB Int. for PowerBooks: $219

- **Modems**
  - Get Your Hands on Our New Apple Products Catalog!
Call 1-800-876-3467 today for your FREE copy

- **Networks**
  - Farallon
    - EtherWave Transceiver 10Base-T Nullus: $99
    - EtherWave 10Base-T Nullus: $169

- **Toner**
  - NEC
    - Toner 900: $35
  - Dataproducts 960 Toner: $35
  - Dataproducts 1560 Toner: $219
  - NEC Long Life EP Toner: $169

- **Authorized Catalog Reseller**
  - MacUser 94/4

Corporate POs Accepted
Sorry, no C.O.D.S

To Place an Order, Call: Mon-Thurs: 8-7 am-7 pm
Fri: 8 am-7pm
(General Standard Time)
CIRCLE 39 ON READER SERVICE CARD
PERIPHERALS

UMAX

UC 1240 $1149 $329 p/m
1200 DP Color Scanner w/PhotoShop 2.5
UC 840 $895 800 DP Color Scanner w/PhotoShop 2.5

radius

Radius Precision Color 17" tilt...$995
Radius IntellColor 20" tilt...$1085
Radius VideoVision Studio...$3850
We carry the full line of Radius Pro. & Photo Media Products

MICROTEK

ScannMaker Hdp (400dpi Scanner) ...$795
NEW ScannMaker Hdp (8-bit Color)...$795
NEW ScannMaker Hdp (16-bit Color)...$795

 Bretton Systems Corporation

NewGen 660...$3395/128 p/m
NewGen Image Plus 12...$6595

HEWLETT PACKARD

ScanJet Htx 24-bit Scanner...$599
NEW Color DeskWriter 600C...$599

HP KA8 (600dpi Laser)...$5195/$479 up to 360dpi...$1095

WACOM

艺术(16"x9" Graphics Tablet)...$285
NEW 12U1212" (12" x 12")...$495

POINTEK

Artline Extended Keyboard...$59
NEW Standard Keyboard w/F Keys & other...$59
Artline Mouse & Char. MacWrite Pro Bundle...$59

COMPARE OUR DRIVE PRICES w/Our COMPETITORS!

QUANTUM 230MB Hard Drive...$195/$275
8MB/44MByte Superdrive w/Facade...$649
Seagate 4400 Cartridge...$57/$87 Cartridge...$86
NEC Triple Speed Ext. CD ROM w/FIWO Slot...$549
Fujitsu MD 120 (120MB) $35...$565

ABC CD ROM BUNDLES

- Medfield inexpensive portable CD ROM Player
- CD ROM Bundle: Brother's Encyclopedia, USA Atlas, & World Atlas
- Motorola CD Acquisition Software
- Doubles as portable Audio CD player

Se MARIA ESPARZO

POWERBOOK

POWERBOOK 500's

NEW! POWERBOOK 540 Power Package!

The Ultimate Top Of The Line Powerbook Performance At An Amazing Price!

PowerBook 540c (33MHz) LCD Display, 12Mbyte RAM, 256Mbyte Hard Drive, 640x480 Color Active Matrix Screen, Two Intelligent Batteries), Symantec GeoWorks, COP, Norton Utilities, Charideschi AddOn Software, & a One Year Warranty!

PowerBook 520c Executive Package...

- PowerBook 520c: 256Mbyte RAM, 240Mbyte Hard Drive, Color Screen, 75MHz CPU, 14.4 Modem, Fax, Modem, & Apple MacWrite Pro Printer
- Tenda Gompany C: ABC Bundle: Extra Intelligent Battery, Symantec GeoWorks, COP, Norton Utilities, Charideschi AddOn Software, & a One Year Warranty!

PowerBook 530c Executive Package...

- PowerBook 530c: 256Mbyte RAM, 240Mbyte Hard Drive, Color Screen, 75MHz CPU, 14.4 Modem, Fax, Modem, & Apple MacWrite Pro Printer
- Tenda Gompany C: ABC Bundle: Extra Intelligent Battery, Symantec GeoWorks, COP, Norton Utilities, Charideschi AddOn Software, & a One Year Warranty!

PowerBook 540 12/240/14.4 Med...$555/$1199...

PowerBook 165 8/160...$1625/$555 (as ABC Bundle)

+ NEW! SERVICE & REPAIR +

The MAC SOLUTIONS HOUSE Service Center

Serves the full line of Apple Products: Computers, Drives, Monitors, Printers. Even if you purchased elsewhere and your warranty is up, we're still the right choice! Our experienced, factory-authorized Technicians can help you get up and running at a very competitive cost! In fact, our hourly repair rate is well below the industry average. Most repairs are completed and on their way back to you within 48 business hours! Call our Toll Free number and ask for the MAC Solutions House Service Center!

ESTIMATES ARE FREE!
Don’t settle for less! Best Data Products has provided superior American made products for over a decade. Our 14.4K bps send receive fax modem is designed for 57.6K bps data throughput. It is Group 3 compatible and offers a complement of data compression and error correction features including V32bis, V.42bis and MNP 2-5. All of our products are built with quality and backed by our 2 year warranty and our satisfaction guaranteed policy. For complete satisfaction on the Information Highway select Best Data Products!

Call 1-800-503-2378
This offer is available from the manufacturer for a limited time only.
AVEC COLOUR 2400

Flatbed Scanner

in a three-pass scanner capable of scanning in 24-bit, 16.0 million colors in an 8.5” x 14” area, with a maximum interpolation of 2400 dpi and an optical hardware resolution of 600 x 300 dpi.

• Supports Mac II (or above)
• Bundled with Art-Scan, TWAIN driver & plug-in models.

$589

CALL THE UPGRADE EXPERTS

800-689-9866

MacFax 14,400 lets you send data fast. That means a graphics file that takes 2.5 hours at 2400 bps takes only 23 minutes at 14,400 bps!

• MacFax 14,400 transmits at 14,400 bps, up to 37,600 bps throughput with built-in V.42bis data compression and V.42 error control
• Built-in speaker with volume control
• Help screen
• 7 LED status lights
• Includes MicroPage LT™ for easy data transmission
• Compatible with 300, 1200, 7400, 9600 bps ITU-T standards

4MB 5.25" $249
8MB 5.25" $339
20MB 5.25" $429
165MB 3.5" $799
270MB 3.5" $1,495

• 2 Year Warranty

CARTRIDGES

4MB $99
8MB $139
20MB $189
165MB $319
270MB $499

• All SyQuest Cartridges include a 1 year warranty

EXTERNAL DRIVES

4MB 5.25" $249
8MB 5.25" $339
20MB 5.25" $429
105MB 3.5" $799
270MB 3.5" $1,495

• 2 Year Warranty

INTERNSHIPS

30 DAY GUARANTEE

Satisfaction

WE SET THE STANDARD:

• MEMORY GUARANTEED 100%
• COMPATIBLE IN FORM, FIT & FUNCTION
• INSTALLATION INSTRUCTIONS INCLUDED WITH MOST MEMORY PRODUCTS
• FREE TECHNICAL SUPPORT
• CORPORATE P.O’S, APO/FPO’S WELCOME
• GOVERNMENT & EDUCATIONAL PRICING
• SPECIAL VOLUME PRICING
• OVERNIGHT DELIVERY AVAILABLE
• NO SURCHARGE ON CREDIT CARDS

DON’T SETTLE FOR LESS!

TOLL FREE FROM USA & CANADA
800-689-9866

INTERNATIONAL ORDERS
714-448-7750

FAX ORDERS
714-448-7760

BUSINESS HOURS:
Monday - Friday, 7am-5pm, P.S.T.
Saturday, 9am-3pm, (Orders Only Please)

MAIL OR FAX ORDERS TO:
First Source International, Inc.
7 Journey, Aliso Viejo, CA 92656

DON’T SELL FOR LESS!

AVEC COLOUR 2400

Flatbed Scanner

is a three-pass scanner capable of scanning in 24-bit, 16.0 million colors in an 8.5” x 14” area, with a maximum interpolation of 2400 dpi and an optical hardware resolution of 600 x 300 dpi.

• Supports Mac II (or above)
• Bundled with Art-Scan, TWAIN driver & plug-in models.

$589

CALL THE UPGRADE EXPERTS

800-689-9866

MacFax 14,400 lets you send data fast. That means a graphics file that takes 2.5 hours at 2400 bps takes only 23 minutes at 14,400 bps!

• MacFax 14,400 transmits at 14,400 bps, up to 37,600 bps throughput with built-in V.42bis data compression and V.42 error control
• Built-in speaker with volume control
• Help screen
• 7 LED status lights
• Includes MicroPage LT™ for easy data transmission
• Compatible with 300, 1200, 7400, 9600 bps ITU-T standards

4MB 5.25" $249
8MB 5.25" $339
20MB 5.25" $429
105MB 3.5" $799
270MB 3.5" $1,495

• 2 Year Warranty

CARTRIDGES

4MB $99
8MB $139
20MB $189
165MB $319
270MB $499

• All SyQuest Cartridges include a 1 year warranty

EXTERNAL DRIVES

4MB 5.25" $249
8MB 5.25" $339
20MB 5.25" $429
105MB 3.5" $799
270MB 3.5" $1,495

• 2 Year Warranty

INTERNSHIPS

30 DAY GUARANTEE

Satisfaction

WE SET THE STANDARD:

• MEMORY GUARANTEED 100%
• COMPATIBLE IN FORM, FIT & FUNCTION
• INSTALLATION INSTRUCTIONS INCLUDED WITH MOST MEMORY PRODUCTS
• FREE TECHNICAL SUPPORT
• CORPORATE P.O’S, APO/FPO’S WELCOME
• GOVERNMENT & EDUCATIONAL PRICING
• SPECIAL VOLUME PRICING
• OVERNIGHT DELIVERY AVAILABLE
• NO SURCHARGE ON CREDIT CARDS

DON’T SETTLE FOR LESS!

TOLL FREE FROM USA & CANADA
800-689-9866

INTERNATIONAL ORDERS
714-448-7750

FAX ORDERS
714-448-7760

BUSINESS HOURS:
Monday - Friday, 7am-5pm, P.S.T.
Saturday, 9am-3pm, (Orders Only Please)

MAIL OR FAX ORDERS TO:
First Source International, Inc.
7 Journey, Aliso Viejo, CA 92656

DON’T SELL FOR LESS!
There Are Two Times When Macintosh® Modem Reliability Is Critical.

When You’re In The Office.

Some modem users don’t care if their data gets hung up, transmits inaccurately, or if they have to redial several times. Most modem users do. For them there’s ZyXEL, the full-featured fax modem for serious Macintosh users.

ZyXEL land and cellular modems get through where others fail. They’re specially designed to overcome poor signal conditions on the physical layer with features like fast retrain and auto fall-forward/fall-back. This means ZyXEL Macintosh modems connect the first time and continue to transmit data accurately at ultra-high speeds up to 19.2Kbps* over land lines (with DTE speeds up to 76.8Kbps) and 14.4Kbps over cellular networks. Fax speed is 14.4Kbps/V17. It’s the kind of performance you only expect from high-priced modems—but with ZyXEL it doesn’t cost more.

ZyXEL data/fax/voice/cellular modems have more features than other Macintosh modems of any price—like digitized voice capability, distinctive ring, multilevel security, industry standard data compression and error correction protocols, and much more.

When it comes to cellular, no other Macintosh modem comes close to ZyXEL. With the ZyCellular option, your modem is not just fast and reliable. It will also communicate in asynchronous/synchronous mode at 14.4Kbps. The ZyCellular autoswitch capability automatically switches your modem from land to cellular when land connections are lost. ZyCellular is the ideal backup for leased lines as well as for mobile communications.

ZyXEL modems will also work in other environments—DOS®, Windows®, OS/2®, NeXt®, UNIX® and Amiga®. So get serious about saving time, cost and effort with true Macintosh modem reliability. Don’t wait.

Call ZyXEL now—800-255-4101.

And When You’re Not.

standard data compression and error correction protocols, and much more.

When it comes to cellular, no other Macintosh modem comes close to ZyXEL. With the ZyCellular option, your modem is not just fast and reliable. It will also communicate in asynchronous/synchronous mode at 14.4Kbps. The ZyCellular autoswitch capability automatically switches your modem from land to cellular when land connections are lost. ZyCellular is the ideal backup for leased lines as well as for mobile communications.

ZyXEL modems will also work in other environments—DOS®, Windows®, OS/2®, NeXt®, UNIX® and Amiga®. So get serious about saving time, cost and effort with true Macintosh modem reliability. Don’t wait.

Call ZyXEL now—800-255-4101.
Creative Computers’ MacMall is Apple’s first full line...

Now you can order Apple® Macintosh® computers by mail.

Creative Computers’ MacMall announces a breakthrough partnership with Apple® Computer, Inc. that will forever change the way you buy Apple Macintosh products. As the first Apple Authorized Catalog Reseller, Creative Computers’ MacMall brings you the same level of award-winning service and low pricing that has made us the #1 Apple Macintosh Reseller in Southern California and the fastest growing Macintosh mail-order company. Call today for a free copy of our giant catalog, or fill in the form below and we’ll mail you one.

Call 1-800-222-2808 to receive your free catalog.

Now you can order Apple® Macintosh® computers by mail.

Call 1-800-222-2808 to receive your free catalog.

Call 1-800-222-2808 to receive your free catalog.

Call 1-800-222-2808 to receive your free catalog.
Amirrcoon Visions CD
20th Century Art from the Roxy, Neuberger Collection.
American Vis~n presents over 2100 works of art in full 24-bit color representing 140 artists along with photos, graphics and narrations about the artists and their work.
$59.99
65540

MacWavemaker
The MacWave Maker meets the performance standard for Macintosh sound MIDI synthesis with sound quality good enough for professional use. Whether you're composing, recording, film scoring or creating multimedia presentations, the MacWave Maker lets you do it all with GarageBand, an affordable SoundPlus synthesis engine. Just plug in the MacWave Maker into your Mac, drag and drop the drivers you need, and you're ready to make music with the built-in sound table synth card on the market. CD quality sound and much more.
$439.99
65536

Select Phone
Find Anyone's Phone # in the U.S. EAST!
Select Phone is a combination National Phone Book Research Tool, Desktop Marketing Utility and Mapping Program. Includes certificate for FREE upgrade.
$178.99
65542

Free Phone
Free directory listings on a single CD-ROM
$24.99
65544

Direct Phone
Select Phone is a combination National Phone Book Research Tool, Desktop Marketing Utility and Mapping Program. Includes certificate for FREE upgrade.
$178.99
65542

Virtus VR
The easiest way to use 3D program ever, launch your 3D world with the Macintosh. For family, For fun, For play, For school, For all. Includes a Free Virtual Tour.
$63
65556

Virtus Walkthrough
VR Gallery: Home Remodeling $39.99 65558
VR Gallery: Sci-Fi $39.99 65556
VR Gallery: Interior Design $39.99 65554
Archeology $239.99 65555

VideoShop 3.0
VideoShop 3.0 makes it easier than ever for you to create high quality digital movies and videocassettes that include stunning effects. To create a movie simply drop media clips into the sequencer, apply special effects, polish your movies with amazing digital effects, including MOeIn. Unique compositing and layout features allow you to layer unlimited video and audio tracks. VideoShop also includes sound mixing.
$299.99
65537

Dayna
Pocket SCS/Link T
The smallest and lightest external adapter for Ethernet networking. It features an Ethernet connector to fit either a desktop Mac or a PowerBook, an RJ-45 connector. Connects two Macs. Dayna T doesn't require a power adapter, thanks to All port technology.
$34.99
65549

VideoShop 3.0
VideoShop 3.0 makes it easier than ever for you to create high quality digital movies and videocassettes that include stunning effects. To create a movie simply drop media clips into the sequencer, apply special effects, polish your movies with amazing digital effects, including MOeIn. Unique compositing and layout features allow you to layer unlimited video and audio tracks.
$259.99
65556

Claris Organizer
The first all-in-one, intelligent personal information manager for the Mac, integrates a phonebook, calendar, to-do list, memo's and much more into one easy-to-use, compact application.
$999
65575

ClarisDraw
Create everything from simple maps and Calendar Contours to fine line drawings, complex specifications and anything else you can visualize quickly and easily.

$198
65589

HP DeskWriter Printer
• 300 DPI letter quality print on plain paper
• Three Year Warranty

$289
65590

HP DeskWriter 520 Printer

$379
65591

HP DeskWriter 520C Printer

$379
65591

HP DeskWriter 310 Printer

$299
65594

Great Buy!
300 DPI GrayScale Scanner

$99
65594

VividSpin CD Drivers
Single Speed External

$999
65559

VividSpin CD Drivers
Double Speed External

$1999
65559

SyncMaster 14GL
$309.99 65590

SyncMaster 17GL
$779.99 65591

SyncMaster 17GLS
$879.99 65592

SyncMaster 4NE 15" Monitor
$369.99 65556

Kensington Turbo Mouse 4.0
$104.99 65598

VividLink 14.4 FAX/Modem
Includes Software and Cables

$34.99 65590

VividSpin CD

$99.99 65559

VividVision Monitor Color Display

$869.99 65591

ORDER TOLL FREE 800-222-2808
MacWare Policies $3.50 shipping via FedEx® offer applies to first order, up to 10 lbs. delivered in continental U.S. only. Orders over 15 pounds incur additional shipping charges. Next Day ® shipping is available only on orders placed before 7:45 EST and may exclude certain print areas. Call Customer Service at 800-560-6800 for a Return Authorization if necessary. Returned products must be in original condition, with all packaging, inserts and warranty card, and must be sent back within 30 days of our invoice date. No refunds on labor or freight charges. For tech support call 800-760-0200. Prices and availability subject to change without notice. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. NO CREDIT CARD SURCHARGES!

MacWavemaker
The MacWave Maker meets the performance standard for Macintosh sound MIDI synthesis with sound quality good enough for professional use. Whether you're composing, recording, film scoring or creating multimedia presentations, the MacWave Maker lets you do it all with GarageBand, an affordable SoundPlus synthesis engine. Just plug in the MacWave Maker into your Mac, drag and drop the drivers you need, and you're ready to make music with the built-in sound table synth card on the market. CD quality sound and much more.
$439.99
65536

Select Phone
Find Anyone's Phone # in the U.S. EAST!
Select Phone is a combination National Phone Book Research Tool, Desktop Marketing Utility and Mapping Program. Includes certificate for FREE upgrade.
$178.99
65542

Free Phone
Free directory listings on a single CD-ROM
$24.99
65544

Direct Phone
Select Phone is a combination National Phone Book Research Tool, Desktop Marketing Utility and Mapping Program. Includes certificate for FREE upgrade.
$178.99
65542

Virtus VR
The easiest way to use 3D program ever, launch your 3D world with the Macintosh. For family, For fun, For play, For school, For all. Includes a Free Virtual Tour.
$63
65556

Virtus Walkthrough
VR Gallery: Home Remodeling $39.99 65558
VR Gallery: Sci-Fi $39.99 65556
VR Gallery: Interior Design $39.99 65554
Archeology $239.99 65555

VideoShop 3.0
VideoShop 3.0 makes it easier than ever for you to create high quality digital movies and videocassettes that include stunning effects. To create a movie simply drop media clips into the sequencer, apply special effects, polish your movies with amazing digital effects, including MOeIn. Unique compositing and layout features allow you to layer unlimited video and audio tracks. VideoShop also includes sound mixing.
$259.99
65556

Claris Organizer
The first all-in-one, intelligent personal information manager for the Mac, integrates a phonebook, calendar, to-do list, memo's and much more into one easy-to-use, compact application.
$999
65575

ClarisDraw
Create everything from simple maps and Calendar Contours to fine line drawings, complex specifications and anything else you can visualize quickly and easily.

$198
65589

HP DeskWriter Printer
• 300 DPI letter quality print on plain paper
• Three Year Warranty

$289
65590

HP DeskWriter 520 Printer

$379
65591

HP DeskWriter 520C Printer

$379
65591

HP DeskWriter 310 Printer

$299
65594

Great Buy!
300 DPI GrayScale Scanner

$99
65594

VividSpin CD Drivers
Single Speed External

$999
65559

VividSpin CD Drivers
Double Speed External

$1999
65559

SyncMaster 14GL
$309.99 65590

SyncMaster 17GL
$779.99 65591

SyncMaster 17GLS
$879.99 65592

SyncMaster 4NE 15" Monitor
$369.99 65556

Kensington Turbo Mouse 4.0
$104.99 65598

VividLink 14.4 FAX/Modem
Includes Software and Cables

$34.99 65590

VividSpin CD

$99.99 65559

VividVision Monitor Color Display

$869.99 65591

ORDER TOLL FREE 800-222-2808
MacWare Policies $3.50 shipping via FedEx® offer applies to first order, up to 10 lbs. delivered in continental U.S. only. Orders over 15 pounds incur additional shipping charges. Next Day ® shipping is available only on orders placed before 7:45 EST and may exclude certain print areas. Call Customer Service at 800-560-6800 for a Return Authorization if necessary. Returned products must be in original condition, with all packaging, inserts and warranty card, and must be sent back within 30 days of our invoice date. No refunds on labor or freight charges. For tech support call 800-760-0200. Prices and availability subject to change without notice. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. NO CREDIT CARD SURCHARGES!
CD ROMs

NEW!
Eagle MultiMedia Kit (includes CD ROM drive, 3 CDs & Multimedia speakers) $299
Eagle 210 CD ROM w/3 CDs $249
Eagle FMF CD ROM w/3 CDs + Oki MultiMedia Ency. $399
Apple CD300 w/5 CDs $399
NEC MultiSpin 3x $499
Pioneer DRM-604x $1199

CD ROM Titles
Hundreds Available!
CALL FOR PRICES!

Multimedia Speakers-
Sony, Altec, Koss, Labtec....CALL $999

PRINTERS

Texas Instruments microlaser Pro 600
- 6 MB RAM (22 MB max) 
- 20 Mhz RISC Processor
- 2 paper drawers
- Mac and PC compatible
- True 600 dpi
- PostScript Level 2

$1209* with Mac/Windows purchase

OMS 860/860 Plus $3499/CALL
OMS ColorScript 210/1008 $3199/CALL
Hewlett Packard 4M/4ML $1999/CALL
Hewlett Packard 310 CALL
Hewlett Packard 550c CALL
Apple LaserWriter Pro 630/630B $2099/CALL
Citizen Notebook Printer $359
Apple StyleWriter $329

MONITORS

Eagle 210 CO ROM $249
Eagle FMF CO ROM w/3 CDs + Oki MultiMedia Ency. $399
Apple CD300 w/5 CDs $399
NEC MultiSpin 3x $499
Pioneer DRM-604x $1199

Call for prices!

MEDIA

128 MB Optical Cartridge $28
44 MB SyQuest Drive Cartridge as low as $49
88 MB SyQuest Drive Cartridge as low as $59

HARD DRIVES

Seagate 235 MB (PowerBook) $369/499
Fujitsu 240 MB (PowerBook) $369/499
Toshiba 520 MB (PowerBook) $799/999
Fujitsu 1.2 GB (3.5") 9 ms. $969/1199
IBM Spintte 1.2 GB (3.5") 8 ms. $798/999
Micropolis 1.2 GB (3.5") 7 ms. $699/999
IBM Alleycat 2.1 GB (3.5") 8 ms. $1199/1199
IBM PisiPisi 2.1 GB (3.5") 8 ms. $1199/1199
Seagate Barracuda 4.4 GB (3.5") $1699/1999
Micropolis 3.6 GB (2.5") $1299/1499
Seagate Elite 5.0 GB (3.5") $1799/2099

CALL/CALL

We stock all Micropolis, Fujitsu, & Seagate drives.

MEMORY

LIFETIME WARRANTY ON ALL SIMMs
The only company that accepts SIMM trade ins!
We carry memory for all Macs. Call and save!

1 MB SIMM as low as $128
4 MB SIMM 80ns $175
8 MB, 72 Pin SIMM 70ns $230*
PowerBook 140-180c, 520-540c and
All Duos CALL

* Limited Quantities

TRADE IN YOUR OLD SIMMS

800 944 0944 Number 1 on Reader Service Card
Number 1 in Service

MacCenter®
1994

Macintosh PowerPC
8100
8.250 w/CD
$3999!

Machines E20
20" Color Monitor
Compatible with all Macs (on board video, 1024x768 or 1152x768)

SCSI Tower™
PowerBook SCSI Adapter
- The only PowerBook SCSI adapter which does not interfere with the ADB port and the modem jack.
- The only internally shielded PowerBook SCSI adapter (eliminates SCSI chain problems encountered with other types of adapters).
- The lightest PowerBook SCSI adapter: less than 1 oz. vs. 1/4 pound.
- Works with all PowerBooks, including the new Blackbirds!
- Works with all DuoDocks
- The most compact - 2 in. long vs. 3 in.
- 30 Day money back guarantee.

$29

88 MB SyQuest Drive Cartridge as low as $49

$999

E-Machines E20
20" Color Monitor
Compatible with all Macs (on board video, 1024x768 or 1152x768)

$999

Eagle MultiMedia Kit (includes CD ROM drive, 3 CDs & Multimedia speakers) $299
Eagle 210 CD ROM w/3 CDs $249
Eagle FMF CD ROM w/3 CDs + Oki MultiMedia Ency. $399
Apple CD300 w/5 CDs $399
NEC MultiSpin 3x $499
Pioneer DRM-604x $1199

Call for prices!

