SECURE.

Keep your ideas safe from harm in a La Cie d2™ encased hard drive. Made with a rugged metal shell, it comes in a range of sizes and speeds to meet your specifications.

LACIE Made for ideas.
Features

Cover Story
72 Macworld's Top Tips
Compiled by Cathy Abes
No matter what you do on your Mac—desktop publishing, graphics, Web production, multimedia, or just playing games—our experts give you 101 ways to do it better.

QuickTime Goes Pro
By Christopher Breen
With version 3, Apple's QuickTime has grown into a truly impressive multimedia all-star. Find out why this extraordinary technology is potentially Apple's biggest cross-platform touchdown ever.

Burn, Baby, Burn
By Stephan Somogyi
Are you hot to make your own CDs? Macworld Lab tested 21 CD-Recordable and CD-Rewritable drives to determine the best for your burning pleasure.

Save time when you work so you have more time for yourself, page 72.

Create

Motion
107 PowerPoint Goes Interactive
By Jim Heid
Harness the unexplored multimedia-authoring capabilities of Microsoft PowerPoint 98.

Print
111 Mastering PageMaker's