MEDIA

128 MB Optical Cartridge $28
44 MB SyQuest Drive Cartridge as low as $49
88 MB SyQuest Drive Cartridge as low as $59

HARD DRIVES

Seagate 235 MB (PowerBook) $369/499
Fujitsu 240 MB (PowerBook) $369/499
Toshiba 520 MB (PowerBook) $799/999
Fujitsu 1.2 GB (3.5") 9 ms. $969/1199
IBM Spintte 1.2 GB (3.5") 8 ms. $798/999
Micropolis 1.2 GB (3.5") 7 ms. $699/999
IBM Alleycat 2.1 GB (3.5") 8 ms. $1199/1199
IBM PisiPisi 2.1 GB (3.5") 8 ms. $1199/1199
Seagate Barracuda 4.4 GB (3.5") $1699/1999
Micropolis 3.6 GB (2.5") $1299/1499
Seagate Elite 5.0 GB (3.5") $1799/2099

CALL/CALL

We stock all Micropolis, Fujitsu, & Seagate drives.

MacCenter®
4100 South Congress, Suite 303
Austin, Texas 78745
Fax 512.444.3726
International Orders 512.446.3114
OVERSEAS TOLL FREE NUMBERS
Mexico - 95-292-9329
United Kingdom- 0800-89-4062
Germany - 0180-91061
France - 950-1870
8 AM - 5 PM EST Monday-Friday
10 AM - 5 PM EST Saturday
AppleLink-MacCenter
CompuServe-MacCenter 7620,324
All returns require approval and are subject to a restocking fee.
© MacCenter 1994
10 Reasons To Order Software & Peripherals from MacConnection®

1. You can order later from us than anyone (3:15 a.m.) and still get it overnight. Only the Stork and Santa do it better.
2. We ship weekends, too! Order Friday, get it Saturday. Order Saturday/Sunday, get it Monday!
3. Our hometown of Marlow, NH has more chickens than people. (And our One Minute Mail Order service makes ordering faster than a speeding pullet.)
4. You can call us toll-free with questions anytime. Before or after you buy.
5. We only "bait and switch" when the fish ignore our high-tech lures and we go back to good old worms.
6. Our prices are so low that our CEO was recently spotted picking up pennies in the parking lot.
7. We'll ship your order freight free if you ask your sales person the question that all America is asking, "What planet is Marlow on, anyway?"
8. We're environmentally correct. You won't find foam peanuts, here.
9. The TOTAL freight charge on every order is just $3. Unless you follow the instructions in #7!

It's Our 10th Anniversary!
That's right, folks. When it comes to transforming mild-mannered Macs into the stuff that dreams are made of, we are most definitely history! Why, we were selling Mac software and peripherals from this classic New England inn back when a powerbook was the latest Steven King novel! Since then, we've been responsible for every major innovation and most of the good one-liners in the chuckle-filled world of Mac mail order. Never tried us? Hey, make a little history yourself—give us a call and join us for the next decade! (Need a little incentive? Don't miss Reason #7!)

800-800-4444
14 Mill Street, Marlow, NH 03456  603-446-4444  FAX 603-446-7791

September 1994 / MacUser 177
Every Mac's Best

Call for a FREE catalog!
800-800-4444

We stock more than 3500 different products for your Mac. Money-back guarantee items indicated by ★. If you don't see what you need here, just give us a call.

HOURS:
8 a.m. Monday continuous thru 5 p.m. Sunday ET

Apple Computer
The affordable, new Apple Newton MessagePad 100 is here! Features updated 4MB ROM for improved performance, 640K RAM, and 20MHz processor. Built-in instead, to-do list, desktop name, calculator, pop-up software keypad—plus great low price.

New Product!
1388 Newton MessagePad 100 $399

The Apple Newton MessagePad 110 is the ultimate PDA! Features sleek, compact case, 1MB RAM, increased battery life. A world of capabilities in the palm of your hand, yet it weighs just 1.28 pounds! Four-month money-back guarantee on Newton Mail MessagePad 110 $599.

POWERBOOK/NEWTON
Abracs Concepts
7106 StatView 4.0 $4.39
Adobe 1.0 1 year
3519 RS Battery 995 $1407.69 89.95
Apple Computer
1332 Apple Newton MessagePad 110 $599
A5D Software
1968 Wiz Tools for PowerBook $59.95
Battery Tech., Inc. 30 day MBG
15861 Battery 59.95 14017 KPot/Bun 89.95
Connectix 30 day MBG
8411 CPU 2.0 $5.50
Global Village 30 day MBG
7720 PowerPort/Saver 269 7110 Gold $29.95
Lind Electronic Design
15187 ERC 2.139 5 14841 BL-200 171.95
Sophisticated Circuits 30 day MBG
7420 PowerPad Granite $99.95
Technogig, Inc. 30 day MBG
14014 PowerDrive XI 219.85 14015 SX 279.95
14013 PowerPlace Mini 3 $154.95
M.S. Robotics
11841 WorldPort 14.4Fax $254.95
VST ThinPick 30 day MBG
2804 Complete 109.95 2368 Plus 269.95
Zoom Telephonics 30 day MBG
10027 FaxModem PBX144 $199.95

BUSINESS
Abicus Consumer Division 30 day MBG
11528 TouchBase or 1952 DaTalk Pro ea. 39
Atoll Corporation 60 day MBG
4045 In Control 3.0 $15
BestMark 30 day MBG
5883 Multilabel 119 $3042.15 79.95
Claris 30 day MBG
3903 ClarisWorks 2.1 for Mac $199.95
3583 MacPaint Pro 255 14322 MW/Win Pro 35
Creative Think
15650 Creative Wrap Pack 3 $29
10274 DVDGraph Pro 3 $139.95
10959 DVDGraph Pro 3 Campt. Upg. $79.95

Danzing Development 30 day MBG
9123 DiskFix Direct 1.1 $2333.33 72.95
StarPlay Productions... 30 day MBG
12857 TotalRoam 2.0 299.95
DataGraph 30 day MBG
4823 DataGraph $84.95 11486 SuperGraph $96.95
FWD Inc.
2999 Hard Disk ToolKit 125 7829 Pers. 49.95
Golden Triangle 30 day MBG
11731 TimesTwo 1.144 $49.95
Hungarian Software... 30 day MBG
14224 wTouchBase or 14238 wDataBook 59
Italian Software 30 day MBG
10884 PowerFolder 34.95 12162 Reduce Del. 49.95
Kent Marsh Ltd. 30 day MBG
9513 Folder—the 1993 NightWatch 18.99
Metroworks, Inc. CatchMessenger
1446 Bronze 199 15464 Gold 299.95
Microsoft Computer Systems
3322 MacBook 89 2986 DriveTech $42
New Software 30 day MBG
12326 Emp. $12324 Fum 29.95 7695 Ult 88.95
Syncromax 60 day MBG
3955 Supreme 53.95 12424 SuperDock 79.95
5176 SAM... 65.95 6748 NUM... 99.95

EDU/TAINMENT/GAMES
Berkeley Systems... 30 day MBG
5123 After Dark for Macintosh 3.0 $299.95
Bungie Software
2986 Timeslips III 2.1 $194.95

Smart Translation
Transcribe English or foreign-language documents quickly and easily with the Macintosh Spanish Language Transcription System. The smart way to translate letters, facts, and other correspondences.$59.95

Classis 30 day MBG
14158 Impact $145.95 2518 Grow Pro $269.95
Demand Software 30 day MBG
11065 airWORKS 99 3227 Carves 3.5 $299.95
Equilibrium Design
9328 Fax/Oil $189.95 189.95
Hartwood Concepts Corp. 30 day MBG
11192 Kick’s PowerTools for Photoshop $199.95
ImageLine, Inc.
14437 PageMaker 3.4 (EPS images) $94.95
14447 VoicePack 3.4 (EPS images) $64.95
IMS
1927 TurboCAD MAC $39.95
Innovative Data Oaptop
9128 MacDraft 4.0 $399.95
Manchester Architect... 30 day MBG
4990 Ready.Set.Go! 6.0 $219.95
Quark
309 PrintProof 2.2 $89.95
Ray Dream 30 day MBG
12246 JAG II 89 4765 Designor 3.0 249.95
Synergy Software
1657 KidLife $149.95
T/Maker 30 day MBG
2134 Image 39.95 3437 CD-ROM $69.95
Virus
3185 WatKit 243.95 3189 Virus VT 64.95

PROGRAMMABILITY UTILITIES
Abbott Systems... 30 day MBG
12669 CoreOpper 2.5 $1678 Kalidicus 25
Afeld Systems 30 day MBG
7419 Stuffoff Sox Sox 34.95 6740 Deluxe 68
Apple Computer
15194 Train Engineer $29.95
Acealive 4996 Adobe Premiere 4.0 $499.95
1736 Illustrator 3.0 8198 InDesign $199.95
Adobe
15138 Freehand $199.95 14801 Uly $145.95
15021 Persuasion 3.0 15029 Upg. 145.95
Adobe
12636 Photoshop $1099.95
Adobe
13714 Eric’s Ultimate Solitaire $39.95
Adobe
13818 SimCity 389.95 15812 Upg. 49.95
Adobe
14158 Impact $145.95 2518 Grow Pro $269.95

Mac User | September 1994 | 178 | 1994
**MacWarehouse**

**UPGRADE NOW!!**

Ask for Item# UPG 0085 to upgrade from Illustrator 5.0...Only $99!

Adobe Illustrator™ 5.5

Adobe Illustrator™ 5.5 gives graphic artists, technical illustrators, and desktop publishers more features than ever! An expanded Pathfinder feature addresses trapping. Import documents from other applications with Adobe Acrobat Exchange and Acrobat Distiller. New text features provide tabs, search and replace by font, spell checker, rows and columns, and much more. Includes a Deluxe CD-ROM with how-to movies, 180 Adobe fonts, clip art and more. Publisher: Adobe

$389

---

**FAXstf 3.0**

Attention Fax modem owners!

Take advantage of all the FAXstf features! Includes: the ability to fax directly from most applications; multiple phone books; broadcast faxes; schedule faxes; gray scale printing support; Combine existing fax files to create a new fax; activity Log for tracking and filing fax history and much more! Item# COM 0216 $99

Publisher: STF Technologies, Inc.

FAXstf 3.0/FST AutoPak Bundle BND 0341 $95

---

**Revise & Convert!!**

Word For Word 6.0

Award-winning program converts over 100 DOS, Windows and Mac formats. Retain features, convert characters and graphics in up to 3 pages per second! 5-User: COM 0231 $239 Publisher: Mastersoft

$119

---

**SyQuest® Blowout!**

Now you can order a 44MB Reovable Syquest Drive for an incredible low price! Order the capacity you need, and the storage potential you desire. Cartridge sold separately. Ask for Item# DRI 0977

Plus Get your first 44MB cartridge for only $29.95 when you buy the 44MB drive at the same time. (Total price $228.95) Item# BND 0361

Now only $199!

---

**Retrospect Remote 2.1**

Powerful Mac network backup software for centralized backup and archiving. Create scripts with multiple sources, destinations, and file-selection criteria with ease. Then schedule the scripts so your backups run automatically on any day and at any time. Supports compression, encryption and verification. Publisher: Dantz Development

Item# UTI 0196

---

**The Flintstones® Screen Saver**

Now the most successful animated series in the history of television is brought to life in The Flintstones® Screen Saver Collection from Delrina. Take a trip back in time to Bedrock™ to enjoy the crazy antics of Fred, Barney, Wilma, Betty, Dino™ and more, in 10 full-color, incredibly detailed screen savers. Publisher: Delrina Item# UTI 0553

---

**Build your future!**

SimCity 2000

Incredible 3-D views in 256 colors, a multi-level interface, 64 levels of altitude, a musical soundtrack, brand new disasters, roads, highways, tunnels, parks, zoos, marina, stadiums, and much more. Publisher: Maxis Item# ENT 0625

---

**Order toll-free 24 hours a day, 7 days a week! 1-800-255-6227**
MacWAREHOUSE carries more than 2000 Macintosh products, including all the latest releases and new versions. We pride ourselves on getting new products first. Just fill in the information requested below and mail the coupon. We'll start your free, one-year subscription to the MacWAREHOUSE catalog with the next issue.

To order this Power User Double-Speed CD-ROM drive, ask for Item # DRI 0891.

To order, call toll-free 1-800-255-6227
(1-800-ALL-MACS)
Call 24 hours a day, 7 days a week.
Inquiries: 908-367-0440
Fax Your Order to: 908-905-9279

Order by Midnight for Overnight Delivery — Only $3.00!

MacWAREHOUSE® 1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701
© 1994 MacWAREHOUSE® Inc. All major credit cards accepted. No surcharge.

All products are priced F.O.B. Lakewood, New Jersey, and must be paid for in advance. Prices are subject to change without notice.

NEW FOR MAC! Get Microsoft ENCARTA A Complete Multimedia Encyclopedia on ONE CD-ROM!

For only $89!

Plus, 2 CD-ROMs FREE!

Now, when you buy any CD-ROM drive and ENCARTA from us at the same time, you'll also receive the Space Shuttle and Oceans Below CD-ROMs absolutely FREE!

To order, call toll-free 1-800-255-6227
(1-800-ALL-MACS)
Call 24 hours a day, 7 days a week.
Inquiries: 908-367-0440
Fax Your Order to: 908-905-9279

FREE CATALOG SUBSCRIPTION

Check the appropriate box(es) to receive your FREE 1-year subscription and mail this coupon to:
1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

Name ________________________________________________________________
Address ______________________________________________________________
City State Zip

(Expect to receive your first issue within 4-6 weeks).

MacWAREHOUSE® 1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701
© 1994 MacWAREHOUSE® Inc. All major credit cards accepted. No surcharge.

All products are priced F.O.B. Lakewood, New Jersey, and must be paid for in advance. Prices are subject to change without notice.

NEW FOR MAC! Get Microsoft ENCARTA A Complete Multimedia Encyclopedia on ONE CD-ROM!

For only $89!

Plus, 2 CD-ROMs FREE!

Now, when you buy any CD-ROM drive and ENCARTA from us at the same time, you'll also receive the Space Shuttle and Oceans Below CD-ROMs absolutely FREE!

To order, call toll-free 1-800-255-6227
(1-800-ALL-MACS)
Call 24 hours a day, 7 days a week.
Inquiries: 908-367-0440
Fax Your Order to: 908-905-9279

FREE CATALOG SUBSCRIPTION

Check the appropriate box(es) to receive your FREE 1-year subscription and mail this coupon to:
1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

Name ________________________________________________________________
Address ______________________________________________________________
City State Zip

(Expect to receive your first issue within 4-6 weeks).

MacWAREHOUSE® 1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701
© 1994 MacWAREHOUSE® Inc. All major credit cards accepted. No surcharge.

All products are priced F.O.B. Lakewood, New Jersey, and must be paid for in advance. Prices are subject to change without notice.

NEW FOR MAC! Get Microsoft ENCARTA A Complete Multimedia Encyclopedia on ONE CD-ROM!

For only $89!

Plus, 2 CD-ROMs FREE!

Now, when you buy any CD-ROM drive and ENCARTA from us at the same time, you'll also receive the Space Shuttle and Oceans Below CD-ROMs absolutely FREE!

To order, call toll-free 1-800-255-6227
(1-800-ALL-MACS)
Call 24 hours a day, 7 days a week.
Inquiries: 908-367-0440
Fax Your Order to: 908-905-9279

FREE CATALOG SUBSCRIPTION

Check the appropriate box(es) to receive your FREE 1-year subscription and mail this coupon to:
1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701

Name ________________________________________________________________
Address ______________________________________________________________
City State Zip

(Expect to receive your first issue within 4-6 weeks).

MacWAREHOUSE® 1720 Oak Street, P.O. Box 3031, Lakewood, NJ 08701
© 1994 MacWAREHOUSE® Inc. All major credit cards accepted. No surcharge.

All products are priced F.O.B. Lakewood, New Jersey, and must be paid for in advance. Prices are subject to change without notice.
CALL YOUR CATALOG SUPERSTORE:
1-800-456-8000
We have more than 2,500 different products in stock.

DesignCAD 2D/3D
- Complete 2D drafting and 3D modeling in one package
- Designed for architecture, engineering (both mechanical and electrical), animation, desk-top publishing and multimedia uses
- The power and versatility of programs costing much, much more

American Small Business Computers #04180

$279.98

MacHandwriter
- All-in-one input device for entering graphics, text and commands
- Includes 10-foot cable
- Plug into your keyboard’s ADB port
- Compatible with Sys 7 and all Mac software
- Features award-winning Handwriter® Recognition System software CIC #95205

Marathon
- 3D, texture-mapped action
- Defend the Marathon against an onslaught from hostile aliens
- Texture-mapped floors, ceilings, and walls
- A functionally designed interface, and a digital sound height score

Bungie Software #96284

$399.98

Nikon CoolScan
- Scans 35mm color or black & white slides and negatives
- 2700 dpi resolution
- Features adjustable thumb-wheel focus control
- Includes scanning software and Photoshop plug-in, Nikon Inc. #06926

$1998

Microsoft Office V3.0 CD

$469.98

Adobe Illustrator V5.5
with purchase of any product in this ad 95330

$384.98

Policies
- All major credit cards accepted
- Shipping and handling included in price of each software title
- Free support and technical assistance
- Free disk repair if ever needed
- Free replacement service
- 30-day money-back guarantee
- Sold directly by Lotus
- In stock and available for immediate shipment

Lotus
toll-free 1-800-395-3847

INTERNATIONALLY
- Mobile phone - +1 607-783-3027
- France - +33 01 75 28 78 47
- Germany - +49 89 27 62 078
- United Kingdom - +44 181 577 3900
- Portugal - +351 218 26 4900
- Hong Kong - +852 35 27 22 32
- Japan - +81 3 4339 1111

CORPORATE SALES: 1-800-258-0882
GOVERNMENT SALES: 1-800-372-9663
EDUCATION SALES: 1-800-381-9663

Adobe Illustrator V5.5

$384.98

MacDoom

$39.98

Sierra On-Line

49445

- Freelance
- Interlaken
- Kings Quest V
- Kings Quest III
- Kings Quest IV
- Kings Quest VI
- Kings Quest VII
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crown
- Kings Quest: Quest for the Crow
Quantum's hard disk drives are available in 2.5 and 3.5-inch form factors in storage capacities ranging from 85 megabytes to 2.1 gigabytes.

LPS 270MB INTERNAL

$239

IN STOCK!

- Fast SCU-2
- 4,500 RPM

Includes all necessary brackets and software.

Seagate

Seagate drives carry a ONE Year Warranty.

CD-ROMs

NEC MultiSpin 3Xp

The 3Xp combines 3X transfer rate performance, 250ms access time and a 256 KB continuous-flow cache in a compact design, making it a slim and lightweight device. At only 2.4 lbs the 3Xp is the lightest triple speed CD-ROM reader.

NEC MultiSpin 3Xp CD-ROM Reader

CD-ROM READERS

NEC MultiSpin 3Xp (Portable, 250ms access time, very light; 2.4 lbs)

$399

NEC MultiSpin 3X (Internal, 195ms access time, 450KB/sec data transfer)

$439

NEC MultiSpin 3Xe (Internal, 195ms access time, 450KB/sec data transfer)

$469

NEC MultiSpin 4X Pro (External, 180ms access time, 600KB/sec data transfer)

$935

NEC MultiSpin CD-ROM Readers carry a ONE Year Warranty.

Quantum's GO•DRIVE SERIES

2.5" POWERBOOK DRIVES

Capacity Access Time Internal External
170mb 17ms $259 $379
256mb 17ms $339 $459

LPS SERIES

3.5" LOW PROFILE

170mb 14ms $189 $249
270mb 11ms $239 $299
340mb 10ms $279 $339
540mb 10ms $399 $459

EMPIRE SERIES

3.5" HIGH PERFORMANCE LOW PROFILE

1080mb 9.5ms $179 $299
440mb 9.5ms $909 $969
2100mb 9.5ms $1359 $1419

Quantum Pro and LPS series carry a TWO Year Warranty.

Go•Drives carry a ONE Year Warranty.

CLUBMAC REMOVABLES

CLUBMAC 3.5" REMOVABLES

ClubMac 44mb 5.25" ($655) $199 $229
ClubMac 88c 5.25" ($611C) $379 $419
ClubMac 200mb 5.25" ($61500) $529 $569
ClubMac 105mb 3.5" ($61101) $289 $329
ClubMac 270mb 3.5" ($611370) $499 $539

CLUBMAC 5.25" REMOVABLES

ClubMac 44mb 5.25" ($61400) $49 $59
ClubMac 88c 5.25" ($61880) $89 $99
ClubMac 200mb 5.25" ($612000) $129 $129
ClubMac 105mb 3.5" ($613101) $189 $189
ClubMac 270mb 3.5" ($613370) $289 $289

CLUBMAC 5.25" 650MB SHARP OPTICAL

Access Time Internal External
30ms $899 $929
40ms $1669 $1699
50ms $2069 $2099

CLUBMAC CD-ROM Bundle

$800 VALUE

w/ ClubMac CD Bundle

$199 $299

ClubMac Optical Drives

ASK ABOUT OUR NEW 1.3 GIG SHARP OPTICAL

ClubMac (NEC201A) 3.25" 730mb Fujitsu Optical

$1099 $1129

ClubMac (NEC2010) 3.25" 750mb Sharp Optical

$1099 $1129

MaxOptic Toshiba III (9100) 5.25" 1.3G Optic

$2499 $2529

Hewlett-Packard (C1714A) 5.25" 1.3G Optical External

$2499 $2529

ClubMac Tape Backups

ClubMac DAT and DAT/2 drives include Kryptopt 3.5 Backup Software, DMI 90 Writer Tape and a TWO Year Warranty. HP DAT drives carry a ONE Year Warranty.

ClubMac DAT and DAT/2 drives include Kryptopt 3.5 Backup Software, DMI 90 Writer Tape and a TWO Year Warranty.

ClubMac DAT and DAT/2 drives include Kryptopt 3.5 Backup Software, DMI 90 Writer Tape and a TWO Year Warranty.

ClubMac 9X Speed CD-ROM Reader

ClubMac Dual Speed (External, 320ms access time)

The ClubMac CD-ROM reader carries a ONE Year Warranty.

ClubMac Optical Drives

ASK ABOUT OUR NEW 1.3 GIG SHARP OPTICAL

ClubMac (NEC201A) 3.25" 730mb Fujitsu Optical

$1099 $1129

ClubMac (NEC2010) 3.25" 750mb Sharp Optical

$1099 $1129

MaxOptic Toshiba III (9100) 5.25" 1.3G Optical

$2499 $2529

Hewlett-Packard (C1714A) 5.25" 1.3G Optical External

$2499 $2529

ClubMac CD-ROM Reader

ClubMac 9X Speed CD-ROM Reader

- 320ms access time
- CD-ROM lens design
- Double speed performance
- headphone jack and RCA jacks
- PhotoCD compliant
- No CD-ROM needed

$399

ClubMac Dual Speed (External, 320ms access time)

The ClubMac CD-ROM reader carries a ONE Year Warranty.

$199

ClubMac CD-ROM Bundle
<table>
<thead>
<tr>
<th>Product Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbo 040 (w/ FPU support)</td>
<td>$1795</td>
</tr>
<tr>
<td>33 MHz Turbo 040 /128K cache</td>
<td>$1789</td>
</tr>
<tr>
<td>40 MHz Turbo 040 /256K cache</td>
<td>$1955</td>
</tr>
<tr>
<td>Turbo 040! (w/FPU support)</td>
<td>$1625</td>
</tr>
<tr>
<td>33 MHz Turbo 040 /128K cache</td>
<td>$1565</td>
</tr>
<tr>
<td>FastCache Turbo 020b</td>
<td>$1165</td>
</tr>
<tr>
<td>APPLICATION ACCELERATORS</td>
<td>$1598</td>
</tr>
<tr>
<td>Image 040 (Good to Cursor) /108K Cache</td>
<td>$1398</td>
</tr>
<tr>
<td>Quality 040 /108K cache (Older version)</td>
<td>$1155</td>
</tr>
<tr>
<td>Networking</td>
<td>$1395</td>
</tr>
<tr>
<td>10MB Yubi/12/108, 10x the paste speed!</td>
<td>$465</td>
</tr>
<tr>
<td>10MB Yubi/8/108, 10x the paste speed!</td>
<td>$229</td>
</tr>
<tr>
<td>Mini Edit/5C</td>
<td>$297</td>
</tr>
<tr>
<td>Mini Edit/10C</td>
<td>$329</td>
</tr>
<tr>
<td>METEX/FN</td>
<td>$219</td>
</tr>
<tr>
<td>Daystar Digital</td>
<td>$1835</td>
</tr>
<tr>
<td>POWERCOLOR PRODUCTS</td>
<td>$1497</td>
</tr>
<tr>
<td>66 MHz PowerPro 601 (000128)</td>
<td>$1497</td>
</tr>
<tr>
<td>80 MHz PowerPro 601 (000135)</td>
<td>$1997</td>
</tr>
<tr>
<td>FastCache /1MB Cache</td>
<td>$499</td>
</tr>
<tr>
<td>POWERCACHE</td>
<td>$275</td>
</tr>
<tr>
<td>33 MHz PowerCache (P757UV33)</td>
<td>$275</td>
</tr>
<tr>
<td>50 MHz PowerCache (P757UV33)</td>
<td>$537</td>
</tr>
<tr>
<td>PowerColor Adapter</td>
<td>$237</td>
</tr>
<tr>
<td>Networking</td>
<td>$179</td>
</tr>
<tr>
<td>Intel Color Display / 20e</td>
<td>$1319</td>
</tr>
<tr>
<td>MULTIMEDIA</td>
<td>$3295</td>
</tr>
<tr>
<td>VideoStudio 0418</td>
<td>$1499</td>
</tr>
<tr>
<td>VideoStudio 0416</td>
<td>$1509</td>
</tr>
<tr>
<td>MONITORS</td>
<td>$1989</td>
</tr>
<tr>
<td>PrecisionColor Display /20e</td>
<td>$1949</td>
</tr>
<tr>
<td>PrecisionColor Display /17e (0401)</td>
<td>$1399</td>
</tr>
<tr>
<td>Precision Color Display /17e (0401)</td>
<td>$969</td>
</tr>
<tr>
<td>Precision Color Display /17 (0401)</td>
<td>$656</td>
</tr>
<tr>
<td>Full Page Display /gs (0424)</td>
<td>$489</td>
</tr>
<tr>
<td>TPFD20gs (0434/21ps (0437)</td>
<td>$1785</td>
</tr>
<tr>
<td>it's time to trade up for VideoStudio!</td>
<td></td>
</tr>
<tr>
<td>LeMansGT</td>
<td>$1835</td>
</tr>
<tr>
<td>Precision Color Pro 4Xx NEE MultiSpin Xx</td>
<td>$1319</td>
</tr>
<tr>
<td>MONITORS</td>
<td>$1989</td>
</tr>
<tr>
<td>PrecisionColor /21 (0463)</td>
<td>$1989</td>
</tr>
<tr>
<td>IntelColor Display /20e (0461)</td>
<td>$1949</td>
</tr>
<tr>
<td>PrecisionColor Display /20 (0461)</td>
<td>$1399</td>
</tr>
<tr>
<td>PrecisionColor Display /17 (0461)</td>
<td>$969</td>
</tr>
<tr>
<td>Precision Color Display /17 (0461)</td>
<td>$656</td>
</tr>
<tr>
<td>Full Page Display /gs (0461)</td>
<td>$489</td>
</tr>
<tr>
<td>TPFD20gs (0434/21ps (0437)</td>
<td>$1785</td>
</tr>
<tr>
<td>It's time to trade up for VideoStudio!</td>
<td></td>
</tr>
<tr>
<td>LeMansGT</td>
<td>$1835</td>
</tr>
<tr>
<td>Precision Color Pro 4Xx NEE MultiSpin Xx</td>
<td>$1319</td>
</tr>
<tr>
<td>MONITORS</td>
<td>$1989</td>
</tr>
<tr>
<td>PrecisionColor /21 (0463)</td>
<td>$1989</td>
</tr>
<tr>
<td>IntelColor Display /20e (0461)</td>
<td>$1949</td>
</tr>
<tr>
<td>PrecisionColor Display /20 (0461)</td>
<td>$1399</td>
</tr>
<tr>
<td>PrecisionColor Display /17 (0461)</td>
<td>$969</td>
</tr>
<tr>
<td>Precision Color Display /17 (0461)</td>
<td>$656</td>
</tr>
<tr>
<td>Full Page Display /gs (0461)</td>
<td>$489</td>
</tr>
<tr>
<td>TPFD20gs (0434/21ps (0437)</td>
<td>$1785</td>
</tr>
<tr>
<td>It's time to trade up for VideoStudio!</td>
<td></td>
</tr>
<tr>
<td>LeMansGT</td>
<td>$1835</td>
</tr>
<tr>
<td>Precision Color Pro 4Xx NEE MultiSpin Xx</td>
<td>$1319</td>
</tr>
</tbody>
</table>

Note: Prices and availability may vary. Please check with your local retailer for up-to-date information.
<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intellicolor Multi 20E</td>
<td>$2065</td>
</tr>
<tr>
<td>LeMans GT (NEW)</td>
<td>$1889</td>
</tr>
<tr>
<td>Precision Color 20V</td>
<td>$1449</td>
</tr>
<tr>
<td>Precision Color Pro 24x</td>
<td>$1245</td>
</tr>
<tr>
<td>Precision Color Pro 24xP</td>
<td>$429</td>
</tr>
<tr>
<td>VideoVision Studio</td>
<td>$3275</td>
</tr>
<tr>
<td>StageTwo Rocket 40Mhz</td>
<td>$1449</td>
</tr>
<tr>
<td>Free NEC CD-ROM with purchase of selected items</td>
<td></td>
</tr>
<tr>
<td>MicroWriter PS23</td>
<td>$679</td>
</tr>
<tr>
<td>MicroWriter PS65</td>
<td>$862</td>
</tr>
<tr>
<td>MicroWriter Pro600PS23</td>
<td>$1225</td>
</tr>
<tr>
<td>MicroWriter Pro 600 PS65</td>
<td>$1465</td>
</tr>
<tr>
<td>PowerStep40Mhz Upgrade</td>
<td>$325</td>
</tr>
<tr>
<td>MicroWriter Toner</td>
<td>$45</td>
</tr>
<tr>
<td>MicroWriter Pro Toner</td>
<td>$159</td>
</tr>
<tr>
<td>1MB TI Pro Memory</td>
<td>$110</td>
</tr>
<tr>
<td>1MB TI Memory</td>
<td>$40</td>
</tr>
<tr>
<td>Bottom Line Distribution has the best software deals available!</td>
<td></td>
</tr>
<tr>
<td>ArtZ Demo</td>
<td>$235</td>
</tr>
<tr>
<td>ArtZ</td>
<td>$269</td>
</tr>
<tr>
<td>12x12UD Tablet</td>
<td>$499</td>
</tr>
<tr>
<td>12x18UD Electrostatic</td>
<td>$810</td>
</tr>
<tr>
<td>12x18UD/Transpar.Surface 675</td>
<td></td>
</tr>
<tr>
<td>Painter v2.0 w/Tablet</td>
<td>$199</td>
</tr>
<tr>
<td>Four Button Cursor</td>
<td>$108</td>
</tr>
<tr>
<td>Infinity 88 External</td>
<td>$469</td>
</tr>
<tr>
<td>Infinity 200</td>
<td>$669</td>
</tr>
<tr>
<td>Infinity 270</td>
<td>$599</td>
</tr>
<tr>
<td>1.3GB Maxoptical</td>
<td>$3290</td>
</tr>
<tr>
<td>Quick Array 1.0GB</td>
<td>$2350</td>
</tr>
<tr>
<td>Quick SCSI F</td>
<td>$498</td>
</tr>
<tr>
<td>Quark 3.3</td>
<td>$549</td>
</tr>
<tr>
<td>Studio Pro</td>
<td>$879</td>
</tr>
<tr>
<td>Games</td>
<td></td>
</tr>
<tr>
<td>7th Guest CD-ROM</td>
<td>$51</td>
</tr>
<tr>
<td>Flying Nightmares PowerPC</td>
<td>$55</td>
</tr>
<tr>
<td>Iron Helix CD-ROM</td>
<td>$59</td>
</tr>
<tr>
<td>The Journeyman Project CD-59</td>
<td>$51</td>
</tr>
<tr>
<td>Myst CD-ROM</td>
<td>$51</td>
</tr>
<tr>
<td>PGA Tour Golf II</td>
<td>$60</td>
</tr>
<tr>
<td>DGR Technologies</td>
<td></td>
</tr>
<tr>
<td>DGR Technologies MultiMax</td>
<td></td>
</tr>
<tr>
<td>Upgrade your LC, LCII, LCIII and Performa 400 with the DGR LC MAX or MultiMax. Increase the single expansion slot to four, add another hard drive and supplement your LC with an additional 40 watt power supply. Enter the world of Multi-Media with the DGR MultiMax! Equipped with a multi-session, double spin CD-ROM and amplified stereo speakers, you can access the vast library of CD-ROMs available or listen to your favorite music. MultiMax</td>
<td>$799</td>
</tr>
<tr>
<td>LC MAX</td>
<td>$299</td>
</tr>
<tr>
<td>44MB External Drive</td>
<td>$189</td>
</tr>
<tr>
<td>88c MB External Drive</td>
<td>$399</td>
</tr>
<tr>
<td>200 MB External Drive</td>
<td>$499</td>
</tr>
<tr>
<td>270 MB External Drive</td>
<td>$499</td>
</tr>
<tr>
<td>44/68 MB Cartridge</td>
<td>$57/69</td>
</tr>
<tr>
<td>200 MB Cartridge</td>
<td>$85</td>
</tr>
<tr>
<td>270 MB Cartridge</td>
<td>$65</td>
</tr>
<tr>
<td>SPECIAL THIS MONTH!</td>
<td></td>
</tr>
<tr>
<td>GCC Widowriter 360 InkJet Printer</td>
<td>$349</td>
</tr>
<tr>
<td>Transportable150 Pro</td>
<td>$497</td>
</tr>
<tr>
<td>90MB Cart</td>
<td>$89</td>
</tr>
<tr>
<td>150MB Cart</td>
<td>$91</td>
</tr>
<tr>
<td>150MB Cart 5 Pack</td>
<td>$429</td>
</tr>
<tr>
<td>44MB Cart for SyQuest</td>
<td>$49</td>
</tr>
<tr>
<td>88MB Cart for SyQuest</td>
<td>$69</td>
</tr>
<tr>
<td>DGR Technologies</td>
<td></td>
</tr>
<tr>
<td>DGR Technologies</td>
<td></td>
</tr>
<tr>
<td>DGR Technologies</td>
<td></td>
</tr>
<tr>
<td>Bottom Line Distribution</td>
<td></td>
</tr>
<tr>
<td>Texas Instruments</td>
<td></td>
</tr>
<tr>
<td>Intellicolor Multi 20E</td>
<td>$2065</td>
</tr>
<tr>
<td>LeMans GT (NEW)</td>
<td>$1889</td>
</tr>
<tr>
<td>Precision Color 20V</td>
<td>$1449</td>
</tr>
<tr>
<td>Precision Color Pro 24x</td>
<td>$1245</td>
</tr>
<tr>
<td>Precision Color Pro 24xP</td>
<td>$429</td>
</tr>
<tr>
<td>VideoVision Studio</td>
<td>$3275</td>
</tr>
<tr>
<td>StageTwo Rocket 40Mhz</td>
<td>$1449</td>
</tr>
<tr>
<td>Free NEC CD-ROM with purchase of selected items</td>
<td></td>
</tr>
<tr>
<td>MicroWriter PS23</td>
<td>$679</td>
</tr>
<tr>
<td>MicroWriter PS65</td>
<td>$862</td>
</tr>
<tr>
<td>MicroWriter Pro600PS23</td>
<td>$1225</td>
</tr>
<tr>
<td>MicroWriter Pro 600 PS65</td>
<td>$1465</td>
</tr>
<tr>
<td>PowerStep40Mhz Upgrade</td>
<td>$325</td>
</tr>
<tr>
<td>MicroWriter Toner</td>
<td>$45</td>
</tr>
<tr>
<td>MicroWriter Pro Toner</td>
<td>$159</td>
</tr>
<tr>
<td>1MB TI Pro Memory</td>
<td>$110</td>
</tr>
<tr>
<td>1MB TI Memory</td>
<td>$40</td>
</tr>
<tr>
<td>*Includes manufacturer's rebate</td>
<td></td>
</tr>
<tr>
<td>DGR Technologies</td>
<td></td>
</tr>
<tr>
<td>DGR Technologies</td>
<td></td>
</tr>
<tr>
<td>DGR Technologies</td>
<td></td>
</tr>
</tbody>
</table>

**Texas Instruments**

**Wacom**

**Summagraphics**

**Iomega**

**Net 30 Terms**

**Custom Apple Configurations**

**Internet Access**

**One Hour Quote Response**

**Stabilized 1985**

**30 Day Money Back Guarantee**

**International Sales Department**

(512)892-4070

Fax (512)892-4455

Espanol/Francais

Deutsch

**Special Offer**

GCC Widowriter 360 InkJet Printer priced down to just $1,449!
Jelloc is the most economical way to refill your inkjet printers. It provides over 50% savings.

2Pk Black/Color ........... $15.99/9.99
2Pk High Capacity Black .... 19.99
500c/550c/560c/310 8Pk ...55.95
AppleColorPrinter 2Pk Black ...22.95
Gcy/Yellow/Magenta .......29.95

Mercury .........................$275
Gold ................................225
Bronze II ..........................93
One World Fax ...................793
Duo Mercury .....................319
Duo Software .....................74

Memory

1MB 30pin 120ns...........$25
2MB 30pin 80ns.............80
4MB 30pin 80ns.............148
4MB 72pin 60/70/80ns ...from 144
8MB 72pin 60/70/80ns ...from 275
16MB 72pin ....................599
2/64MB 72pin 60ns .....125/2795
Powerbook RAM ..........Call
Newton 1MB/2MB ............from 159
LC/Quadra VRAM ............29/19
ColorBlaster LC ..............149
All Magic memory has a 30 day money back guarantee and a lifetime warranty.

Magic Modems

Magic Fax Modems
Magic 28.8 V. Fast Class ...$199
Magic 14.4 Data/FaxModem ······99
With Voice Mail ................189
High Speed Modem Cable ......15
Magic Powerbook Int. Modems
14.4bps Data/FaxModem ........119
24/96 Data/FaxModem ...........79
All FaxModems come with feature fax and data software, America Online and Compuserve Startup Kit.

Magic Hard Drives

Magic 240 External ...............$299
Magic 1.0 GB Ext. 9 ms .......799
Magic 2.0 GB Ext. 9 ms .......1199
Active Terminat or ...............39
Call us about custom configurations

Trading with Retrospect 2.1 and a competitor's 65 cents. Each drive comes with a two year warranty.

Magic 256 Optical/Turbo ....899/999
Magic 128 Optical/Turbo ...899/999
Magic 256 Optical/Turbo ...899/999
Magic 1.3GB /Turbo ..........2299/2399
128 MB Carts/10 Pack ........27/240
256 MB Carts ......................19
256 MB Carts/10 Pack ........65/590
1.3 GB Carts ......................135

PowerPC 6100 as low as $1699
PowerPC 7100 as low as 2599
PowerPC 8100 as low as 3859
Q60/8/160 DOS Compatible ...1505
Blackbird 520 4/160 ...........2240
540 4/240 ..................3010
520c 4/160 ..................2850
540c 4/320 ..................4520

Bottom Line carries the full line of Apple products. Leasing available from $49/month. Custom configurations available.

TO ORDER FROM BOTTOM LINE: Call 1-800-624-9307

1-800-624-9307
1-512-892-4070
On the Internet: sales@max.dgr.com

International Orders: Bottom Line provides the extra level of support international clients require: 24-hour international fax line, 220 volt versions of most hardware, discount rates and customs brokerage available via DHL and FEDERAL EXPRESS, 2-3 DAY DELIVERY to most countries. Bottom Line Distribution cannot be responsible for errors in typography or photography. All brands and product names are trade marks of their respective holders.

Bottom Line carries the full line of Apple products. Leasing available from $49/month. Custom configurations available.
POWERPC MEMORY

POWERPC, CENTRIS, QUADRA, LC III

4MB-70ns / 4MB-60ns $145 / $145
8MB-70ns / 8MB-60ns $294 / $300
16MB-60ns non-composite $615
32MB-60ns $1212

STANDARD 30 PIN MEMORY

1x8680 $40 4x8680 (I/fx) $155
1x870 $42 4x870 (I/fx) $157
1x100 $59 4x100 (I/fx) $155
2x880 $77 4x880 (I/fx) $157
2x870 $79 8x870 (I/fx) $348
4x880 $145 16x880 (Low Profile) $625
$197 16x890 (I/fx) $635

POWERBOOK MEMORY

PB110-170-4/6 $147 / $125
PB160-180-4/6/8/10 $149 / $219 / $299 / $359
PB16SC-180C-4/6/8/10 $155 / $232 / $319 / $405
DUO 210 - 280C 4/6/8/10 $169 / $205 / $300
DUO 210 - 280C 12/14/20/28 $519 / $595 / $732 / $1430
PB 520 - 540C 4/8/16/32 $259 / $459 / $679 / $1709

POWERBOOK ACCESSORIES

Battery Charger / Conditioner $75
Long Life Battery 140-180k $59
Automobile Adapter 120-180 / DUO $69
Newer Technology DUO Micro Dock SCSI / Color $135 / $259
Rasterops Duomate 8 / 16 SC $269 / $359

VIDEO RAM / FPU'S ETC...

Video RAM 256K / 512K $20 / $38
16MHz LC / Classic II $49
16MHz Color Classic $49
25MHz LC III $69
35MHz Performa 600 / Duo Dock FPU $65
Centris FPU $519
MicroMac 5MM/Double $137
MicroMac 5MM/charger $98

We have a Lifetime Warranty on all our memory products. Prices and availability are subject to change without notice.

OTHER MAC NEEDS

Compact Mac Tool Kit / PB Tool Kit $8 / $75.00
SIMM Remover (30 pin only) / Grounding Strap $3 / $5.00
Modem Cable / High-Speed Hand Shaking $7.50 / $12
Printer Cable DIN-8 to DIN-8 / DIN-8 to DB-25 $5.00
Newer Technology VSO Q700 / 900 / 950 / IIFX $125
Wrist Saver Keyboard or Mouse Pad / Bundle $12 / $20
SCSI Cables M25-M50 18'/25-M50 6' $8 / $19
SCSI Cables M50-M50 18'/50-M50 6' $9 / $19

SYQUEST 270MB CARTRIDGES $65

SyQuest 44MB Cartridge 1/4-5/9-10+ $59 / $58.50 / $57.50
Formatted $65
SyQuest 88MB Cartridge 1/4-5/9-10+ $69 / $68 / $67
Formatted $75
SyQuest 105MB Cartridge 1/4-5/9-10+ $62 / $61 / $60
SyQuest 200MB Cartridge $79
SyQuest 270MB Cartridge 1/4-5/9-10+ $65 / $64 / $63

MODEMS

Supra v32bis S/R Fax 14 4 w / C & S $1223
Supra v32bis S/R Fax 14 4 w / C & S $159
Supra v32bis S/R Fax 14 4 w / C & S $195
Supra 2400 Modem ONLY $99
Supra 2400 Modem S/R Fax 9600 w / C & S $139
Supra v32bis PowerBook 144 $229
Supra 28.8 External w / C & S $325

Global Village OneWorld Fax 1 line / 2 line $859 / $1299
Global Village OneWorld Rem. Access Server (2) $1639
Global Village Teleport / Powerport (Bronze) 24/96/48 $977
Global Village Teleport / Powerport (Gold) 14,400 $279
Global Village Teleport / Powerport (Mercury) 19,200 $229
U.S. Robotics Sportster 14.4 S/R Fax $237
Prometheus PowerBook 14.4 w / Voice $300
Zoom Pocket 14.4 w / Voice $239
Zoom 14.4 w / Voice $189
Zoom V. fast 28.8 modem $249

VERBATIM AS LOW AS $23

128MB 3.5 Optical $30
128MB 3.5 Optical, Apple Format $36
256MB 3.5 Optical $59
600 / 650MB 3.25 Optical (512 b/s / 1024 b/s) $112
1/2 / 1.3GB Optical (512 b/s / 1024 b/s) $112
DC200 with QIC40 $14.90
DC208 with QIC30 $16.90
DC2120 with QIC80 $19.90
8mm 90 / 60m $11.50 / $8.90
8mm 112m $10

CD / Recordable 640 / 74 min $23

WE ALSO CARRY FARALLON & DAYNA NETWORKING PRODUCTS, CABLES, PRINTER SUPPLIES, KEYBOARDS, MICE, SCANNERS, ... CALL US TODAY

FAX 206-454-7302

Educational/Government 1-800-848-1424

Fortune 1000 Companies 1-800-848-1418
## SYQUEST DRIVES ONLY $289

**Rumi SyQuest Drives**
- 44MB SyQuest (FREE Cartridge) $289
- 88c (R/W 44) SyQuest (FREE Cartridge) $139
- 168c SyQuest (FREE Cartridge) $289
- 208c SyQuest (FREE Cartridge) $289

**Rumi Hard Drives**
- PowerPro 601 66Mhz $51559
- PowerPro 601 80Mhz $52075
- PowerPro 601 1MB Cache Card $5519

**Rumi DAT Drives**
- PowerPack 210 Int (Toshiba) $409

**Rumi Optical Drives**
- 128MB Optical Drive $995

## CD-ROM Drive $299

**CD-ROM Bundle**
- Includes Rumi Drive
- Sony Speakers and 4 CD Titles - Myst, World Atlas, Luminous, Where in the World is Carmen Dellora

## ACCELERATORS

**PowerPC Products**
- PowerPro 601 66MHz $1559
- PowerPro 601 80MHz $2075
- PowerPro 601 1MB Cache Card $519

**040 Accelerators**
- 40MHz Turbo 040 with 128k cache $999
- 33MHz Turbo 040 with 128k cache $829
- 33MHz Turbo 040 w/128k cache (No FPU) $649
- 128k Cache for Turbo 040's $172
- Value 040 33MHz (No FPU) $649
- Value 040 33MHz $829
- Value 040 40MHz $999

**Universal PowerCache**
- 33MHz w/ FPU $289 / 379
- 50MHz with FPU $439 / 565

**Centris & Quadra 040 Accelerators**
- Image 040 40MHz $1599
- Quadra 040 40MHz w/ 128k cache $999

**CALL US FOR ALL DAYSTAR PRODUCTS**

## Scanners / Printers

**SCANNERS / PRINTERS**
- HP II CX $999
- HP IIP $799
- UMAX UC 650 PS/LE $799
- UMAX UC 840 $999
- UMAX 1260 $1399
- Microtek ScanMaker II $499
- Microtek ScanMaker IIIP $829
- Microtek ScanMaker IIIE $888
- Microtek ScanMaker IEIE $1329
- Microtek ScanMaker 3ST $1398
- Nikon Coolscan $2039
- Citizen Notebook II Color Printer $378
- Notebook II NIC battery Pack $49
- LabelWriter II PLUS $59
- GCC Write Impact $549

**HEWLETT-PACKARD**
- HP Deskwriter Printers New Available

"Customer Service Guaranteed!"

- Airborne Express Overnight $5 and up.
- First quality New, Brand Name products.
- R.O.'s accepted upon approval.
- All major credit cards accepted with no surcharge.
- Credit card not charged until order is shipped.
- Orders received before 2:00 pm Eastern time weekdays shipped same day.
- We ship to most countries in the world.
- All returns require approval and are subject to a restocking fee.
- Prices subject to change.
- Open 7 am to 6 pm M-F, 9 am to 4 pm Saturdays.

300 120th Avenue NE, Bldg 1, Suite 120, Bellevue, WA 98005, (206) 454-7258

1-800-848-8967

THE LLB COMPANY, INC.
SEPTEMBER 1994 / MacUser 189
Introducing the APS “I” Series

APS is proud to introduce technologically superior drives based on IBM mechanisms with MR-Head technology.

*SPreview* of competitive world of the humble desktop hard drive, nobody swears the details more than APS.

Elegant design, quality components, and rock-solid construction distinguish the compact APS SR 2000 Case.

— Editors of MacUser

---

**SCSI Sentry™**

Now you can "stop SCSI Voodoo" on your SCSI Chain, even when you're not ready to buy a new drive. Our new SCSI Sentry™ gives you all the benefits of APS' acclaimed DATerm technology in the form of an external SCSI performance monitoring instrument.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>SCSI Sentry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimizes Overall SCSI Performance</td>
<td>✔</td>
</tr>
<tr>
<td>Provides Ideal Termination Power</td>
<td>✔</td>
</tr>
<tr>
<td>Dramatically Reduces SCSI Retries</td>
<td>✔</td>
</tr>
<tr>
<td>Regulates SCSI Line Voltage</td>
<td>✔</td>
</tr>
<tr>
<td>Solves Bus Impedance Issues</td>
<td>✔</td>
</tr>
<tr>
<td>LED Activity Indicators Diagnostic Tool</td>
<td>✔</td>
</tr>
<tr>
<td>Easy Installation: Takes Seconds</td>
<td>✔</td>
</tr>
</tbody>
</table>

---

**Just $99**

---

**APS HARD DRIVES**

For your Mac or Power Mac

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Internal</th>
<th>SR2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>163MB - 1029MB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS 0.2701</td>
<td>257MB</td>
<td>$259</td>
<td>$359</td>
</tr>
<tr>
<td>APS 1.7570</td>
<td>260MB</td>
<td>259</td>
<td>359</td>
</tr>
<tr>
<td>APS MX 2901</td>
<td>276MB</td>
<td>249</td>
<td>349</td>
</tr>
<tr>
<td>APS MX 3451</td>
<td>324MB</td>
<td>329</td>
<td>429</td>
</tr>
<tr>
<td>APS 3401</td>
<td>327MB</td>
<td>279</td>
<td>379</td>
</tr>
<tr>
<td>APS I” 3601</td>
<td>342MB</td>
<td>299</td>
<td>399</td>
</tr>
<tr>
<td>APS Q 525</td>
<td>516MB</td>
<td>379</td>
<td>479</td>
</tr>
<tr>
<td>APS I” 5401</td>
<td>522MB</td>
<td>399</td>
<td>499</td>
</tr>
<tr>
<td>APS Q 5401</td>
<td>516MB</td>
<td>399</td>
<td>499</td>
</tr>
<tr>
<td>APS I” 7201</td>
<td>700MB</td>
<td>499</td>
<td>599</td>
</tr>
<tr>
<td>APS MS1.2A</td>
<td>956MB</td>
<td>759</td>
<td>859</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Internal</th>
<th>SR2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1612MB - 2845MB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS I” 1.0</td>
<td>1001MB</td>
<td>$699</td>
<td>$799</td>
</tr>
<tr>
<td>APS I” 1.0.1</td>
<td>1003MB</td>
<td>699</td>
<td>799</td>
</tr>
<tr>
<td>APS MS1.2A</td>
<td>1002MB</td>
<td>699</td>
<td>799</td>
</tr>
<tr>
<td>APS Q 10801</td>
<td>1029MB</td>
<td>749</td>
<td>849</td>
</tr>
<tr>
<td>APS MS1.7A</td>
<td>1612MB</td>
<td>999</td>
<td>1099</td>
</tr>
<tr>
<td>APS MS L7</td>
<td>1682MB</td>
<td>929</td>
<td>1029</td>
</tr>
<tr>
<td>APS I” 2.0</td>
<td>1920MB</td>
<td>1299</td>
<td>1399</td>
</tr>
<tr>
<td>APS ST 3.0</td>
<td>2040MB</td>
<td>1679</td>
<td>1779</td>
</tr>
<tr>
<td>APS MS 2.4G</td>
<td>2100MB</td>
<td>1349</td>
<td>1549</td>
</tr>
<tr>
<td>APS MS 3.0G</td>
<td>2845MB</td>
<td>1999</td>
<td>2199</td>
</tr>
<tr>
<td>APS ST 9.0</td>
<td>1611MB</td>
<td>4149</td>
<td>4349</td>
</tr>
</tbody>
</table>

---

**POWERBOOK DRIVES**

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Internal</th>
<th>Companion II</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS PB 85</td>
<td>80MB</td>
<td>$249</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS PB 170</td>
<td>160MB</td>
<td>319</td>
<td>269</td>
<td>$419</td>
</tr>
<tr>
<td>APS 213</td>
<td>202MB</td>
<td>319</td>
<td>269</td>
<td>419</td>
</tr>
<tr>
<td>APS PB 250</td>
<td>240MB</td>
<td>449</td>
<td>399</td>
<td>539</td>
</tr>
<tr>
<td>APS 340</td>
<td>324MB</td>
<td>549</td>
<td>499</td>
<td>639</td>
</tr>
<tr>
<td>APS T520</td>
<td>500MB</td>
<td>699</td>
<td>649</td>
<td>799</td>
</tr>
</tbody>
</table>

---

**PORTABLE STORAGE**

The Perfect Home for your 2.5" PowerBook Drive.

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>Internal</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS 520B</td>
<td>520MB</td>
<td>$799</td>
<td>4 Hour Battery!</td>
</tr>
</tbody>
</table>

---

**Regulaires SCSI line Voltages**

Solves Bus Impedance Issues

End Cable Bondage Forever!

Minimizes SCSI Chain Length

Heavy Metal Shielding Protects SCSI Signal

StackKIT Includes Four Concave Stacking Feet

StackKIT Includes Exclusive APS SCSI Connector

---

**$699**

**APS I” 1.0**

**NEW**

**$699**

**APS I” 1.0**

The new high-capacity, value leader, the APS I” 1.0 features IBM’s Magento Resistor head technology. Delivering impressive performance with seek times as low as 13.3 ms and sustained transfer rates as high as 3.3 MB per second.

**$24**

**SR 2000 StaticKill™**

- End Cable Bondage Forever!
- Minimize SCSI Chain Length
- Heavy Metal Shielding Protects SCSI Signal
- StackKIT Includes Four Concave Stacking Feet
- StackKIT Includes Exclusive APS SCSI C "Connector"
Get the Best: APS DAT

Only APS DATs bring you all the benefits of our SR 2000 enclosure with DATenn, Digital Active Termination At New Low Prices

APS HyperDAT
If you need high-speed backup (not the kind that ties your server up and slows down your network), you need the DDS-2 power of the APS HyperDAT! Back up locally at rates as high as 28MB per minute! Pack up to 10GB on a single tape! Best of all, your regular DDS and DDS compression tapes can be read in the APS HyperDAT, too!

APS DAT
The amazing APS DAT offers you great performance and reliability. Get up to 2.0GB on a 90 meter tape with backup speeds as high as 10MB per minute. All APS DATs include Retrospect, a $129 Value, Free!

<table>
<thead>
<tr>
<th>DAT Model</th>
<th>DAT Media (Units)</th>
<th>DAT Turbo DAT</th>
<th>DAT HyperDAT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60 meter DAT Tapes</td>
<td>10</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>90 meter DAT Tapes</td>
<td>12</td>
<td>11.5</td>
</tr>
<tr>
<td></td>
<td>120 meter DAT Tapes</td>
<td>23</td>
<td>22.5</td>
</tr>
</tbody>
</table>

*Actual data compression and tape capacity vary greatly depending on the type of data recorded, other system parameters and environment.

MAGNETO OPTICAL

<table>
<thead>
<tr>
<th>Model</th>
<th>Model Internal</th>
<th>Internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS 128MB MO</td>
<td>$659</td>
<td>$759</td>
</tr>
<tr>
<td>APS 230MB MO</td>
<td>$999</td>
<td>1099</td>
</tr>
<tr>
<td>APS 1.3Gig MO</td>
<td>2399</td>
<td>2499</td>
</tr>
</tbody>
</table>

SYQUEST

<table>
<thead>
<tr>
<th>Model</th>
<th>Model Internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS SQ 555</td>
<td>$44MB</td>
</tr>
<tr>
<td>APS SQ 3105</td>
<td>105MB</td>
</tr>
<tr>
<td>APS SQ 3270</td>
<td>270MB</td>
</tr>
</tbody>
</table>

I-800 235-3707

CIRCLE 146 ON READER SERVICE CARD

SEPTEMBER 1994 / MacUser 191
Supports multiple resolutions on-the-fly including 1280x1024, 832x624, & 640x480
- Works with most Mac built-in video
- Mac/PC compatible
- 0.31mm dot pitch
- Microprocessor user controls located on the front panel

LeMansGT
- Best performance of any interface in its class
- Custom ASIC circuitry for ultra-fast 32-bit Quickdraw acceleration
- Lifetime warranty with overnight replacement
- Multiple on-the-fly resolutions from 1152x870 to 640x480.

FREE! CD ROM Drive!
Until August 31, receive a free NEC Multiplan 3Xa CD ROM drive with the purchase of the LeMansGT or the PrecisionColor Pro 24x!

Precision Color Display 21
- 21 inch flicker free flat square tube
- Adjustable color temperature settings
- Works with most Macintosh built-in video
- 10 square inches larger than 20 inch displays
- Microprocessor controls and user adjustments
- Multiple on-the-fly resolutions from 1360x1024 to 1024x768
- 0.28mm dot pitch - 15% sharper than a 20 inch Trinitron

Precision Color Display 20V
- Supports multiple resolutions on-the-fly
- Includes 1280x1024, 832x624, & 640x480
- Works with most Mac built-in video
- Mac/PC compatible
- 0.31mm dot pitch
- Microprocessor user controls located on the front panel

SPECIAL BUNDLE PRICING
- PrecisionColor Display/21 with LeMansGT $3598
- PrecisionColor Display/21 with Pro 24X $3098
- PrecisionColor Display/20V with Pro 24X $2548

Volume Discounts Available!

LeMansGT
- PrecisionColor Display/21 with LeMansGT $1299
- PrecisionColor Display/21 with Pro 24X $1299
- PrecisionColor Display/20V with Pro 24X $1299

PhotoBooster
- Twin A&I 3210 Digital Signal Processors (DSPs) running at 66kHz
- Accelerates over 50 Photoshop filters
- Up to 10 times faster than a Quadra 950

PhotoBooster
- Twin A&I 3210 Digital Signal Processors (DSPs) running at 66kHz
- Accelerates over 50 Photoshop filters
- Up to 10 times faster than a Quadra 950

$1849

$1299

$1799

$699
NEW AND DEMO SPECIALS!

PrecisionColor Display/20 Trinitron from $1499
- 1152x882 to 640x480
- Sony Trinitron quality!
- Runs off built-in video or dedicated video interface

PrecisionColor Display/19 from $1199
- Multiple resolution switching on-the-fly
- Compatible with Centris or Quadra built-in video (16 bit on 0950)
- With 24 bit video card — from $1798

RasterOps 20 inch Color Display $1199
RasterOps 20 inch Trinitron $1699
Radius PrecisionColor Display/17 CALL!
- Compatible with built in video, 1152x870 to 640x480
- On-the-fly resolution changing, 0.26mm Trinitron tube

Sony 17 inch Trinitron $899
- Built-in video compatible

Sony 17" Trinitron w/24-bit video card $1198
Radius 21 inch Grayscale Display $799
Radius 20 inch Grayscale Display $699

Radius PowerView $199
- Allows most Powerbooks and the Classic II to support color grayscale, monochrome displays and projectors.
- Similar to PowerView but also supports TV!

SUPERMAC SUPERVIEW $299

ROCKETS/ACCELERATORS

Radius Rocket 68040 $399
- 33MHz or 40MHz Upgrade for Quadras
- 6100/7100 Upgrade to Power Macintosh 8100 speed!

WE BUY MACS!!

Call for Mac Systems and Parts!

CPUs
Quadras CALL
Powerbooks CALL
PowerMacs CALL

PARTS
All Apple parts new and used in stock.
Advance exchange available.
- Motherboards CALL
- Power supplies CALL
- CRTs CALL
- Over 20,000 items parts in stock, if you don’t see it—CALL US!

Consultants/Dealers 817.754.2131
International Sales 817.754.2120
TeleFax 817.754.2345

CRA Systems, Inc.
300 South 13th St.
Waco, TX 76701

SEPTEMBER 1994 / MacUser 193
Only one technology will emerge as the de facto standard in removable storage. And, only one company will emerge as the leader in innovative storage solutions. ADO Electronics introduces the new Microtech. It is the same quality driven company that you’ve relied on since 1985, but now with the power of ADO behind it.

Introducing the Microtech RS200. Which allows you to store 200MB of data on a single 5.25" SyQuest cartridge. It also reads and writes to the over 6 million SyQuest 44 and 88MB cartridges already in use.

Field-proven SyQuest technology is an unbeatable combination of data security and transportability. From primary storage, to back up media, the 200MB cartridges provide unlimited capacity to meet your most demanding requirements. Access times rival fast hard disk drives and sustained data transfer rates burst up to 5MB per second, giving you high end performance at a lower cost per megabyte than any other storage option.

Who do you trust with your future... Microtech.

The future is now. Call 800-626-4276 for complete details.

Microtech offers a full line of SyQuest products including the RS270, 270MB, 3.5" removable drive. Ask about our complete line of storage and memory solutions for the Macintosh.
CDW® YOUR COMPLETE SOURCE FOR MACINTOSH SOFTWARE

MacDeals™ says:
"Any order $200 or less ships for only $2.99"

Call CDW® today for all your Macintosh computing needs!

800-291-4CDW

CDW® HOURS
9:00 AM - 9:00 PM, Monday - Friday
9:00 AM - 1:00 PM, Saturday

CDW® SELLS FOR LESS AND SERVICES YOU BETTER!

CDW®, 195 MacUser September 1994
<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAGNOX CM2080 14&quot; 29mm Monitor</td>
<td>$249.80</td>
</tr>
<tr>
<td>MultiSpin 3Xe CD-ROM Drive</td>
<td>$457.92</td>
</tr>
<tr>
<td>Mac &amp; Fax Sportster 28.6</td>
<td>$225.83</td>
</tr>
</tbody>
</table>

**MacDeal$ says: "If you've seen a better price, call us before you buy—because CDW is DEALIN'!"**

**NEW!**

**Futura SX**

**Future 5X**

**CM2080 14" 29mm Monitor**

**Spectral Series III**

**Spectrum Series IV**

**Simplified PDIchem**

**Simplified PDIchem II**

**Wacom**

**Mac & Fax Sportster 28.6**

**MultiSpin 3Xe CD-ROM Drive**

**MacDeal$** says: "If you've seen a better price, call us before you buy—because CDW is DEALIN'!"**


### Advertiser Index

<table>
<thead>
<tr>
<th>RS#</th>
<th>ADVERTISER</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>168</td>
<td>Abacus Concepts</td>
<td>22</td>
</tr>
<tr>
<td>23</td>
<td>Adobe Systems, Inc.</td>
<td>103</td>
</tr>
<tr>
<td>22</td>
<td>Adobe Systems, Inc.</td>
<td>116-117</td>
</tr>
<tr>
<td>150</td>
<td>Advance Business Center</td>
<td>170</td>
</tr>
<tr>
<td>52</td>
<td>AGFA Div. - Scanner</td>
<td>115</td>
</tr>
<tr>
<td>30</td>
<td>Aladdin Systems</td>
<td>61</td>
</tr>
<tr>
<td>20</td>
<td>America On-Line</td>
<td>93-94</td>
</tr>
<tr>
<td>20</td>
<td>Apple Computer, Inc.</td>
<td>35</td>
</tr>
<tr>
<td>41</td>
<td>Apple Computer, Inc.</td>
<td>41-43</td>
</tr>
<tr>
<td>8-9</td>
<td>Apple Computer, Inc.</td>
<td></td>
</tr>
<tr>
<td>146</td>
<td>APS Technologies</td>
<td>190-191</td>
</tr>
<tr>
<td>86</td>
<td>Asante Technologies</td>
<td>16</td>
</tr>
<tr>
<td>13</td>
<td>Attain Corporation</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>Berkeley Systems</td>
<td>4</td>
</tr>
<tr>
<td>116</td>
<td>Best Data Products</td>
<td>171</td>
</tr>
<tr>
<td>21</td>
<td>Bottom Line Distribution</td>
<td>186-187</td>
</tr>
<tr>
<td>38</td>
<td>Caere Corporation</td>
<td>146</td>
</tr>
<tr>
<td>80</td>
<td>Caere Corporation</td>
<td>58</td>
</tr>
<tr>
<td>52</td>
<td>Ceres Software</td>
<td>52</td>
</tr>
<tr>
<td>120</td>
<td>ClubMac</td>
<td>184-185</td>
</tr>
<tr>
<td>136</td>
<td>Computer Discount Warehouse</td>
<td>196-197</td>
</tr>
<tr>
<td>62</td>
<td>Connectix Corporation</td>
<td>69</td>
</tr>
<tr>
<td>69</td>
<td>Delphi</td>
<td>89</td>
</tr>
<tr>
<td>80</td>
<td>Delrina Technology</td>
<td>148</td>
</tr>
<tr>
<td>165</td>
<td>Deneba Software</td>
<td>15</td>
</tr>
<tr>
<td>21</td>
<td>DGR Technologies</td>
<td>186-187</td>
</tr>
<tr>
<td>69</td>
<td>Digital Equipment Corp.</td>
<td>152-153</td>
</tr>
<tr>
<td>58</td>
<td>Digital Ocean</td>
<td>134</td>
</tr>
<tr>
<td>35</td>
<td>Dr. Mac</td>
<td>195</td>
</tr>
<tr>
<td>82</td>
<td>Eastman Kodak Co.</td>
<td>113</td>
</tr>
<tr>
<td>112</td>
<td>Educational Resources</td>
<td>166</td>
</tr>
<tr>
<td>73</td>
<td>Engineered Software</td>
<td>22</td>
</tr>
<tr>
<td>22</td>
<td>* Epson</td>
<td>26-27</td>
</tr>
<tr>
<td>125</td>
<td>* First Source International</td>
<td>172</td>
</tr>
<tr>
<td>140</td>
<td>Foresign</td>
<td>14</td>
</tr>
<tr>
<td>130</td>
<td>Frame Technology</td>
<td>130</td>
</tr>
<tr>
<td>71</td>
<td>FWB, Inc.</td>
<td>154</td>
</tr>
<tr>
<td>25</td>
<td>Gold Disk, Inc.</td>
<td>59</td>
</tr>
<tr>
<td>108</td>
<td>Graphsoft</td>
<td>123</td>
</tr>
<tr>
<td>123</td>
<td>* Hewlett-Packard</td>
<td>85</td>
</tr>
<tr>
<td>52</td>
<td>* Inspiration Software</td>
<td>52</td>
</tr>
<tr>
<td>41</td>
<td>La Cie Limited</td>
<td>144</td>
</tr>
<tr>
<td>43</td>
<td>La Cie Limited</td>
<td>53</td>
</tr>
</tbody>
</table>

*Denotes no reader service number.
FREE PRODUCT INFORMATION

Get the information edge. Use the MacUser Reader Service Fax Card.

It's the quick and easy way to get detailed product information mailed directly from the manufacturer, free of charge.

- CHECK OFF your answers to the research questions below.
- CIRCLE the numbers on the card that correspond to the product ads or articles you'd like more information about.
- FAX your request to (609) 829-0692 or mail this card and we'll pay the postage!

1. How many micro computers do you buy products? (check one)
   □ $1-4    □ $5-49    □ $50+

2. Your primary job function (check one)
   □ Administrator    □ Engineering/R&D    □ General Management
   □ MIS/MS-DOS    □ Communications    □ Marketing/Sales
   □ Systems/Programming    □ Computer Science/VAR

3. For which of the following products are you interested in selecting brands/models to be bought by your company or organization? (check all that apply)

4. Which of the following products have you bought in the last 6 months? (check all that apply)

SOFTWARE
   □ Accounting    □ Accounting
   □ Spreadsheet/Financial Planning
   □ Word Processors/Planners
   □ Database Managers
   □ Graphics/Computer-Aided Design
   □ Communications
   □ Utilities

HARDWARE
   □ Modems    □ Scanners
   □ Microcomputers    □ Monitors/Plotters
   □ Printers/Plotters
   □ Storage
   □ Add-in Boards
   □ Networking

5. If so, what function do you serve in the buying process? (check all that apply)
   □ Initiative/Interaction/Decide    □ Selection of Brand and Model
   □ Selection of Source
   □ Authorization
   □ PC Other

6. Over the next 12 months, how much will your organization spend on computer products or services? (check one)
   □ $1-$5 million    □ $5-$10 million    □ $10 million +

   □ $50,000 - $99,999    □ $100,000 - $249,999
   □ $250,000 - $999,999    □ under $10,000
   □ $100,000 - $499,999

7. Please print clearly

8. PLEASE PRINT CLEARLY

   □ Please send me a one-year (12 issue) subscription to MacUser for $19.97 (U.S. price); all other countries add $16.00 for additional postage.

9. PLEASE PRINT CLEARLY

   □ Please send me a one-year (12 issue) subscription to MacUser for $19.97 (U.S. price); all other countries add $16.00 for additional postage.

   □ Please send me a one-year (12 issue) subscription to MacUser for $19.97 (U.S. price); all other countries add $16.00 for additional postage.

   □ Please send me a one-year (12 issue) subscription to MacUser for $19.97 (U.S. price); all other countries add $16.00 for additional postage.

   □ Please send me a one-year (12 issue) subscription to MacUser for $19.97 (U.S. price); all other countries add $16.00 for additional postage.
FREE PRODUCT INFORMATION

Get the information edge. Use the MacUser Reader Service Fax Card.
It's the quick and easy way to get detailed product information mailed directly from the manufacturer, free of charge.

- CHECK OFF your answers to the research questions below.
- CIRCLE the numbers on the card that correspond to the product ads or articles you'd like more information about.
- FAX your request to (609) 829-0692 or mail this card and we'll pay the postage!

001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038 039 040

041 042 043 044 045 046 047 048 049 050 051 052 053 054 055 056 057 058 059 060 061 062 063 064 065 066 067 068 069 070 071 072 073 074 075 076 077 078 079 080

081 082 083 084 085 086 087 088 089 090 091 092 093 094 095 096 097 098 099 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120

121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160

161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200


241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280


441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480

1. For how many microcomputers do you buy products? (check one)
   - (01) 1-4
   - (02) 5-9
   - (03) 10 or more

2. Your primary job function is (check one)
   - (01) Administrative
   - (02) Engineering/R&D
   - (03) General Management
   - (04) Finance/Accounting
   - (05) MIS/DP, Communications
   - (06) Computer Dealer/Reseller
   - (07) Marketing/Sales
   - (08) Customer Service
   - (09) Software Products

3. For which of the following products are you involved in selecting brands/models to be bought by your company or organization? (check all that apply)
   - (01) Modems
   - (02) Teleprinters
   - (03) Modem Accessories
   - (04) Mainframe Computer Accessory
   - (05) Terminal/Display
   - (06) Storage介质
   - (07) Network
   - (08) Personal Computers
   - (09) Animals
   - (10) Antivirus
   - (11) Accounting
   - (12) Accounting
   - (13) Accounting
   - (14) Accounting
   - (15) Accounting
   - (16) Accounting
   - (17) Accounting

4. Which of the following products have you bought in the last 6 months? (check all that apply)
   - (01) Printers/Plotters
   - (02) Printers/Plotters
   - (03) Printers/Plotters
   - (04) Printers/Plotters
   - (05) Printers/Plotters
   - (06) Printers/Plotters
   - (07) Printers/Plotters
   - (08) Printers/Plotters
   - (09) Printers/Plotters
   - (10) Printers/Plotters
   - (11) Printers/Plotters
   - (12) Printers/Plotters
   - (13) Printers/Plotters
   - (14) Printers/Plotters
   - (15) Printers/Plotters
   - (16) Printers/Plotters
   - (17) Printers/Plotters

5. If so, what function do you serve in the buying process? (check all that apply)
   - (01) Influential Decision Maker
   - (02) Selection of Brand and Model
   - (03) Selection of Source
   - (04) Authorization
   - (05) Other

6. Over the next 12 months, how much will your organization spend on computer products or services? (check one)
   - (01) under $5 million
   - (02) $5-$10 million
   - (03) $10-$15 million
   - (04) $15-$20 million
   - (05) over $20 million

FREE PRODUCT INFORMATION

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 433 RIVERTON NJ

POSTAGE WILL BE PAID BY ADDRESSEE

MacUser
P.O. BOX 1688
RIVERTON, NJ 08077-9688

For Faster Service Fax
(609) 829-0692
### Xtra REASONS TO BUY FROM MAC Xtra...

#### MEMORY UPGRADES

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1X8X80</td>
<td>$38</td>
</tr>
<tr>
<td>2X8X80</td>
<td>$77</td>
</tr>
<tr>
<td>4X8X80</td>
<td>$138</td>
</tr>
<tr>
<td>4X8X80 II/IX</td>
<td>$155</td>
</tr>
<tr>
<td>16X8X80 (Low Profile)</td>
<td>$519</td>
</tr>
<tr>
<td>1X8BFX</td>
<td>$41</td>
</tr>
<tr>
<td>4X8BFX</td>
<td>$155</td>
</tr>
<tr>
<td>4MB 72Pin (70NS/ 60NS)</td>
<td>$149/$151</td>
</tr>
<tr>
<td>8MB 72Pin (70NS/ 60NS)</td>
<td>$293/$298</td>
</tr>
<tr>
<td>16MB 72Pin (60 NS)</td>
<td>$599</td>
</tr>
<tr>
<td>32MB 72Pin (60NS)</td>
<td>$1199</td>
</tr>
</tbody>
</table>

#### POWERBOOK UPGRADES

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB 520-540C 4MB/8MB</td>
<td>$259/$459</td>
</tr>
<tr>
<td>PB 520-540C 16MB/32MB</td>
<td>$879/$1709</td>
</tr>
<tr>
<td>PB 140-170 4MB/6MB</td>
<td>$139/$209</td>
</tr>
<tr>
<td>PB 160-180 4MB/6MB</td>
<td>$139/$215</td>
</tr>
<tr>
<td>PB 160-180 8MB/10MB</td>
<td>$269/$335</td>
</tr>
<tr>
<td>PB 165C-180C 4MB/8MB</td>
<td>$139/$229</td>
</tr>
<tr>
<td>PB 165C-180C 8MB/10MB</td>
<td>$317/$335</td>
</tr>
<tr>
<td>PBDUO 4MB/8MB</td>
<td>$165/$298</td>
</tr>
<tr>
<td>PBDUO 12MB/14MB</td>
<td>$515/$592</td>
</tr>
<tr>
<td>PBDUO 20MB/28MB</td>
<td>$930/$1429</td>
</tr>
</tbody>
</table>

#### SYQUEST MEDIA

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>44MB 1-4/5-9/10+</td>
<td>$59/$56/$57</td>
</tr>
<tr>
<td>44MB Pre-Formatted</td>
<td>$65</td>
</tr>
</tbody>
</table>

#### MODEMS

<table>
<thead>
<tr>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prometheus Powerbook 14.4 Int.</td>
<td>$244</td>
</tr>
<tr>
<td>Powerbook Home Office 14.4 Int</td>
<td>$279</td>
</tr>
<tr>
<td>Home Office 14.4E Ext.</td>
<td>$210</td>
</tr>
<tr>
<td>Zoom Accura 144/Fax 14.4 Mac</td>
<td>$164</td>
</tr>
<tr>
<td>Optima 144/Fax 14.4 Mac</td>
<td>$403</td>
</tr>
<tr>
<td>Optima 144/Fax 14.4 Pocket</td>
<td>$201</td>
</tr>
<tr>
<td>Opliam 288 VFC/FAX Mac</td>
<td>$449</td>
</tr>
<tr>
<td>Hayes US Robotics Spool 16.6 Mac &amp; Fax</td>
<td>$323</td>
</tr>
<tr>
<td>Sporster 14.4 Mac &amp; Fax</td>
<td>$152</td>
</tr>
<tr>
<td>Sporster 2400 Mac &amp; Fax</td>
<td>$135</td>
</tr>
</tbody>
</table>

#### NETWORKING

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dayna Port Pocket SCSI/Link-T</td>
<td>$231</td>
</tr>
<tr>
<td>Dayna Port SCSI/Link</td>
<td>$247</td>
</tr>
<tr>
<td>Dayna Port SCSI/Link Powerbook-T</td>
<td>$266</td>
</tr>
<tr>
<td>Dayna Port TRX (Friendly Net Adapter)</td>
<td>$34</td>
</tr>
<tr>
<td>Dayna Port E/I-T Nubus</td>
<td>$104</td>
</tr>
<tr>
<td>Dayna Port E/L-T Mac LC Card</td>
<td>$88</td>
</tr>
<tr>
<td>Dayna Port E/I-E-T Mac SE Card</td>
<td>$143</td>
</tr>
<tr>
<td>Dayna Port Mini Hub 5 10base T</td>
<td>$140</td>
</tr>
<tr>
<td>EtherWave Nubus Card</td>
<td>$99</td>
</tr>
<tr>
<td>EtherWave MC Adapter</td>
<td>$278</td>
</tr>
<tr>
<td>EtherWave Printer Adapter</td>
<td>$278</td>
</tr>
<tr>
<td>EtherWave LC-C</td>
<td>$170</td>
</tr>
<tr>
<td>EtherMac LC-101</td>
<td>$84</td>
</tr>
<tr>
<td>PhoneNet Connector</td>
<td>$28</td>
</tr>
</tbody>
</table>

#### ACCELERATORS

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daystar Turbo 040 33MHz WCache</td>
<td>$795</td>
</tr>
<tr>
<td>Daystar Turbo 040 40MHz WC</td>
<td>$995</td>
</tr>
<tr>
<td>Daystar Turbo 040 128K</td>
<td>$165</td>
</tr>
<tr>
<td>Daystar 030 30/33/33 w/FPU</td>
<td>$275/$357</td>
</tr>
<tr>
<td>Daystar 030 50/50 w/FPU</td>
<td>$415/$537</td>
</tr>
<tr>
<td>Daystar PowerPro Cards</td>
<td>CALL</td>
</tr>
</tbody>
</table>

#### DRIVES

<table>
<thead>
<tr>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xtra Drives</td>
<td>$269/$439</td>
</tr>
<tr>
<td>SyQuest 200MB w/Cart.</td>
<td>$579</td>
</tr>
<tr>
<td>SyQuest 105/270MB w/Cart.</td>
<td>$429/$579</td>
</tr>
<tr>
<td>128MB Optical 30ms w/DTest</td>
<td>$699</td>
</tr>
<tr>
<td>CD-Rom Photo CD 2x</td>
<td>$299</td>
</tr>
<tr>
<td>8GB DDS/2 Dial</td>
<td>$1209</td>
</tr>
<tr>
<td>MicroNet Int/Ext 170MB Fast SCSI-2</td>
<td>$264/$288</td>
</tr>
<tr>
<td>Int/Ext 270MB Fast SCSI-2</td>
<td>$302/$337</td>
</tr>
<tr>
<td>Int/Ext 340MB Fast SCSI-2</td>
<td>$347/$382</td>
</tr>
<tr>
<td>Int/Ext 16GB Fast SCSI-2</td>
<td>$940/$570</td>
</tr>
<tr>
<td>External 2.7GB Fast SCSI-2</td>
<td>$2,532</td>
</tr>
<tr>
<td>Int/Ext 128MB Optical Drive</td>
<td>$904/$1,164</td>
</tr>
</tbody>
</table>

#### VIDEO CARDS

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius Precision Color 8XJ Nubus</td>
<td>$461</td>
</tr>
<tr>
<td>Precision Color PRO 24XX Nubus</td>
<td>$768</td>
</tr>
<tr>
<td>Precision Color PRO 24XP Nubus</td>
<td>$461</td>
</tr>
<tr>
<td>Power Page Display 15&quot; Mono</td>
<td>$296</td>
</tr>
<tr>
<td>PhotoKodak for Power Mac</td>
<td>$615</td>
</tr>
<tr>
<td>PhotoBooster 68040-66</td>
<td>$768</td>
</tr>
<tr>
<td>SuperMac Spectrum/24 Series V Nubus</td>
<td>$550</td>
</tr>
<tr>
<td>Spectrum/24 PDD M</td>
<td>$510</td>
</tr>
<tr>
<td>Spectrum/8 Series III Nubus</td>
<td>$382</td>
</tr>
<tr>
<td>Video Spigot Nubus</td>
<td>$278</td>
</tr>
<tr>
<td>Video Spigot Mac Powerbook DAC</td>
<td>$243</td>
</tr>
<tr>
<td>Thunder II Light Nubus</td>
<td>$1,701</td>
</tr>
</tbody>
</table>

#### PRINTERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuperMac Proof Positive full Page Color</td>
<td>$6,805</td>
</tr>
<tr>
<td>Hewlett Packard Deskwriter 1350/300 (Color)</td>
<td>$407/$634</td>
</tr>
<tr>
<td>Canon Deskwriter 310/520 (Mono)</td>
<td>$307/$382</td>
</tr>
<tr>
<td>Call for HP Printer Supplies</td>
<td>CALL</td>
</tr>
<tr>
<td>Texas Instruments MicroWriter Basic L.E.D. 5pm</td>
<td>$524</td>
</tr>
<tr>
<td>Printronix 9235 L.E.D. 5pm A4</td>
<td>$594/$560</td>
</tr>
<tr>
<td>PRO PS2/DS 65 ppm</td>
<td>$1,399/$1,572</td>
</tr>
</tbody>
</table>

#### PRINTER ACCESSORIES

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbatim 30/50/50 w/FPU</td>
<td>$1416</td>
</tr>
<tr>
<td>Daystar PowerPro Cards</td>
<td>CALL</td>
</tr>
<tr>
<td>Verbatim 30/50/50 w/FPU</td>
<td>$1416</td>
</tr>
</tbody>
</table>

#### XTRA MEDIA

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daystar PowerPro Cards</td>
<td>CALL</td>
</tr>
<tr>
<td>Verbatim 138MB Optical</td>
<td>$59</td>
</tr>
<tr>
<td>Verbatim 128MB Optical</td>
<td>$30</td>
</tr>
<tr>
<td>Verbatim 560 Optical</td>
<td>$65</td>
</tr>
<tr>
<td>Verbatim 1.3GB Optical</td>
<td>$112</td>
</tr>
<tr>
<td>Verbatim RDC (for RDC Drives)</td>
<td>$23</td>
</tr>
<tr>
<td>Komag 128MB Optical</td>
<td>$28</td>
</tr>
<tr>
<td>Komag 600MB Optical</td>
<td>$79</td>
</tr>
<tr>
<td>Komag 1.3MB Optical</td>
<td>$98</td>
</tr>
<tr>
<td>Samsung 128MB Optical</td>
<td>$30</td>
</tr>
<tr>
<td>Samsung 650MB Optical</td>
<td>$85</td>
</tr>
</tbody>
</table>

#### MONITORS

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radius Precision Color 17&quot; Multiscan</td>
<td>$1,075</td>
</tr>
<tr>
<td>Precision Color 20&quot; 20V</td>
<td>$1,417</td>
</tr>
<tr>
<td>Precision Color 21&quot;</td>
<td>$2,110</td>
</tr>
<tr>
<td>Full Page Display 15&quot; Mono</td>
<td>$485</td>
</tr>
<tr>
<td>NEC 5FGE 17&quot; Multiscan</td>
<td>$1,035</td>
</tr>
<tr>
<td>5FGE 16&quot; Multiscan</td>
<td>$941</td>
</tr>
<tr>
<td>4FGE 15&quot; Multiscan</td>
<td>$652</td>
</tr>
<tr>
<td>SuperMac SuperMatch 17T 17&quot;</td>
<td>$1,063</td>
</tr>
<tr>
<td>SuperMatch 17X17 17&quot;</td>
<td>$1,020</td>
</tr>
<tr>
<td>SuperMatch High Res 20&quot;</td>
<td>$2,763</td>
</tr>
<tr>
<td>SuperMatch 21T XL 21&quot;</td>
<td>$2,257</td>
</tr>
</tbody>
</table>

---

To order, call: 1-800-553-4230 or visit our website at www.macxtra.com.
### You Can't Shock Us

Well, maybe you can. The fact is, our new long life Nomai (pronounced know-my) removable cartridge is the most shock resistant cartridge on the market. Maximum resistance to shock and protection from airborne particles is obtained by utilizing DLC (Diamond Like Coating) media which results in a long life cartridge you can trust.

Backed by a 5 year warranty, the Nomai cartridge offers you unparalleled dependability and performance at an affordable price.

In a recent review in *MacUser* magazine, Senior Editor Mark Frost said, "we mailed 'em, cooked 'em, froze 'em, magnetized 'em and dropped 'em - and these removable cartridges came back for more...None of the cartridges suffered any data loss."

You be the judge! Call 1-800-55-NOMAI (1-800-556-6624) for more information or the name of your nearest authorized Nomai reseller.
Thinking of Bar Codes ...

If you need a quality bar code reader small enough to fit in the palm of your hand, Videx has a bar code reader for you.

The TimeWand I offers credit-card sized portability, ideal for time and document tracking applications. The rugged DuraWand can take the punishment typically found in delivery and security applications. The TimeWand II offers the durability and computing power necessary in applications ranging from hospital patient care to warehouse inventory.

Call today to receive a free information kit on Videx portable bar code readers.

1105 N.E. Circle Blvd., Corvallis, OR 97330
503-758-6521 • Fax 503-752-5285

Videx, TimeWand, and DuraWand are registered trademarks of Videx, Inc. GCO462B

Bright color. Bright price.

$2,299.

SPECIAL OFFER!

The BOXLIGHT 1280 ColorShow Projection Panel. Our Brightest true-color panel. And for $700 off the list price, it's an unbeatable value.

• Compact, easy-travel panel
• 640 x 480 resolution
• PC and Mac compatible
• FREE remote and cables

Call Today 1-800-497-4008

PowerBook Enhancements

BookEndz™ dock
• For PowerBook 140 thru 190c
• Dock/undock in seconds
• No cable confusion
• Works with all ports
• Works w/Monitor Stand
• Houses your cables
• Assemblies in minutes
• Power extension included
• Other cables available
• Model HE-15 $99.95

Plug-in accessory case
• Combines PB 140-130c & ThinPack™
• 3-hour wireless, and 5-9 hours w/8.4V
• Attach/detach in seconds
• No assembly required
• Works accessible
• Works w/Keystone Microsaver™
• PB/8.4V case only $40
• PB/3-hour case w/ThinPack $29.95

Call Today 1-800-497-4008

America, Inc. Plant

America, Inc. Plant

MacUser MARKETPLACE

SEPTEMBER 1994 / MacUser 203
AutoBoot Commander™
Control up to 96 file servers with just 1 keyboard, monitor and mouse!

- Supports all 100% IBM compatible computers
- New KeyScan™ feature for keyboard-controlled scanning
- Jumperless support for analog (VGA) and TTL video
- Add a second control center up to 150 feet away
- AutoBoot™ feature boots computers without operator intervention
- Each unit controls from 2 to 8 PCs; cascade up to 12 units

For Macintosh support, ask about our new Mediator™ for Macintosh!

Cybex Corporation
4912 Perdido Drive • Huntsville, AL 35805 USA
(205) 430-4000 • FAX (205) 430-4030

IBM is a trademark of IBM Corporation. Macintosh is a trademark of Apple Computer, Inc.
Dealer Program Available Made in USA

CIRCLE 177 ON READER SERVICE CARD

Terminate SCSI Problems!
SCSI Vue™ Terminator & Cables

- Improves Performance
- Fixes Problems
- Fast & Fast Wide SCSI
- Diagnostic Analyzer
- Supports SCSI 1-2-3

Granite
3101 Whipple Rd.
Union City, CA. 94587
Ph: 510-471-6442
Fax 510-471-6267

CIRCLE 178 ON READER SERVICE CARD

A HANDFUL OF POWER
110V Supplemental Power for 100 Series PowerBooks.

- More portable for travel than AC power adaptors.
- Supplements DC power with AC for up to 4 times longer usage from each charge.
- Weighs just 2.5 ounces.
- Actual size: 1 1/8" W x 2 7/8" L x 1 1/2" D.
- Recharges battery in about 5 hours when PowerBook is off.

Order Now! 1-800-678-3726

Neuer Technology

CIRCLE 179 ON READER SERVICE CARD

Connect Your Macintosh to any TV...
The Presenter Plus Mac/PC turns your Macintosh into an incredible presentation machine. Easy plug-and-play external hook-up makes group presentations much more efficient and certainly less expensive. Print to video tape so others can share your presentation. Forget carrying heavy equipment to your presentation, that's history. Why dim the lights? That's for overhead projectors, also history. So with your PowerBook and The Presenter Plus in your briefcase you're ready for that Academy Award performance. The Presenter Plus Mac/PC works with all Macintosh computers that have monitor output except the IIc, IIci, and IIci. The PowerBook Duo series requires a docking station. Also DOS, Windows and OS/2 compatible.

$429
The Presenter Plus Mac/PC—When your presentations count!
800/356-3932

CIRCLE 180 ON READER SERVICE CARD
System that has been designed and proven by thousands of retailers just like you. POS•IM provides full POS and Inventory Management functionality with the features you need at an outstanding price.

POS•IM
Point-of-Sale • Inventory Management
Ensign Systems, Inc.
(801) 546-1616

“What’s for Dinner???”
Ask Your Computer with Digital Gourmet!

Digital Gourmet helps you with all your cooking needs.
✓ Award winning software
✓ 5000+ mouth-watering international recipes
✓ Prints recipes, shopping lists
✓ Automatic nutritional analysis
✓ Find recipes fast
✓ Special diet books
✓ 500+ alcoholic and non-alcoholic drinks
✓ 100 Photos (CD-only)
✓ 3.5” disks or CD-ROM
✓ Ben Appetit!

Books-On-Disk
1-800-505-3333

Now that we’ve got it just right, it’s ready for Macintosh

Introducing Street Atlas USA™
Street Atlas USA is a complete street map of the entire country on a single CD-ROM. You can zoom in on every city, town, or rural area in the country right down to the tiniest backroads. The database gives you instant access to more than 12 million street segments and more than 1 million lakes, ponds, rivers, parks, railroads, and more! Whether you’re traveling across town or across the country, Street Atlas USA gives you all the mapping information you’ll ever need.

COMPREHENSIVE, SEAMLESS MAPS OF ALL 50 STATES
✓ Search by zip code, place name, or phone number
✓ Print maps directly or export them to other applications
✓ Zoom in and out with ease
✓ Search block ranges in metropolitan areas

Order Today!
Call 1-800-452-5931
EXT. 8191
FAX: 207-865-9291
30-DAY MONEY-BACK GUARANTEE
AE, MC & VISA ACCEPTED

POWERBOOK PRODUCTS–SOFTWARE/CD-ROM

CYBEX

Cybex Corporation
4912 Research Drive
Huntsville, AL 35805 USA
205/430-4000 • 205/430-4020 FAX

PC is a trademark of IBM Corporation. Macintosh is a trademark of Apple Computer, Inc. Dealer Program Available. Made in USA

Sentinel PowerBook™ Security

Stop PowerBook™ theft with the Kaibit™ Sentinel

Secure-It

Secure peace-of-mind at the office, at home, the airport, and anywhere else you and your PowerBook travel.

For more information call 800-451-7592...

Secure-It™, 18 Maple Court, East Longmeadow, MA 01028

The particular Master Lock trademarks used are trademarks of The Master Lock Company and are used by Secure-It, Inc. under license.

CIRCLE 183 ON READER SERVICE CARD

CIRCLE 164 ON READER SERVICE CARD

CIRCLE 182 ON READER SERVICE CARD

CIRCLE 165 ON READER SERVICE CARD

CIRCLE 181 ON READER SERVICE CARD

CIRCLE 180 ON READER SERVICE CARD

CIRCLE 185 ON READER SERVICE CARD

SEPTEMBER 1994 / MacUser 205
HEY, MAC. WE’VE GOT YOUR NUMBER
And Ninety One Million More!

"You must buy this...one of the few CD-ROM sets that I keep on my desk." - John Dvorak, PC MAGAZINE.

Top rated by the leading PC magazines; it's Mac ready right now.

RESIDENTIAL $79
Find 81 million numbers, addresses, even zip codes in a fraction of the time, and at a fraction of the cost of directory assistance calls.

BUSINESS $79
Identify 9.5 million business names from just a phone number or street address; business type or SIC code.

PowerFinder™ $299
The master investigative tool.™

Developed for government agencies. Features include search by number and address of 91 million residential and business listings on five regional discs.

Download, print and dial on all products.

Now the same PhoneDisc® run on Windows, Mac and DOS!

1-800-284-8353
PhoneDisc® USA

The fastest way to find anyone, anywhere!

Your four-color Premier ad gets out more than the word to Macintosh Business Buyers. It shows them—with full-color depth and dimension—your commitment to long-term business...your confidence in your products. Seeing is believing!

Call today for details on how you can target 452,443 primary readers with an affordable display in Premier!

MacUser Premier
800-825-4237

SEENING IS BELIEVING!
Make your computer both a Macintosh and a UNIX workstation.

Now for under $899, the Mach™ UNIX software environment from Tenon InterSystems lets you combine the high level functionality of a networked UNIX workstation with Macintosh "Look and Feel" and wide array of applications. Mach™ is an actual industry-standard UNIX operating environment - not just a UNIX work-alike or derivative. Built on the advanced Carnegie Mellon Mach foundation, Mach™ is AT&T licensed, Berkeley 4.3 BSD UNIX that runs on the Classic to the Quadra! Mach™'s strength lies in the way it merges the Macintosh and UNIX environments. In addition to its UNIX capabilities, Mach™ is System 7 compatible, so you can still enjoy all of the easy-to-use word processing, spreadsheet, design and desk accessory applications that make the Macintosh one of the most personal computers around. You can use Macintosh programs and utilities on UNIX data and UNIX commands and utilities on Macintosh files. An example of this would be using the Macintosh "Find" command to find files or using grep to find an ASCII string in an MS Word file.

Full software development capability. The development system includes the GNU C compiler, debugger, assembler and libraries to let you create new applications or port existing ones.

Full X Window client and server. Mach™ implements the complete X11. Turn every Macintosh on your network into an open system. You get full Internet TELNET support.

For more information, or to order call 1-800-4-MACH-10.

New Dimensions in Personal Workstation Technology

1123 Chapala Street, Santa Barbara, CA 93101
Tel. 805-963-6983 Fax: 1-805-962-8202 Internet: info@tenon.com

CIRCLE 190 ON READER SERVICE CARD

Photo CD’s are the easiest, least expensive way of bringing great looking photographs into your desktop publishing applications. All you need is a CD ROM drive and pictures taken on any 35mm, 120, or 4” x 5” transparency or negative film. We do the rest... scanning and digitizing your photo images into high resolution files (16-63MB) on Kodak compact discs.

Prices start at less than $1 per scan.

For Free Information Call (800) 327-1776

CIRCLE 192 ON READER SERVICE CARD
$8.50/MEG = YOUR MEMORY - CONVERSION = $8.50/MEG
AUTOtime introduces cost-effective MEMORY SOLUTIONS for DIP, ZIP and SMT.

Choose your Format
Use chips from any system.

NEW POWER PC MEMORY

LIFETIME GUARANTEE

MAC MEMORY, FOR LOWEST PRICES

POWER BOOK

PROVIDE BOOK

VRAM

1-800-662-SIMMM (7466)

We Accept MC, VISA & DISCOVER,
UNIVERSITY, GOVERNMENT AND CORPORATE P.O.'S WITH APPROVED CREDIT

ALL PRINTER MEMORY

VRAM

256K VRAM, 512K VRAM

4 & 8 BIT VRAM SETS

1MB VIDEO ZIPS

256K DIPS, 1MB DIPS

DATA MEMORY SYSTEMS INC.

15 UNION ST. LAWRENCE, MA 01840

TEL. 508-683-2325 SERVING THE INDUSTRY SINCE 1963 FAX 508-975-5232

MEMORY TRADERS

WE BUY USED MEMORY

ANY QUANTITY - ANY SPEED

WORKING OR BROKEN

256K POWERBOOK 2MB-10MB

512K VRAM IIFX SIMMS

1MB CALL FOR NEW MEMORY PRICING

2MB

8MB

4MB

16MB

MEMOR YB OOTH SIMMS

32MB

WE SELL NEW MEMORY

TRADE IN FOR NEW SIMMS

800-315-7807

7213 Arlington Road, Suite 202

Bethesda, MD. 20814

Phone 301-215-7807

FAX 301-907-7842

208 MacUser / SEPIEMBER 1994
PERIPHERAL 800 256-6581

Call now! We have all sizes of memory for the new Blackbird PowerBooks!

Standard SIMMs

- 1 Megabyte: $35.00
- 2 Megabytes: $75.00
- 4 Megabytes: $140.00
- 8 Megabytes: $309.00
- 16 Megabytes: $569.00

Video RAM

- 4 Bit to 8 Bit Upgrade (Mac II/IV cards): $24.00
- 256K Video RAM for LC II/III, Performa: $18.00
- 256K Video RAM for LC II/III, Performa: $18.00
- 512K Video RAM for LC II/III, LC IV, LC II, DuoDock, and Performa: $36.00

68882 FPU Boards

- 25 MHz for Macintosh LC: $55.00
- 20 MHz w/ 2 slots for Mac IIfx: $119.00
- 25 MHz for Mac Classic II: $55.00

Cache Cards, Etc.

- 128K Cache Card for LC II/III and Performa 450: $159.00
- 128K Cache Card for LC II/III and Performa 450: $159.00
- 64K Cache Card for LC II/III and Performa 450: $125.00
- 64K Cache Card for LC II/III and Performa 450: $125.00

Math Coprocessors

- 68851 16MHz PMMU: $89.00
- 68851 16MHz PMMU: $89.00

Miscellaneous

- LaserWriter Pro 810 4 MB Upgrade: $275.00
- LaserWriter Pro 810 8 MB Upgrade: $499.00
- PowerBook Duo 20 MB/28 MB Modules: $949.00
- LaserWriter 320 2 MB & 6 MB Upgrades: $275.00

SavE MONEY! Peripheral Outlet will buy back your old memory at great prices! Call for details.

NEW PRODUCTS!

- LaserWriter Pro 810 4 MB Upgrade board: $275.00
- LaserWriter Pro 810 8 MB Upgrade board: $499.00
- PowerBook Duo 20 MB/28 MB Modules: $949.00
- LaserWriter 320 2 MB & 6 MB Upgrades: $275.00

Prices Changing Daily - Call for Best Prices!

PowerBook Memory

- 4 Megabyte
- 8 Megabyte
- 16 MB-Non Composite
- 32 MB-Non Composite

$45.00

LaserWriter Pro 810 8 MB Upgrade: $499.00

PowerBook Duo 20 MB/28 MB Modules: $949.00

LaserWriter 320 2 MB & 6 MB Upgrades: $275.00

Due to volatility in the market all prices and availability are subject to change without notice.

PERIPHERAL OUTLET, Inc.
327 East 14th, PO Box 2329 • Ada, Oklahoma 74820
405/332-6581 FAX 405/436-2245 • AppleLink PERIPHERAL
HOURS: Monday-Thursday 7AM-7PM CST, Friday 7AM-6PM
COME SEE US AT MACWORLD EXPO IN BOSTON!

CIRCLE 228 ON READER SERVICE CARD

SEPTEMBER 1994 / MacUser 209
**ACCELERATORS**

DOUBLE THE SPEED OF YOUR QUADRA 610 OR CENTRIS 610!

$249

40MHz 68040 Centris 610 $249/$339
50MHz 68040 Quadra 610 $399

Mobius Speedster 25MHz $389/$489
33MHz w/128K cache $499/$589
40MHz w/128K cache $689

25MHz: 030 Mac SE $129/$178
25MHz: 020/060/160/260 Mac IIc $99
25MHz: 030/060/160/260 Mac LC $129
33MHz: 030 Mac II, Ix $188

**FPU**

68040-25PFU for Quadra 605/610, Centris 610, LC 475 $249
68040-33PFU for LC 575/63X, Performa 57X, 63X $299

(*with 68040 trade-in*)

68882 FPU LC-1-III, Duo, etc. $39-49
Dual PDS w/68882 Mac Iil $169
MailusAdapter w/68882Mac Iil $139
68851 PMH/i with Mode 32 Mac II $99

**MEMORY**

4/8/16/32MB-70ns S145/293/599/1395
1x8-128/256/512/1024 $39/77/143/289
4x8-80ns S143/289/579/1195
256K/512K/1024/2048 $149/293/599/1195

Apple Cache Cord Mac IIci S49
VRAM 256K/512K/1024 $51/99/199
Apple Cache Cord Mac Iil $49

MEMBER BETTER BUSINESS BUREAU

Since 1986

ALL PRODUCTS ARE MANUFACTURED IN THE U.S.A.

CALL FOR UPDATED LOW PRICES AND NEW PRODUCTS

(415) 323-6059 (from CA) 714-261-2800

VISAC J/MC/AMEX with 68040 trade-in

One year warranty on all products.
Apple’s First All-in-One 040
New Mac LC 575
$1,699.00

Includes:
- 6MB RAM/160MB Hard Drive
- Internal Apple 30P Plus CD Drive
- Macintosh Color Trinitron 14"
- IBM VGA Monitor (32/64 Colors)
- 50MHz 68LC040/25-R Fast Bus

NEW Mac IIvx 4/0
(Factory Refurbished)
PowerPC Upgradable!!
> $699.00

NEW LaserWriter Select 310
(Postscript, 300 dpi, 5 ppm)
> $499.00

NEW Apple 16”
Color Monitor
> $799.00

SUPER DEALS!
- NEW MS Office - $149.00
- Apple’s First All-in-One 040 - $699.00
- PowerPC Upgradeable!!

CALL FOR LATEST
UPDATED PRICING!!

WE WANT TO BUY YOUR NEW/USED MAC EQUIPMENT

CALL THE MAC EXPERTS!
You won’t find anyone with more Macintosh expertise than the experienced consultants at PowerMax. Give us a call today for a competitive quote and expert advice. Make our knowledge your power!

Mac CPUs & Powerbooks

Display, Printers & Scanners

Software and Hard Drives

Quadra 610 Intro System
Includes:
- 8MB RAM/160MB Hard Drive
- Internal Apple 30P Plus CD Drive
- Macintosh Color Trinitron 14"
- IBM VGA Monitor (32/64 Colors)
- 50MHz 68LC040/25-R Fast Bus

Quadra 840AV Desktop Video System
This complete system includes: 40-negatives film, one graphics superfast hard drive, internal Apple Color Drive, extended keyboard, 17” Trinitron Display, PLUS our incredible Power Warranty Package!!

$1549 or $544/mo*  
$1549 or $544/mo*  

CALL 800-844-3599
24 hour fax line:
1-503-232-7101

Discount Mac Rentals!
- DAILY - WEEKLY - MONTHLY
- MAC • IBM • COMPAQ
- LASERS • PERIPHERALS
- GUARANTEED LOWEST RATES!

RENTX
(800) 545-2313
“We’re in the NYNEX Yellow Pages”

WE WANT TO BUY YOUR NEW/USED MAC EQUIPMENT

1-800-729-7031

POWERBOOK

NEW Mac IIcs 5/160
$699.00

NEW 5/80
$879.00

NEW Mac LC II 4/80
$499.00

NEW Mac LC 520 4/80
$1,299.99

New LaserWriter II Engine
$599.00

New Personal LaserWriter LS
$399.00

New Extended Keyboard
$89.00

New Apple PC 5 1/4”
Floppy Drive
$15.00

New Ext. Hard Drive Enclosures
$69.00

New Power Mac’s + Duo’s
In Stock

WE STOCK THE LATEST MODELS!

Prices listed may not be current market values...
Prices represent a Cash Discount - off Full Price.
Returns at discretion of Mgmt/15% Restocking fee.

CIRCLE 233 ON READER SERVICE CARD

CIRCLE 234 ON READER SERVICE CARD

CIRCLE 235 ON READER SERVICE CARD

CIRCLE 236 ON READER SERVICE CARD

CIRCLE 237 ON READER SERVICE CARD
## Power Macs 8100, 80MHz

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8MB/400MB HD</td>
<td>$3499</td>
</tr>
<tr>
<td>16MB/1Gig HD/Apple CD</td>
<td>$4799</td>
</tr>
<tr>
<td>40MB/1Gig/Syquest 200MB/Ext. key</td>
<td>$5799</td>
</tr>
<tr>
<td>136MB/2.4Gig/SuperMac Press View 21/CD</td>
<td>$1297</td>
</tr>
</tbody>
</table>

24 bit Color with Display Resolution of 1152 x 870

### Power Macs 7100, 66MHz

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8MB/250MB HD</td>
<td>$2999</td>
</tr>
<tr>
<td>16MB/500MB HD/Apple CD</td>
<td>$3499</td>
</tr>
<tr>
<td>24MB/1Gig/Syquest 88c/Ext. key</td>
<td>$4177</td>
</tr>
<tr>
<td>40MB/1Gig/Sony 17SE/Apple CD/2mb Vram</td>
<td>$5699</td>
</tr>
</tbody>
</table>

16 bit color with Display Resolution of 832x624

### Power Macs 6100, 60MHz

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8MB/160MB HD/Apple CD</td>
<td>$1895</td>
</tr>
<tr>
<td>16MB/500MB HD/Apple CD</td>
<td>$2566</td>
</tr>
<tr>
<td>8MB/160HD/Apple Color Plus &amp; CD/Ext. key</td>
<td>$2222</td>
</tr>
</tbody>
</table>

### PowerBooks 520/520C

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4MB/160MB HD</td>
<td>$2127/2718</td>
</tr>
<tr>
<td>8MB/240/19.2 Modem</td>
<td>$2988/3539</td>
</tr>
</tbody>
</table>

PowerBooks 540/540C

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>12MB/240MB HD</td>
<td>$3347/4735</td>
</tr>
<tr>
<td>12MB/240/19.2 Modem</td>
<td>$3572/4960</td>
</tr>
<tr>
<td>24MB/240MB HD</td>
<td>$3915/5195</td>
</tr>
<tr>
<td>24MB/240/19.2 Modem</td>
<td>$4427/5803</td>
</tr>
<tr>
<td>20MB/130MB HD</td>
<td>$3295/4122</td>
</tr>
<tr>
<td>20MB/130/19.2 Modem</td>
<td>$3689/4427</td>
</tr>
</tbody>
</table>

### PowerBooks 520/520C

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>4MB/160MB HD</td>
<td>$895</td>
</tr>
<tr>
<td>8MB/240/19.2 Modem</td>
<td>$1127</td>
</tr>
<tr>
<td>12MB/240/19.2 Modem</td>
<td>$1219</td>
</tr>
</tbody>
</table>

### Apple Printers

Select 310/320/360 .. $799/895/1499

Stylewriter II/Color .. $299/595

### Apple Monitors, Keyboards

20"/17" Multiscan .. $1877/888

14"/16" Color Display .. $399/799

### Quadra 840AV

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8MB/230MB/CD</td>
<td>$2459</td>
</tr>
<tr>
<td>16MB/500/CD</td>
<td>$3395</td>
</tr>
<tr>
<td>24MB/1GB/CD</td>
<td>$3845</td>
</tr>
</tbody>
</table>

### Quadra 650/660AV

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8MB/230MB/CD</td>
<td>$2222/1615</td>
</tr>
<tr>
<td>16MB/500/CD</td>
<td>$2722/2119</td>
</tr>
<tr>
<td>24MB/1GB/CD</td>
<td>$3199/2599</td>
</tr>
</tbody>
</table>

### Apple Color Plus/Extended Key

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>14&quot;AV/14&quot; plus</td>
<td>$659/309</td>
</tr>
<tr>
<td>Standard/Extended key</td>
<td>$89/169</td>
</tr>
</tbody>
</table>

### Quadra 950

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8MB/230MB/CD</td>
<td>$3395</td>
</tr>
<tr>
<td>72MB/1GB/CD</td>
<td>$5999</td>
</tr>
<tr>
<td>128MB/1GB/CD</td>
<td>$8222</td>
</tr>
</tbody>
</table>

### Quadra 610/605

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>8MB/230MB/CD</td>
<td>$1648/1295</td>
</tr>
<tr>
<td>Quadra 605, 8MB/230/Apple 14&quot; Color Plus/Extended Key</td>
<td>$1566</td>
</tr>
</tbody>
</table>

### Apple PowerPC 540 Upgrade Products

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>940/1260/1200SE .. $872/1137/2513</td>
<td></td>
</tr>
<tr>
<td>ARTZ-Z 6X8 w/fractal Painter</td>
<td>$499</td>
</tr>
<tr>
<td>ARTZ-Z 6X8</td>
<td>$289</td>
</tr>
<tr>
<td>12X12 UD</td>
<td>$289</td>
</tr>
<tr>
<td>12X18 UD</td>
<td>$766</td>
</tr>
</tbody>
</table>

### NewGen Imager Plus

6L/6L W/Ethernet .. $369/3995

### SONY Tape Back-Up

2-4 GB DDS 338 KB/Sac .. $959

4-6 GB DDS 732 KB/Sac .. $1079
COMMUNICATIONS

SOMETHING FOR NOTHING

FREE CATALOG OF USED MACINTOSH COMPUTERS AND PERIPHERALS

While Macintosh systems come and go, we just keep on doing what we do best. We've been refurbishing and selling used computers for 11 years. Your satisfaction is guaranteed with us!

CALL ANYTIME!
1-800-890-0999
J-J-H: 7-885-9999
PS 105,3152
Logan, UT 84034-3580
International: (801) 7-885-9999
(801) 7-885-9999
Fax: (801) 755-6111

SUPERMAG

OVER 18,000 PRODUCTS TO CHOOSE FROM!

COMPUTER PROS
1-800-329-4MA (4622)

SE Habla Español (303) 825-9574 • Free Shipping on orders over $500

POWERBOOKS

MacUser / SEPTEMBER 1994 214

CIRCLE 241 ON READER SERVICE CARD
### MacAttack

**(800) 299-MACS**(800) 299-6227
409.690.5353 (Fax) 409.690.5345 (Intl. Sales)
Contact Us Via Internet! MSAales@aol.com

**We Attack High Prices!!**
Prices subject to change — please call for latest pricing. We carry hundreds of items — call for availability. Your satisfaction is our goal. Prices are C.O.D. subject to change. International Center and fax orders welcome.

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MacPro</strong></td>
<td><strong>$290</strong></td>
</tr>
<tr>
<td><strong>PowerBooks</strong></td>
<td><strong>$329</strong></td>
</tr>
<tr>
<td><strong>Scanners</strong></td>
<td><strong>$800</strong></td>
</tr>
<tr>
<td><strong>CDs</strong></td>
<td><strong>$335/223</strong></td>
</tr>
<tr>
<td><strong>Monitors</strong></td>
<td><strong>$470</strong></td>
</tr>
</tbody>
</table>

**Lowest Prices Guaranteed**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Macs</td>
<td><strong>$290</strong></td>
</tr>
<tr>
<td>PowerBooks</td>
<td><strong>$329</strong></td>
</tr>
<tr>
<td>Scanners</td>
<td><strong>$800</strong></td>
</tr>
<tr>
<td>CDs</td>
<td><strong>$335/223</strong></td>
</tr>
<tr>
<td>Monitors</td>
<td><strong>$470</strong></td>
</tr>
</tbody>
</table>

**Contact Us Via Internet!**
MASales@aol.com

**Phone:** (818) 505-8991 **Fax:** (818) 505-8992

**Apple**

**MacPro**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Printers**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Monitors**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**UPS**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Apple**

**MacPro**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Printers**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Monitors**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**UPS**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Apple**

**MacPro**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Printers**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Monitors**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**UPS**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Apple**

**MacPro**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Printers**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Monitors**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**UPS**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Apple**

**MacPro**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Printers**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Monitors**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**UPS**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Apple**

**MacPro**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Printers**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**Monitors**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897

**UPS**

- 8100 AV 26/1200 CD $2900
- 8100 32/1000 $3290
- 7100 8/500 CD $1997
- 8100 16/500/DO $2897
<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price 1</th>
<th>Price 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SuperMac 20&quot; Color</strong></td>
<td>STD9782 1024x768 .28 dp</td>
<td>$969</td>
<td></td>
</tr>
<tr>
<td><strong>SuperMac 17&quot; Color</strong></td>
<td>STD9790 1024x768 .28 dp</td>
<td>$549</td>
<td></td>
</tr>
<tr>
<td><strong>E-Machine E-20</strong></td>
<td></td>
<td>$849</td>
<td></td>
</tr>
<tr>
<td><strong>Apple PowerBook Black Bird Memory</strong></td>
<td>4/8/1632MB _ $209/389/769/1499</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IBM ThinkPad 750C 4/340</strong></td>
<td></td>
<td>$589</td>
<td></td>
</tr>
<tr>
<td><strong>IBM ThinkPad 750CS 4/340</strong></td>
<td></td>
<td>$385</td>
<td></td>
</tr>
<tr>
<td><strong>COMPAQ Contura 4/25 M.120</strong></td>
<td></td>
<td>$499</td>
<td></td>
</tr>
<tr>
<td><strong>COMPAQ Contura 3/25 M.120</strong></td>
<td></td>
<td>$779</td>
<td></td>
</tr>
<tr>
<td><strong>TOSHIBA 1950CT 320HD</strong></td>
<td></td>
<td>$279</td>
<td></td>
</tr>
<tr>
<td><strong>PowerMac 6100</strong></td>
<td>8-160/250/500 _ 183/179/1944</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PowerMac 7100</strong></td>
<td>8-160/250/500 _ 279/279/329</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PowerMac 8000</strong></td>
<td>8-230/3/5GB _ 195/199/239</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PowerBook</strong></td>
<td>Proprint 300/240 _ 49/50/69</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Printers</strong></td>
<td>Apple Color 16/20/24 W/CD _ 2069/2469/3469</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Monitors</strong></td>
<td>Dell Color 16/20/24 W/CD _ 2069/2469/3469</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SALES** (818)787-3282  
**FAX** (818)787-5555

All prices reflect C.O.D. orders only.  Prices are subject to change without notice.
**DIGITAL VIDEO & ANIMATION SYSTEMS**

APPLE • ASDG • AVID • ELECTRIC IMAGE • FWB • RADIUS
SPECULAR • STRATA • YARC • OTHERS

We sell only the best quality, highest
performance products from the most respected manufacturers in the business.

Call for our latest prices on complete
systems, drives, monitors, video cards,
printers, scanners, memory, and software.

---

**DGS**

DIGITAL GRAPHICS SYSTEMS
Cutting Edge Macintosh Computer Systems

800-273-2DGS

---

**Creating precision bar codes is as easy as using a font!**

**PRINTBAR™**

**BAR CODE FONTS**

- Compatible with virtually any
  Macintosh application.
- Choose from: UPC/EAN/ISBN
- Code 39 Interleaved 2 of 5
- POSTNET/FIM
- 90-day money back guarantee.

---

**Bar Code Fonts**

- 60 PostScript Type 1 Bar Code Fonts
- Laser, Electromagnetic or Dot Matrix
- Use in any program with a font menu
- Code 39, UPC/EAN, Code 128, 12 of 5, UPC Container, & PostNet with FIMs
- Not HyperCard Dependent
- Simple, Easy-to-Use, Plug & Play
- Includes our Sequence™ DA
- Generate film masters in Quark, etc.
- $199 includes our DA & All Fonts

---

**WORTHINGTON**

DATA SOLUTIONS

Bar Code Readers
For Mac or PC. Connects between keyboard and
computer. Works with any software package. All major
bar codes supported.

Wand Reader $255

---

**Scanning bar codes is even easier!**

**CODESCAN 3000™**

**BAR CODE READER**

- Comes complete with wand
  and 5 year warranty.
- Scans information directly
  into any software application.
- Available with laser gun, CCD,
  barcode slot, magstrip options.
- No software required.
  Ready to use in minutes!!
  Money back guarantee.

800 232-7625
**Micro Access** 1-800-429-0777

**3D DAY GUARANTEE**

**FREE FWB HARO DISK DRIVE PURCHASE!**

**EXTERNAL HARD DRIVES**

<table>
<thead>
<tr>
<th>PN</th>
<th>Capacity</th>
<th>MFR. Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-170 E</td>
<td>170MB Quantum</td>
<td>14ms $249</td>
</tr>
<tr>
<td>MA-270 E</td>
<td>270MB Quantum</td>
<td>11ms $299</td>
</tr>
<tr>
<td>MA-340 E</td>
<td>340MB Quantum</td>
<td>11ms $349</td>
</tr>
<tr>
<td>MA-540 E</td>
<td>540MB Quantum</td>
<td>10ms $449</td>
</tr>
<tr>
<td>MA-1080 E</td>
<td>1080MB Quantum</td>
<td>9.5ms $789</td>
</tr>
<tr>
<td>MA-1440 E</td>
<td>1440MB Quantum</td>
<td>10ms $1289</td>
</tr>
</tbody>
</table>

External Hard Drives include SCSI cable, AC power cord, external terminator, FWB Hard Disk Toolkit and come preformatted and loaded with Apple's System 7.1 software.

**INTERNAL HARD DRIVES**

<table>
<thead>
<tr>
<th>PN</th>
<th>Capacity</th>
<th>MFR. Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-1701</td>
<td>170MB Quantum</td>
<td>14ms $189</td>
</tr>
<tr>
<td>MA-2701</td>
<td>270MB Quantum</td>
<td>11ms $239</td>
</tr>
<tr>
<td>MA-3401</td>
<td>340MB Quantum</td>
<td>11ms $289</td>
</tr>
<tr>
<td>MA-5401</td>
<td>540MB Quantum</td>
<td>10ms $389</td>
</tr>
<tr>
<td>MA-10801</td>
<td>1080MB Quantum</td>
<td>5ms $729</td>
</tr>
<tr>
<td>MA-14401</td>
<td>1440MB Quantum</td>
<td>10ms $999</td>
</tr>
<tr>
<td>MA-21001</td>
<td>2100MB Quantum</td>
<td>10ms $1229</td>
</tr>
</tbody>
</table>

Includes: Bracket, SCSI cable, power cable, FWB Hard Disk Toolkit and comes preloaded with Apple's System 7.1 software.

**POWERBOOK INTERNAL DRIVES**

<table>
<thead>
<tr>
<th>PN</th>
<th>Capacity</th>
<th>MFR. Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-170 P</td>
<td>160MB PowerBook</td>
<td>$255</td>
</tr>
<tr>
<td>MA-213 P</td>
<td>202MB PowerBook</td>
<td>$312</td>
</tr>
<tr>
<td>MA-256 P</td>
<td>250MB PowerBook</td>
<td>$319</td>
</tr>
<tr>
<td>MA-340 P</td>
<td>324MB PowerBook</td>
<td>$499</td>
</tr>
<tr>
<td>MA-520 P</td>
<td>500MB PowerBook</td>
<td>$649</td>
</tr>
</tbody>
</table>

Yes, all our Powerbook drives are preformatted, 100% tested and come preloaded with Apple's System 7.1 software.

**PORTABLE DRIVES**

<table>
<thead>
<tr>
<th>PN</th>
<th>Capacity</th>
<th>MFR. Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-170 P</td>
<td>160MB Portable</td>
<td>$325</td>
</tr>
<tr>
<td>MA-213 P</td>
<td>202MB Portable</td>
<td>$389</td>
</tr>
<tr>
<td>MA-256 P</td>
<td>250MB Portable</td>
<td>$399</td>
</tr>
<tr>
<td>MA-340 P</td>
<td>324MB Portable</td>
<td>$569</td>
</tr>
<tr>
<td>MA-520 P</td>
<td>500MB Portable</td>
<td>$719</td>
</tr>
</tbody>
</table>

-Free FWB Hard Disk Tool Kit Included with Any Hard Disk Drive Purchase!

**EXTERNAL HD ENCLOSURES**

- 2.5" Hard Disk "Portable" Size $59
- 3.5" Hard Disk "Mini" w/40W PS $69
- 5.25" H/H "Zero Foot Print Size" $79
- 5.25" F/H "Zero Foot Print Size" $99

- 2.5" Hard Disk Enclosures include external SCSI and power cables. push button SCSI ID switch, universal power supply and mounting screws.

**MEMORY UPGRADES**

30 PIN SIMMS

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>1MB x 8</td>
<td>70ns $450</td>
</tr>
<tr>
<td>2MB x 8</td>
<td>70ns $700</td>
</tr>
<tr>
<td>4MB x 8</td>
<td>70ns $1010</td>
</tr>
<tr>
<td>10MB x 8</td>
<td>70ns $4810</td>
</tr>
</tbody>
</table>

**FORMATTED CARTRIDGES**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.25&quot; Cartridge</td>
<td>$399</td>
</tr>
<tr>
<td>8MB Cartridge</td>
<td>$159</td>
</tr>
<tr>
<td>16MB Cartridge</td>
<td>$219</td>
</tr>
<tr>
<td>32MB Cartridge</td>
<td>$399</td>
</tr>
</tbody>
</table>

**POWERBOOK MEMORY**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>128MB</td>
<td>$154</td>
</tr>
<tr>
<td>256MB</td>
<td>$192</td>
</tr>
<tr>
<td>512MB</td>
<td>$230</td>
</tr>
<tr>
<td>1GB</td>
<td>$268</td>
</tr>
</tbody>
</table>

**QUALITY CABLES**

<table>
<thead>
<tr>
<th>Description</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>C25/50</td>
<td>25-pin to 50-pin SAS Cable</td>
</tr>
<tr>
<td>CS5050</td>
<td>50-pin to 50-pin SAS Cable</td>
</tr>
<tr>
<td>C45355</td>
<td>Powerbook to 25-pin SAS Cable</td>
</tr>
<tr>
<td>CBP550</td>
<td>Powerbook to 50-pin SAS Cable</td>
</tr>
<tr>
<td>CB505</td>
<td>SC+ Termination, 50-pin</td>
</tr>
<tr>
<td>CNET08</td>
<td>PhoneTalk Serial Adapter, 8-pin</td>
</tr>
<tr>
<td>CACU</td>
<td>AC Power Cable, US</td>
</tr>
</tbody>
</table>

**WE GLADLY ACCEPT**

Visa, MasterCard, Discover, American Express

With No Surcharge!

**Micro Access**

21 Morgan, Suite 100, Irvine, CA 92718

INTERNATIONAL: (714) 452-0630

24 hour FAX: (714) 452-0635

Prices and product availability subject to change without notice. Not responsible for typographical errors. University and corporate PO's accepted. All returned product must have RMA authorization number, subject to 15% re-stocking fee. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. All brand names and product names are trademarks or registered trademarks of their respective owners.

220 MacUser / SEPTEMBER 1994
• Award-winning Stock Photos on CD-ROM for Mac or PC. Outsell all others.
• Model and photo released for immediate use.
• High-resolution, color-corrected for CMYK separation or B & W output.
• Indexed printed catalogs.
• Over 3,800 images available currently with new volumes released every quarter.

Call for a Starter Kit only $49 or an Information Kit, absolutely free.
See us at MacWorld Expo Booth # 5826

T (800) 528-3472
F (206) 441-9379

PHOTODISC

CD's Next to Wholesale!

Crothers Encyclopedia 6.0 $45.00
Guinness Disc Records '93 $23.00
Iron Helix .......... $55.00
Lucas Game Pack ... $20.00
H tollab ............ $49.00
Journeyman Project $45.00
Moyo Clinic ....... $24.00
MYST ............ $39.00
Publish It 2.0 ....... $19.00
Quicktoons ......... $17.00
Rebel Assault .... $39.00
Seventh Guest ...... $49.00
Sherlock Holmes Cont. Dest. $23.00
Space Shuttle .... $23.00
Storytime ......... $19.00
Timetable/Science .... $19.00
Trade Opportunity .... $22.00
Wayzata World Factbook .... $19.00

Call for Free Catalog!

CD-RACEWAY CD
1-800-240-0055

CIRCLE 245 ON READER SERVICE CARD

Microsoft Office 3.0
(FREE upgrade to 4.0)

only: $419.00
3/1399.00

PageMaker 5.0

only: $469.00

PAGE COMPUTER
(800) 886-0055

Software Up To 80% Off
(Students-Teachers-Schools)

QuarkExpress 3.3 $249
Photoshop 2.5.1 269
AutoCAD R12/AME199

PageMaker 5.0 $249
Strata Studio Pro 1 495
Director 4.0 598
Premiere 3.0 249
Illustrator 5.5 199

WordPerfect 3.0a 99

MiniCAD +5 250
FileMaker Pro 2.1 149
Claris Works 2.1 149

MS Word 5.1 99

MS Excel 4.0 129

Multi user, School PDSAgreement

Orders (800) 377-9943 V/MC/MO
SOFTWARE PLUS Academy Inc.

CIRCLE 246 ON READER SERVICE CARD

CIRCLE 250 ON READER SERVICE CARD

CIRCLE 265 ON READER SERVICE CARD

CIRCLE 266 ON READER SERVICE CARD

CIRCLE 267 ON READER SERVICE CARD

CIRCLE 268 ON READER SERVICE CARD

CIRCLE 269 ON READER SERVICE CARD

SEPTEMBER 1994 / MacUser 221
We'll beat any advertised price on CD-ROM products (some restrictions apply). FREE Express 2-day shipping on the CD-ROM titles below marked with "-f".

OVER 750 TITLES IN STOCK! FREE EXPRESS SHIPPING!

**EQUIPMENT & BUSINESS**

**Multimedia Encyclopedias**
- *Dinosaurs*... $49.95
- *Life*... $64.95

**ZooGuides Series**
- "a series of beautiful interactive zoo discs." — MacUser Magazine
  Each volume includes video, expert narration, animation, photos, maps, and a guide to families & species.

**Small Blue Planet: The Real Picture Atlas #2090, $69.95**
- "One of the 5 Best Discs of '93" — MacUser Magazine
  Small Blue Planet integrates a collection of maps with striking images of how satellites see our planet. This interactive exploration is a global geography voyage. Features maps and images located within world maps. Includes the Chronosphere World Map and Times Globe, 106 of satellite images from the NASA Space Shuttle and much more.
  Published by NowWhat? Software

**Japanese for Everyone 2.0 #1605, $279.95**
- "the hands down winner...certainly the best of the Japanese language learning CD-ROM programs available." — MacUser Magazine
  The fastest way to competently speak Japanese. An exciting interactive approach that teaches the same way you learned your first language, through repetitive hearing and speaking. Focus is on the basic patterns of spoken Japanese and situationally based dialogues with sound and animation. A complete 120 hour program.
  Published by Better Consulting

**EcoDisc #1355, $249.95**
- Choose to fly or walk through a simulation of a real life reserve in summer and winter. Interactively explore, observe, and collect information on different plant and animal species. Consult experts, view data projections, and manage the reserve. This is an ideal simulation for 14 to 18 year-olds studying our earth's ecology and environmental problem solving. Multilingual: English, German, Danish, Spanish, French, Italian, Norwegian, Dutch and Swedish.
  Published by the British Broadcasting Company

**ENTERTAIN/GAMES**

**Adventures of Pinocchio #2040, $37.95**
- Carlo Collodi's classic tale of the little wooden boy with a lot of heart comes to life. Illustrations, narration, and more.

**Time Traveler #1853, $48.95**
- A multimedia chronicle of history, culture, and travel through 6,000 years and learn about five geographical areas.

**Cooking to Seduce #50420, $27.95**
- Enjoy an innovative multimedia experience in cooking and entertaining. Choose from eight evening themes with tantalizing menus and complete recipes. Print menus, recipes and shopping lists. Before dinner, set the mood with a selection from eight video clips and 40 voice comments on decor, music, movie and gift ideas. Listen to a musical background distinctive to each theme. This innovative approach to dining and entertaining is a feast for your senses.

**KIDS EDUCATION**

**Japanese for Everyone 2.0 #1605, $279.95**
- "the hands down winner...certainly the best of the Japanese language learning CD-ROM programs available." — MacUser Magazine
  The fastest way to competently speak Japanese. An exciting interactive approach that teaches the same way you learned your first language, through repetitive hearing and speaking. Focus is on the basic patterns of spoken Japanese and situationally based dialogues with sound and animation. A complete 120 hour program.
  Published by Better Consulting

**Wines & Spirits #50324, $52.95**
- "the hands down winner...certainly the best of the Wine & Spirits learning CD-ROM programs available." — MacUser Magazine
  The fastest way to competently speak Japanese. An exciting interactive approach that teaches the same way you learned your first language, through repetitive hearing and speaking. Focus is on the basic patterns of spoken Japanese and situationally based dialogues with sound and animation. A complete 120 hour program.
  Published by Better Consulting
FREE!

CD-ROM DRIVES/BUNDLES

3 Free CDs with drive / bundle!
Free Lun icus, Mister X and the EDUCORP CD Sampler with every drive or drive bundle purchase from EDUCORP.

CDROM DRIVES/BUNDLES

Lun icus - Animation enhanced comic book series.

Part# Drive ...... Alone Bundle
R1824 CD Tech ... $369.00 559.00
R503 Precom ...... 299.00 559.00
945 NEC 3x(e) .. 459.00 799.00
944 NEC 3x(p) .. 369.00 699.00
978 Prentor .... 1,295.00 1,499.00
5008 Prextor .... 425.00 649.00

Add an "A" in front of part of for the bundle.

Labtec CS-800 Speakers

#CS800, $37.95

3 1/2" high, full range speakers that are magnetically shielded for monitor, drive and disc protection. Power on-off button, volume control, treble and bass boost, plus a headphone jack for private listening. Includes AC/DC adapter (9v. 1000 mA. UL & CSA approved) and 3.5mm stereo plug. Available in platinum gray.

GAMES

Action! Aliens! Astronauts! #6B1, $79.95
3 award-winning CDs! You'll get Jump Raven "Eco-tamer with a gun", Lun icus "The King of CD-ROM Adventure" and Space Shuttle "Rated RRRRRR " on your Mac.

50135 7th Guest .... 59.95
50267 Chaos Continuum ... 29.95
50590 Critical Path ... 49.95
50149 Darkseed ....... 44.95
50450 Flying Nightmares ... 44.95
1611 Game Room + 1,000 games ... 29.95
1476 Hell Cab ....... 45.95

Midnight Stranger + #50316, $59.95
"This product should be in the Smithsonian Institution." - Glenn Collyer, San Francisco State University Winner of the 1993 Macworld Award (ADULTS ONLY)
Free headphones.

This is the first CD-ROM to incorporate Virtual Immersion! A strange night out in a grimy urban environment — a strange and wonderful place full of the unpredictable. Explore the limits of human emotion and experience thrilling new discoveries. Become part of the plot. Don't miss out on this interactive film experience.

More bundles available, call.

EDUCORP will BEAT ANY ADVERTISED PRICE

Desktop Publishing

Page Overtures One #50060, $74.95
Exquisite library of 160 high-res photographic backgrounds for print, multimedia, slide production or as premium graphic source material. Each image is saved as 24-bit color JPEG-PICT file, in 4 resolutions:
• High: 9x12 at 266 dpi (133-line screen)
• Low: 9x12 at 72 dpi (hi-res proxy)
• Slide: 875x1250 at 266 dpi
• Multimedia: 640 x 480 at 72 dpi. Includes a printed color catalog and electronic browser. Royalty-free.

Right Images #1385, $159.95
"The best and only comprehensive commercial collection..." — Publish Magazine
Stars, planets, asteroids, nebulae and shuttles. People react to these dramatic images. You'll get results with over 160 photographs saved in 24-bit and 8-bit color PICT and grayscale PICT. Use them in educational and commercial presentations, print brochures, advertisements, multimedia productions and much more. Includes browser catalog and Adobe Photoshop Tryout. Royalty-free.

MacUser 1-800-843-9497

4th Dimension Publishing

The Multimedia Pioneer

MACWORLD BOOTH #1312
EDUCORP 1-800-843-9497

UA27
Finally!

A Russian
Font that is:

Postal Script Type 1
System 7 Compatible
Bilingual
Crafted in Russia by
Russian Font Designers
Keyboard Translation Software
Keyboard Layouts Included
Compatible with most
Applications
Used by People all Around
the World

Get 100 Brushscript fonts for just $49.97

These artistic brush script fonts are so
unique that you'll never have to worry
about running out of just the right fonts
for your message. Just think of it, 100
brush script fonts at your finger tips,
with punch and "Wow" to your projects.
Imagefonts empower you to be an even
better visual communicator. This offer
will not last long! For fast service call
1-800-914-0009 today.

"If it hadn't been for
DriveSavers, our
information would
have been lost
forever." - S.S.,
Saratoga CA

As the only all-Mac data
recovery company, we've
saved more megabytes of
Mac data than anyone
else in the world. We're
certified by every Mac drive
manufacturer. Our propri­
etary techniques are so
advanced we can rescue
data others might simply abandon.
400 Bel Martin Keys Bl.
Novato, CA 94949
415-383-4233
Getting data and
peace of mind since 1989
1-800-440-1904

"Data Crash
We're Going Crazy!

CPR & RS has been
recognized in national
magazines for its data
recovery techniques and the
ability to repair SCSI drives
Computer Peripheral Repair & Recovery
Services, Inc.
314-49 University Rd., Suite 280
Reno, Nevada 89502
800-765-9292
487-324-3246
Reach those who count!

Advertise in MacUser and reach business buyers making Mac purchasing decisions. More than 8 in 10 MacUser subscribers are directly involved in their organizations’ decisions to acquire Macintosh computer products. In fact,

- 76% initiate purchases
- 75% are involved in brand selection
- 67% are involved in selecting the purchase source
- 40% authorize purchases.

For advertising information, call your MacUser Marketplace account representative today at 800-825-4237.

Source: MacUser 1993 Installed Base and Plan to Buy Study.
CD-ROM Collections
1-800-858-0311

**GREAT DEAL!!!**
ALL $99.95
Grolier Encyclopedia 1994 Version 6
World Atlas
US Atlas

**SUPER VALUE!!**
ALL $49.95
Funny
Great Business Jokes
The Orchestra
Word Tails

**SUPER SPECIAL**
ALL $99.95
The Animals!
Space Shuttle
Oceans Below
Desert Storm
The View From Earth

**BONUS!!!**
ANY 3
$49.95
ANY 6
$69.95
The Animals!, Oceans Below
Word Tales, The Orchestra
Great Business Jokes
Funny, Space Shuttle
The View from Earth
Desert Storm, Capitol Hill
Mac Prod. Reg.

**NEW MACHINE**
The Dream Machine..................$95
Interactive Adventures of S. Butts.....$49
Nightwatch Adult Interactive 1...........
Nightwatch Adult Interactive 2...........
Best of Dirty Debutantes "The Stars".......$49
Interactive Adult Movie Almanac...........
"A Taste of Erotica" Sampler..........
Seymore Butts..................$95
Interactive Adult Movie Almanac...........

Must be 21 or older to order Adult CD-ROMs

**FREE**
**New Lower Prices**

<table>
<thead>
<tr>
<th>Adult CD-ROM Title</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>BodyCello</td>
<td>$39.95</td>
</tr>
<tr>
<td>Girls with Girls</td>
<td>$39.95</td>
</tr>
<tr>
<td>Heavenly Bodies</td>
<td>$39.95</td>
</tr>
<tr>
<td>Midnight Stranger</td>
<td>$39.95</td>
</tr>
<tr>
<td>OverExposed</td>
<td>$39.95</td>
</tr>
<tr>
<td>Seymour Butts</td>
<td>$39.95</td>
</tr>
<tr>
<td>Penthouse Interactive</td>
<td>$39.95</td>
</tr>
</tbody>
</table>

**INTERACTIVE CD-ROMS**

Vampire's Kiss *new* Navigate through virtual 3D castle........ $59
The Barlow Affairs *new* Playing Flamenco Ten Weigh........ $39
Inferno *new* Playing Flamenco Ten Weigh........ $39
Virgins 1 & 2 *new* 25+ girls, choose from over 1000 chars........ $49
Dream Machine........ $54
Seymore Butts........ $54
Maddams Family* new* Adventure through 3D mansion........ $49

**DIGITAL ADULT MOVIES**

Baby's Got B. It Three lovely scenes of B., ab........ $25
Hidden Obsessions Perils of PeP' Jasmine Lindemuder........ $25

**PHOTO DISCS**

Elite American Girls Volumes 1 & 2: 250 photos of top nude American models in each volume........ $35
Elite European Girls Volumes 1 & 2: 250 photos of top nude European models in each volume........ $35
Adult Sampler CD........ $9.95

**SUPER SAVER BUNDLES!!**

Dream Bundle 3 CD-ROM Titles (Dream Machine, Baby's Got B. It, Inferno)........ $99
Vampire Bundle 3 CD-ROM Titles (Vampire's Kiss, Baby's Got B. It, Barlow Affairs)........ $99
Maddams Bundle 3 CD-ROM Titles (Maddams Family, Baby's Got B. It, Inferno)........ $99
Virgins Bundle 3 CD-ROM Titles (Virlng, Baby's Got B. It, Barlow Affairs)........ $99
Gorgeous Girls Bundle 3 CD-ROM Titles (Virlngs, Elite American & European Girls)........ $99

**CD Discount**

CKAO to: CD Discount
2115 Devonshire St. #304 Chatsworth, CA 91311
Domestic: $5.95 for shipping & handling.
Foreign: Must be 21 or older for shipping & handling.
Foreign orders: 818-772-6999
Fax orders: 818-773-8314

**VISA/MC ORDERS**

1-800-990-9077

**CALL FOR CATALOG**

CD-ROM Collections
1-800-858-0311

**FREE**
**BodyCello Color Catalog!**

Call, write or FAX for your free catalog!
Outside the U.S. and Canada send by 1st.

**MUST BE 21 OR OLDER TO ORDER**

CD-ROM Collections
1-800-858-0311

**SPOTLIGHT**

Maddams Family*..."others one of the better examples of how adult CD-ROMs arc interactive."

"CD-ROM Today Magazine June 94"
Let Us Blow Your Hardware!

TEN WHEELER • TRACI LORDS • SAVANNAH

Taylor Wayne • Bianca Trump • Ashlyn Gere • Tianna Taylor
Falco • Jeanne Fine • Zara White • Lulu Devine • Cherie Moore • Ashley Nicole
Selena Steele • Cassidy • Tracy West • Tranny Peaks • Crystal Storm
Deena Duos • Madison • Ashley Sinclair • Devon Shine • Randy Fox

PHOTO CD’S
952...Wicked (w/Kodak Access)..........................$69.88
961...Mark of Zoro............................................$49.88
962...Cat & Mouse............................................$49.88
965...Billie Holiday...........................................$49.88
966...Double Play I.............................................$49.88
967...Double Play II............................................$49.88

INTERACTIVE CD’S
963...Penthouse Interactive..................................$99.88
974...Adult Movie Almanac.................................$99.88
958...Seymore Butts II........................................$99.88
969...Scienna in Stones.......................................$99.88
970...Paradise Club Interactive.............................$99.88
959...Digital Sanction.........................................$99.88
950...Nightwatch Interactive................................$99.88
968...Dream Machine.........................................$99.88

MULTI-MEDIA MOVIES
976...The Other Side of Chelsea............................$99.88
977...Deception..................................................$99.88
960...Hidden Obsessions....................................$99.88
975...Beverly Hills 90269...................................$99.88
978...Murphie’s Brown........................................$99.88
979...The Fisherman’s Wife................................$99.88
954...Wicked.....................................................$99.88
955...Befroyal....................................................$99.88
956...Cal R. Moune.............................................$99.88
947...The House of Sleeping Beauties....................$99.88
960...Legends of Porn 2.....................................$99.88
972...Traci, I Love You........................................$99.88
981...New Wave H**kers....................................$99.88
982...Hidden Obsessions....................................$99.88

GUARANTEED LOWEST PRICE!
WE MATCH ANY ADVERTISED PRICE!!

PURCHASE ANY 4 CD-ROMS FOR ONLY $168!
Department 81, P.O. Box 4188, Deerfield Beach, FL 33442

CIRCLE 294 ON READER SERVICE CARD

*FREE ADULT CD-ROM SAMPLER
1-800-882-6959

Brand new, 94 sampler features 28 HOT adult demos, including Seymore Butts II.

Why pay retail?
We will beat any price
printed in this magazine
Call us LAST for:
• Lowest Prices
• Finest Quality
• Largest Selection
• Full Service
• Tech Support

LASER CONCEPTS
The first and still the best
20929-47 Ventura Blvd. #323
Woodland Hills CA 91364
Product info: (818)894-9437
$6.95 S&H - Must be 18+
Hours 10 - 6 Mon.-Fri. Pacific Standard

CIRCLE 295 ON READER SERVICE CARD

MISSION CONTROL
FREE SAMPLER
WITH ANY ORDER
OVER $999
(4% value)

New Machine $69 ea/3 For $179.
NightWatch Interactive II
You will make the rounds with your host, the lascivious PJ Sparx. If you make the right choices PJ might consider extending your stay.

The Dream Machine
The Dream Machine’s beautiful hostess will lead you on an interactive journey through your sexual imagination.

Adventures of Seymore Butts Part II
Seymore’s out looking to mate with the girls of his dreams and he requires your help. You will be able to navigate Seymore’s camera to some interesting places.

Dirty Debutantes $54. Legends of Porn II $24.
Nightwatch $44. New Wave H**kers $24.

Pixis Interactive $69 ea/2 $129.
Virtual Vixens
To save your friend from the evil Crystal, you must satisfy 3 beautiful women and solve the mystery of her strange, erotic existence. A Virtual Reality science fiction adventure with 3D animation and graphics combined with high quality live motion video and a virtual realistic interface.

NeuroDancer
Roam the NeuroNET by hacking into the forbidden worlds of dark mysteries, danger, and sexuality. Featuring 3D animation, interactive gameplay, TPUI Interface and live motion video.

Scissors’ N Stones $49./House of Sleeping Beauties or Buttman’s Euro Vacation Only $29 each! FOR $49!!
To Order: Mission Control • 7 Oak Place • MACO994 • Mountville, NJ 07042. MC, Visa, Discover, Checks & Money Orders. Checks held 14 days. Please Include Phone #/Shipping $5 UPS/$7 Two Day! Int’l Shipping $20 Minimum. Over 21 To Order.

CALL NOW FOR OUR DAILY SPECIALS
(800) 999-7995
Voice (213) 783-9690 • Fax (213) 783-3866 • Call Our FaxBack Line From Your Fax Machine 783-6374

HUSTLER
Online
The Best Reason Yet To Own A Modern
Introducing the premium adult bulletin board service. Hustler Online is an electronic library of Hustler Magazine’s vast archives including material that was never published. Hustler Online is extremely easy to use. In fact, you already know how to use it because you use the same interface you used to search for topics in Windows or Macintosh.
Our state of the art systems is continually updated with the highest quality, most provocative images and audio you’ve ever seen on your computer. We promise that you will only get the images you want, we’ve incorporated lighting that’s color sensitive.
To sign up simply set your communications software to B-8-N-1 and call (816) 472-4648
Or call (816) 472-4646 for a free color brochure

GOURMET
GALLERY
100% original gifts
thumbnails + closures
50 new pics/week
7 online cd-roms
16 lines (1200-14.4)
7 gig of files
$2.75/meg
no time limit
mc, visa, amex
408.956.5656
CIRCLE 299 ON READER SERVICE CARD

SEPTEMBER 1994 / MacUser 227
CD-ROM Mania

INTERACTIVES
- Doors of Passion $30.95
- Dungeon of DM $29.95
- Adult Movie Almanac $39.95
- The Dream Machine $29.95
- Adv. of Seymore $29.95
- Nightwatch $29.95
- Frat Girls of Double D $29.95
- The Last Girl Scout $29.95
- Exotica $29.95
- Virtual Vixens $29.95

ADULT MOVIES
- Extreme Delights $29.95
- Public Fantasies $29.95
- Digital Dancing $29.95
- House of Dreams $29.95
- Blonde Justice $29.84
- New VES $29.84

PHOTO DISCS
- Photos, That Keep $29.95
- N. Stephen Hicks $29.95
- Legends Of Porn $29.85
- New Wave H. $29.95
- Satiable $29.95

FREE GIFS!
Download some of the "Sexiest" images from our Adult On-Line Magazine - FREE!
LACE, which has been rated #1 by its users offers you:
- Positively the best Color Photographs & Scans in the World! GIF's not available on any other BBS!
- Video for Macintosh files. Watch our models come to life. They talk to you, entice you and show you why they enjoy Adult Modeling.
- GORGEOUS & Sexy Models both Amateur and Professional!
- LOCAL Access #s for over 800 cities in the U.S.
- HIGH SPEED Access available on ALL lines 14.4 down to 1200 baud. Set your modem to 8-N-1 and your terminal to ANSI and dial:
  (818) 709-4275
- LACE the on-line adult magazine
Questions? (818) 709-3795 (voice)
Adults Only • Limited Offer
CIRCLE 104 ON READER SERVICE CARD

ADULT CD's
INTERACTIVES
Winner Takes All (Game) $59
The Dream Machine $55
The Inter. Adv of Seymore $55
Interactive CD ROM Sampler $20
Nightwatch Interactive 1/2 $45
Interactive Electric Swing $39
Interactive Pethouse $39
Best of "Dirty Debutter" $47
The Maddam's Family $45
Digital Dancing (Game) $39
Interactive Adult Movie Almanac $55
Seymore Butt's "The Sequel" $55

PHOTO CD
Adult Palace Vol. 2 $39
American / Asian Palate $39
High Volume Nudes $39
The Girls of J. Stephen Hick $39
MANY MANY MORE TITLES TO CHOOSE FROM:
CALL FOR FAX LIST. Must be over 21 to purchase
(800) 761-1999
Tel: (310) 470-7099
Fax: (310) 470-8099

W.C.N.
COMPUTERS
大人の世界は、私たちの町で
BBS# 318-742-9193

CLASSIFIED
FOR ADULTS ONLY
Meet sexy singles/couples on the world's hottest adult chat system—Lifestyle BBS. Less than 30¢ per hour.
Log on: 516-689-5390
AND
GRAFIX
Computer pictures so hot they could melt your modem.
Log on: 516-689-2853
SUPER CHEAP • 100% PRIVATE
Local access from 500+ cities
SAN FRANCISCO'S PREMIER ADULT GAY MEN'S ONLINE SERVICE HAS NOW GONE NATIONWIDE!
- Local access from over 1,000 US cities!
- Live uncensored group & private chat!
- Online, interactive, multi-player games!
- Lively salon style public forums!
- Over 20,000 Adult rated GIF's & files!
- Matchmaker online databases!
- On-line, interactive, multi-player games!
- Ladies & Gents in Groups & Private!
- Shareware Files and Adult GIF's!
- Tons Of Sizzling Hot Message Areas,
- Local Numbers In Over 800 Cities!
- Shareware Files and Adult GIF's!
- Unlimted Conn. With One Call.
- Win The $15,000.00 Grand Prize!
- Shareware Files and Adult GIF's!
- FREE GIFS!
- Shareware Files and Adult GIF's!
- Unlimited Conn. With One Call.
- Local Numbers In Over 800 Cities!
- Shareware Files and Adult GIF's!
- Shareware Files and Adult GIF's!
- Unlimited Conn. With One Call.
- Local Numbers In Over 800 Cities!
- Shareware Files and Adult GIF's!
- Unlimited Conn. With One Call.
- Local Numbers In Over 800 Cities!
- Shareware Files and Adult GIF's!
- Unlimited Conn. With One Call.
- Local Numbers In Over 800 Cities!
- Shareware Files and Adult GIF's!
- Unlimited Conn. With One Call.
- Local Numbers In Over 800 Cities!
- Shareware Files and Adult GIF's!
- Unlimited Conn. With One Call.
- Local Numbers In Over 800 Cities!
- Shareware Files and Adult GIF's!
- Unlimited Conn. With One Call.
- Local Numbers In Over 800 Cities!
- Shareware Files and Adult GIF's!
- Unlimited Conn. With One Call.
- Local Numbers In Over 800 Cities!
- Shareware Files and Adult GIF's!
**HARDWARE/BATTERIES**

**COMPUTER BATTERIES & MORE**

For laptop/NB/PB, CMOS, camcorders, cameras, RC vehicles, toys, cordless phones/shavers, cellular phones, pet fences, UPS/LANS, Ni-Cads, chargers, etc. WE REBUILD! CALL & ASK! WHOLESALE! Visa/MC/AmX/PO #s.

**BATTERY EXPRESS**

304-428-2207
Phone: 1-800-656-2296 or 304-428-2296

**BOARDS/COMPONENTS/CHIPS**

**CAMERAS. RC VEHICLES. TOYS. CORDLESS PHONES/CORDLESS PHONES**

CALL & ASK/WHOLESALE! Visa/MC/AmX/PO #s.

**DRILLS/SHAVERS. CELLULAR. REMOTEs. PET GROOMING**

UPS/LANS, Ni·Cads, chargers, etc. WE REBUILD! CALL & ASK/WHOLESALE! Visa/MC/AmX/PO #s.

**UPS/LANS, NI·CADS, CHARGERS. ETC. WE REBUILD!**

**DISKS • MACINTOSH HFS OR ISO 9660 FORMATS**

**PORTS**

**HURDLER" NUBUS 2 & 4 PORT SERIAL BOARDS PROVIDE MAC II USERS W/ADDITIONAL PORTS THAT ARE CTB/SYS PORTS VIA SCSI PORT ON ALL MACS. $595 INTRO.**

**PORTS • HQS). NEW SCSI/ SERIAL VERSION ADDS 4 SERIAL PORTS.**

**CUSTOM CD-ROM SERVICE!**

Does Your System Need a Home? GuestHouses are custom-built kiosks ideally suited for producers of multimedia programs and information systems. Each custom engineered cabinet is designed to withstand the rigors of continual public use in any setting.

**GUESTHOUSES**

175 N. 9th St., Brooklyn, NY 11211
718/963-2555 Fax 718/486-6542

**CIRCLE 358 ON READER SERVICE CARD**

**LEONARDO DURMET**

WRITE YOUR OWN SOFTWARE! 800-MAC-DOCS (800-622-3627)

**SOFTWARE/BUSINESS**

**ON-STOP ACCOUNTING SOFTWARE**

We carry a wide variety of accounting software for any size business, from basic programs to sophisticated multiuser systems. We also carry a wide variety of accounting software for any size business, from basic programs to sophisticated multiuser systems. We also carry:

**PRINT YOUR OWN CHECKS!**

Business's. Try our free version today! The Aston CheckPrint Kit provides you with everything you need to print 100% bank compatible checks. Print any style check on your existing laser printer. Don't delay, call an Aatrix check expert for details.

**AATRIX SOFTWARE, INC.**

523 N. Washington St., Grand Forks, ND 58203
1-800-426-0854

**CIRCLE 363 ON READER SERVICE CARD**

**ACCOUNTING. • GL/ AR/AP • ORDER ENTRY • INVENTORY • PAYROLL**

**POWER BOOK PRODUCTS**

Solar Power for PBs or Newtons Recharge or run your Powerbook or Newton with a revolutionary solar charging system. The SunPack uses flexible solar panels sewn into a case. Built for the heartiest road warrior, compact as long as the Sun shines and not worry about battery life! Keep It Simple Solar

**32 S. Ewing, Ste. 211, Helena, MT 59601**

**(800) 327-6882 On Line Kiss4@aol.com**

**CIRCLE 360 ON READER SERVICE CARD**

**EVERYWARE DEVELOPMENT CORP.**

Keeping America Moving Forward in the Information Age

**5643 Mississauga Rd., Mississauga, ON L5M 1A6**

**(905) 819-1173 ext. 227**

**CIRCLE 366 ON READER SERVICE CARD**

**STEP UP TO CONNECTED ACCOUNTING**

Gain control of your financial operations with powerful management tools found in Connected Accounting. *GL* • *AR* • *AP* Order entry • Inventory Control • Bill of Mtls. • Job Costing • Multi-User • Macintosh & Windows • Ole Wanted

**EVERYWARE DEVELOPMENT CORP.**

**5643 Mississauga Rd., Mississauga, ON L5M 1A6**

**(905) 819-1173 ext. 227**

**CIRCLE 366 ON READER SERVICE CARD**

**DEADLINES:**

MacUser is published 12 times a year. The BusinessCard closing is approximately two months prior to issue date. Please send copy and payment to: MacUser BusinessCard, One Park Avenue, 3rd Floor, New York, NY 10016, ATTN: Cathy Conway For more information, call Cathy Conway at 800-425-4237 or 212-503-3963 FAX: 212-503-3606.

**SOFTWARE/BUSINESS**

**SOFTWARE/BUSINESS**

**ONE-STOP ACCOUNTING SOFTWARE**

We carry a wide variety of accounting software for any size business, from basic programs to sophisticated multiuser systems. We also carry:

**PRINT YOUR OWN CHECKS!**

Business's. Try our free version today! The Aston CheckPrint Kit provides you with everything you need to print 100% bank compatible checks. Print any style check on your existing laser printer. Don't delay, call an Aatrix check expert for details.

**AATRIX SOFTWARE, INC.**

523 N. Washington St., Grand Forks, ND 58203
1-800-426-0854

**CIRCLE 363 ON READER SERVICE CARD**

**ACCOUNTING. • GL/ AR/AP • ORDER ENTRY • INVENTORY • PAYROLL**

**POWER BOOK PRODUCTS**

Solar Power for PBs or Newtons Recharge or run your Powerbook or Newton with a revolutionary solar charging system. The SunPack uses flexible solar panels sewn into a case. Built for the heartiest road warrior, compact as long as the Sun shines and not worry about battery life! Keep It Simple Solar

**32 S. Ewing, Ste. 211, Helena, MT 59601**

**(800) 327-6882 On Line Kiss4@aol.com**

**CIRCLE 360 ON READER SERVICE CARD**

**EVERYWARE DEVELOPMENT CORP.**

Keeping America Moving Forward in the Information Age

**5643 Mississauga Rd., Mississauga, ON L5M 1A6**

**(905) 819-1173 ext. 227**

**CIRCLE 366 ON READER SERVICE CARD**

**STEP UP TO CONNECTED ACCOUNTING**

Gain control of your financial operations with powerful management tools found in Connected Accounting. *GL* • *AR* • *AP* Order entry • Inventory Control • Bill of Mtls. • Job Costing • Multi-User • Macintosh & Windows • Ole Wanted

**EVERYWARE DEVELOPMENT CORP.**

**5643 Mississauga Rd., Mississauga, ON L5M 1A6**

**(905) 819-1173 ext. 227**

**CIRCLE 366 ON READER SERVICE CARD**

**DEADLINES:**

MacUser is published 12 times a year. The BusinessCard closing is approximately two months prior to issue date. Please send copy and payment to: MacUser BusinessCard, One Park Avenue, 3rd Floor, New York, NY 10016, ATTN: Cathy Conway For more information, call Cathy Conway at 800-425-4237 or 212-503-3963 FAX: 212-503-3606.

**SOFTWARE/BUSINESS**

**SOFTWARE/BUSINESS**

**ONE-STOP ACCOUNTING SOFTWARE**

We carry a wide variety of accounting software for any size business, from basic programs to sophisticated multiuser systems. We also carry:

**PRINT YOUR OWN CHECKS!**

Business's. Try our free version today! The Aston CheckPrint Kit provides you with everything you need to print 100% bank compatible checks. Print any style check on your existing laser printer. Don't delay, call an Aatrix check expert for details.

**AATRIX SOFTWARE, INC.**

523 N. Washington St., Grand Forks, ND 58203
1-800-426-0854

**CIRCLE 363 ON READER SERVICE CARD**

**ACCOUNTING. • GL/ AR/AP • ORDER ENTRY • INVENTORY • PAYROLL**

**POWER BOOK PRODUCTS**

Solar Power for PBs or Newtons Recharge or run your Powerbook or Newton with a revolutionary solar charging system. The SunPack uses flexible solar panels sewn into a case. Built for the heartiest road warrior, compact as long as the Sun shines and not worry about battery life! Keep It Simple Solar

**32 S. Ewing, Ste. 211, Helena, MT 59601**

**(800) 327-6882 On Line Kiss4@aol.com**

**CIRCLE 360 ON READER SERVICE CARD**

**EVERYWARE DEVELOPMENT CORP.**

Keeping America Moving Forward in the Information Age

**5643 Mississauga Rd., Mississauga, ON L5M 1A6**

**(905) 819-1173 ext. 227**

**CIRCLE 366 ON READER SERVICE CARD**

**STEP UP TO CONNECTED ACCOUNTING**

Gain control of your financial operations with powerful management tools found in Connected Accounting. *GL* • *AR* • *AP* Order entry • Inventory Control • Bill of Mtls. • Job Costing • Multi-User • Macintosh & Windows • Ole Wanted

**EVERYWARE DEVELOPMENT CORP.**

**5643 Mississauga Rd., Mississauga, ON L5M 1A6**

**(905) 819-1173 ext. 227**

**CIRCLE 366 ON READER SERVICE CARD**

**DEADLINES:**

MacUser is published 12 times a year. The BusinessCard closing is approximately two months prior to issue date. Please send copy and payment to: MacUser BusinessCard, One Park Avenue, 3rd Floor, New York, NY 10016, ATTN: Cathy Conway For more information, call Cathy Conway at 800-425-4237 or 212-503-3963 FAX: 212-503-3606.
**BusinessCard**

**Business**

**Forms: As Low As $65 for SF171**
- Real Estate, Mortgage, Legal, HTA and more.
- Quick/easy, simple on screen fill-in.
- Unique common information, auto text resizing.
- Auto math. Import PICT. Auto Date & Time.
- Call for local retailer. New Dealer ins. welcome.

MacForMation2
1150 N. 1st St., Suite 180, San Jose, CA 95112
(800)959-6284 (408)947-2107 Fx(408)947-2120

CIRCLE 306 ON READER SERVICE CARD

**Inventory** • **Pos** • **Ups**
- Take control of your inventory! Largest Pos Mac base USA. A/R billing, GST, bar codes/cash/drwr receipt prints, auto vendor orders, custom forms, taxes, customers, labels, reports, G/L links... UPS-US/Irl/Br. EASY for clerks, US/Can Domers.

SHOPKEEPER Publ. Int’l Inc.
3711 Shamarck W Suite 110 Tallahassee, FL 32308 904•222-8806 or FAX 904•668-9616

CIRCLE 367 ON READER SERVICE CARD

**CAD/Cam**

Mac CAD/CAM as low as $1495!
- Professional CAD + 2 Axis Milling & training videos.
- Simple 3 axis Mill, Turn, 2 & 4 axis WCDM also available. Compatible with IGES, EDD & MFG CAD. CALL FOR 30 DAY FREE TRIAL.

Aura CAD/CAM
2353 Alaska Avenue • El Segundo, CA 90245
(310) 530-9507 • Fax (310) 643-9713

CIRCLE 368 ON READER SERVICE CARD

**CD-ROM**

Fashion Merchandising Company
- We are sourcing for Fabric/Textiles Programs for Apple Computers to develop Jacquards, Checks, and other Designs for both Woven & Knit Fabrics & items. *CD Rom Software specific for Sales Presentations & Direct Mall Order Sales Setup.

GLOBART REFLECTIONS
Sloanebank 15 • Gilze, Berg en-Lindern, Netherlands
Tel:011-31-2208-13948 Fax:011-31-2208-98987

CIRCLE 389 ON READER SERVICE CARD

**Build Your Graphics Library!**
- Texturized photographs and synthetic graphics offer marketing professionals a wide variety of design elements. 180 royalty-free tiff images in two sizes 640x480 & 1024x768 . ISO9660.

BRAVE NEW MEDIA PUBLISHING
1666 Spring Creek Dr. Sarasota, FL 34239
(813) 365-3264

CIRCLE 390 ON READER SERVICE CARD

**Communications/Networking**

Put Your Voice to Work
- You don’t need speech recognition to be productive. Voice Processor™ turns your Mac into a digital tape recorder with transcription assistant, ACDSee, RealPlayer, fax, etc. e-mail, security. $179.05 (ACE Edition $259.95) MC/VISA/AE/DS accepted.

Useful Software Corp.
12 Page Street, Danvers, MA 01923
(800) 666-9828 FAX: (508) 774-2918

CIRCLE 391 ON READER SERVICE CARD

**Nutrition Software**

- 3,500 grams sold!
- Analyzes foods, workouts, fat, cholesterol, etc. Creates menu. Provides guidelines. Not shareware, not public domain. Send $11 and specify Mac or IBM & disk size. Satisfaction Guaranteed!

OHIO DISTINCTIVE SOFTWARE
4588 Kenny Road, Columbus, OH 43220
614-454-0453

CIRCLE 372 ON READER SERVICE CARD

**Graphics**

FREE CD! FREE CD! FREE CD!
- Sample CD-ROM containing all original fonts & never seen before clipart. Please send $4.95 (Non Refund.) for 5 1/2. Other products available: World Class Fonts-5,000 original fonts W/300 page book for 49.95+5.00 S&H. Call about other Clipart.

FANTAZIA CONCEPTS, INC.
3514 Vine Street, Eastlake, Ohio 44095
1-800-991-0877 or 216-991-6666

CIRCLE 373 ON READER SERVICE CARD

**General**

- Easy, simple on screen
- Link common information. auto text resizing.
- Auto math. Import PICT. Auto Date & Time.
- Textured photographs and synthetic graphics
- Simple 3-axis Mill, Turn. 2 & 4-axis WCDM also
- OTHER multimedias, video & 3D producers a wide variety of design elements. 180 royalty-free tiff images
- Apple Computer to design Jacquards, Checks, and Mac CAD/CAM as low as $1495!
- Professional CAD + 2 axis Milling & training videos.
- Simple 3 axis Mill, Turn, 2 & 4 axis WCDM also available. Compatible with IGES, EDD & MFG CAD. CALL FOR 30 DAY FREE TRIAL.

CIRCLE 306 ON READER SERVICE CARD

**CD Hanson RPM**

- Build your Graphics Library!
- Texturized photographs and synthetic graphics offer marketing professionals a wide variety of design elements. 180 royalty-free tiff images in two sizes 640x480 & 1024x768 . ISO9660.

CIRCLE 390 ON READER SERVICE CARD

**Programming/Tools/Languages**

FORTRAN 7.7 - System 7
- LS FORTRAN is an ANSI/ISO standard FORTRAN 77 compiler with System 7 features. Includes VAX and Gray extensions, built-in debugging, 2D on 3D graphics support, and optimized code generation for all Macintoshes.

LANGUAGE SYSTEMS CORP.
100 Carpenter Drive, Sterling, VA 20164
(800) 292-6479 / (703) 689-9953 FAX

CIRCLE 394 ON READER SERVICE CARD

**Real Estate**

RATED FIVE MICE BY MACUSER
- Real Estate Edge. Tracks clients, sends letters, envelopes, $395.00, PROMANALYSIS, produces comprehensive reports for clients, banks, and investors. $295. PROPERTY MGR., keeps books, print reports & checks, notices...$495/$955.

Business Edge
20250 Acacia St., Suite 180, Santa Ana Hills, CA 92707. Call (800) 588-EDGED FAX: (714) 476-8119

CIRCLE 380 ON READER SERVICE CARD

**Religion**

BIBLE MASTER v3 - NASB, NIV
- and more! Great Computer Bible software. Uses a standard MAC interface. Fast, flexible, and easy to use. Transfer verses to your word processor, 30 Day money back Guarantee! Great discount prices! Free information!

AMERICAN BIBLE SALES
870 S. Anaheim Blvd., Anaheim, CA 92805
1-800-538-5131 or 714-440-9681

CIRCLE 381 ON READER SERVICE CARD

**Musical/Midi**

Spotlight Computer Music
1-800-355-0220

CIRCLE 378 ON READER SERVICE CARD

**Dental Software**

- Dental software developer ToothPic® (10yrs) needs VARs/resellers established in vertical markets for sales, training & Installation.
- In-depth training for new dealers available.
- Call Dan Smith.

PROFITMASTER CO.
PO Box 50031 Phoenix, AZ 85031
(800)358-5130 or FAX: (602) 358-0345

CIRCLE 374 ON READER SERVICE CARD

**Dentalsoftware**

- Dental software developer ToothPic® (10yrs) needs VARs/resellers established in vertical markets for sales, training & Installation.
- In-depth training for new dealers available.
- Call Dan Smith.

PROFITMASTER CO.
PO Box 50031 Phoenix, AZ 85031
(800)358-5130 or FAX: (602) 358-0345

CIRCLE 378 ON READER SERVICE CARD

**Medical/Dental**

Practice Management Systems
- Front Office is the most comprehensive and flexible system for all medical billing needs. Integrate to clinical information: electronic claims direct to Medicare/Medicaid & ETS. Full support and customization. Call for free demo.

Systec Computer Services
P.O. Box 7533 San Jose, CA 95150-7533
800-762-7149 408-723-2264 Fax 408-678-0596

CIRCLE 377 ON READER SERVICE CARD

**Real Estate**

Bible Book Store on Disk
- Full featured, Fast and Friendly Bible study software. As the leader in Bible Study software since 1986, we have continued to listen to our customers and provide them with the tools they need. Call for FREE catalog.

BIBLE RESEARCH SYSTEMS
2013 Wells Branch Pkwy #304, Austin, TX 78728
(800) 423-1228 (512) 251-7541

Reach 452,443 Primary Readers
Finding and reaching serious Macintosh Business Buyers is the key to your success... Call your representative today and learn how you can profit from BusinessCard.

BusinessCard
Call your representative today! 800-825-4237
**BUSINESSCARD**

**SHAREWARE**
Affordable Mac Software
Shareware - $5 or less per disk! Huge selection of games, education, business, & utilities! Member of the ASP. New CD-ROM disk available with over 10,000 programs - $46.99! Call us to request a catalog or order by phone!

Willard Computer Services
276 West Bagley Rd. Berea, OH 44017
1·800·860·9407 FAX (216) 891·1193

CIRCLE 384 ON READER SERVICE CARD

**SERVICES/COMPUTER INSURANCE**
Insures Your Macs
The COMPUTEROWNERS’ Insurance policy repairs or replaces hardware, media and purchased software. Rates as low as $49 a year covers theft, accidents, fire, power surge and more! Call for immediate coverage or info: 1·800·800·1492.

Safeware, The Insurance Agency Inc.
2929 N. High St., PO Box C2211, Columbus, Ohio 43202
1·800·SAFEWARE

CIRCLE 390 ON READER SERVICE CARD

**CONSULTING PROGRAMMING**
4th DIMENSION Consulting
• Specializing in 4D and Client/Server Apps.
• Expert in 4D 3.0 and 4D Server
• Network Design and Custom Applications
• Troubleshooting and Technical Support
• Documentation and Training

Natural Intelligence, Inc.
2067 Mass. Ave., Cambridge, MA 02140
(617) 876·4876 Fax: (617) 492·7425

CIRCLE 391 ON READER SERVICE CARD

**DESKTOP PUBLISHING**
Desktop Photo Service Bureau
Desktop Photo Service Bureau
• Mac, DOS, Apple Disks Floppy to 128 Optical
• Slides as low as $2, AGFA Alto - 164 X 45; 2 S/4Meg/Pic/Bit/4W • Dye-Sub Prints as low as $10 • Laser Master Big, Color, 1200 dpi Laser, Plates for Offset

MouseWorks Printing & Photography
105 N. Jackson, Athens, TN 37303
Phone: Voice (615)·744·7898 Fax (615)·745·0233

CIRCLE 396 ON READER SERVICE CARD

**PLAY YOUR CARDS RIGHT...**
*Our BUSINESSCARD & Your Credit Card!*

BUSINESSCARD is already the most cost-effective way to reach tens of thousands of proven Macintosh business buyers each and every month in *MacUser* magazine.

And now, you can earn maximum frequency discounts with *MacUser’s* new Credit Card Charge Program:

• save as much as $540
• take advantage of every issue advertising
This program offers the lowest out-of-pocket expense for *MacUser* advertisers who use their VISA, MasterCard or American Express card for payment.

• no delay for credit card approval
• convenient billing on your monthly credit card statement

The savings is obvious...but the real value is in delivering your ad message to over 452,443 primary readers with every issue of *MacUser*.

You can’t buy more for less anywhere!

**DON’T DELAY...CALL TODAY**
1·800·825·4237

**TRUE MEANING TRANSLATION!**
Want your ad, brochure, catalog or manual to appear in perfect "Deutsch"? German Senior Copy Writer, 15 years in advertising, will do translation/re-writing. Call for sample, or send e-mail to CompuServe • ID 100112,UOO.

HEADLION ADVERTISING
M. Zerwell, Bismarckstr. 25, 42115 Wuppertal Germany 011·49(20 2)31515 2. F ax (202)31 6367

CIRCLE 397 ON READER SERVICE CARD

**DISK DUPLICATION**
Software Duplication
Full Service Diskette & CD Replication
• Complete packaging assembly & printing.
• Custom Labels & silk-screening.
• Available in all disk formats.
• 100% virus checked & copy-verified.

Syncom Technologies, Inc.
1000 Syncom Dr., Mitchell, SD 57301
1·800·843·9862

CIRCLE 398 ON READER SERVICE CARD

**TRAINING**
Rent MacAcademy Videos by Mail
Video’s the easy way to learn! All major Mac programs available; over 85 different titles, each 2 hours long. A two week rental including S&H, costs less than a dollar a day. Return postage is prepaid. Get a free catalog.

CareerTAPEs® Enterprises
PO Box 309 Center Harbor, NH 03226
(603)·253·7470

CIRCLE 399 ON READER SERVICE CARD

**MISCELLANEOUS / SUPPLIES**
THE SOFTEST KEYBOARD SKIN
Perfect fit, super thin, and excellent tactile sensation. 1AP0811 for Mac Classic/LC M0487... Oakland Rd. B101. San Jose, CA 95131
Tel: (408) 251·4837 Fax: (408) 258·2678

CIRCLE 400 ON READER SERVICE CARD

SEPTEMBER 1994 / MacUser 231
The Universal PowerPC

I CAN HARDLY WAIT until I no longer have to answer the question: Should I buy a Mac or a PC? With a new stand-alone standard for the PowerPC emerging from the PowerPC consortium, there may finally be a true cross-platform solution: They'll be in the same box! Any PowerPC machine using the new standard will be able to boot a Mac environment, boot an OS/2 (actually Workplace OS renamed) environment, boot a UNIX environment, or whatever. Since Workplace OS is supposed to have a DOS emulator and should be able to run Windows at blazing speed, why would anyone buy anything else? And if the world turns to this box, what becomes of Apple and its proprietary franchise? Is it down the tubes? No. In fact, sales may increase.

Playing to Apple's Strength
The top three makers of personal computers are currently Compaq, Apple, and IBM. Imagine two of the top three makers — Apple and IBM — coming out with a new machine and moving their combined market share (not overnight, obviously) to this new platform and taking a bunch of cloners with them. All of a sudden, Apple is part of a giant new market that's wide open for growth. It sheds its need to design hardware and focuses on doing what it does best: Sell! A venture capitalist once referred to Apple as a vertically integrated ad agency. An amusing comment, but it has more than a grain of truth. Apple has managed to garner a (relatively) huge share of the PC market while selling a proprietary machine. But Compaq now sells more clones than Apple sells proprietary machines. The handwriting's on the wall: The days of the proprietary machine are numbered. But if Apple has done so well selling a proprietary machine, imagine what it could do if it were competing on a level playing field with the schlockmeisters who sell PCs. Except that the playing field won't be exactly level: Apple is part of the core group that designed the microprocessor!

Under this scenario, Apple can continue selling computers but will concentrate on selling System 7 for the PowerPC in the new PowerPC market. The Intel PC installed base has grown to nearly 200,000,000 computers. All these machines will eventually be dumped for something new. If that something new is the PowerPC platform, those buyers will flock to System 7.

Best of Both Worlds
Although dual operating systems have previously been used only by hackers running DOS and maybe UNIX, I've noticed that a lot of OS/2 users run both OS/2 and DOS/Windows, even though DOS/Windows is built into OS/2. That's because there are some peculiar products you like to run once in a while that don't work with OS/2, despite compatibility claims. But you don't want to drop OS/2, because it's generally better and less crash-prone than Windows. So what do you do? Use both. There is already a critical mass of cool applications running under the Mac environment. Children love the Mac and prefer it over any PC. And as I've said before in this column, my wife flatly refuses to use anything but a Mac. You can be sure I'll have a Mac OS running on any Universal PowerPC in my house.

The Universal PowerPC will incorporate the Mac ROM and load it into the system from the hard disk. This opens up the possibility that the Mac OS can be enhanced by outside coders to add better speech recognition or other interesting functions. The Universal PowerPC will also open up the operating environments more than in the past. The rule of thumb today is to code your product for the dominant operating system — Windows — if you want to make the most money. Many reluctant Mac coders have been forced to do this against their will. With multiple operating systems in the
After staring at it for hours he finally started to see where it was going.
In 8 hours he'd change his resolution as often as he'd changed his mind.
She spent hours designing it so others could spend hours enjoying it.
Introducing the MultiSync® Professional Series Monitors.
Designed for people who see things differently.

No two people look at the world the same. It’s called being creative. And that’s exactly why we built the MultiSync® Professional Series “Monitors. The MultiSync 6FGp (21” CRT, 19.8” diagonal viewable area) and MultiSync 5FGp (17” CRT, 15.6” diagonal viewable area) work with the latest Macs* to provide designers and desktop publishers with bright, sharp images. Our OptiClear™ surface reduces reflections while enhancing contrast and color saturation. NEC’s AccuColor™ control system lets you adjust on-screen color. All this while supporting multiple resolutions from 640 x 480 to 1152 x 870, so you can display dual page layouts. And our Intelligent Power Manager (IPM™) system saves you energy and money. We’ve also included DPI-On-The-Fly® resolution switching software and a 3-year limited warranty. In short, they’ve been designed to make you more creative. Questions? Call 1-800-NEC-INFO. For info via fax, call 1-800-366-0476 and request our Mac products catalog #4. The easiest monitors to live with for hours and hours:

* Optional cable adapter available free from NEC, required for Power Macintosh connection.

Psycho Cycle and Digit screen images courtesy of Carlos Segura. © 1994 Segura, Inc.

MultiSync and DPI-On-The-Fly are registered trademarks and OptiClear, AccuColor and IPM are trademarks of NEC Technologies, Inc. © 1994 NEC Technologies, Inc.

CIRCLE 10 ON READER SERVICE CARD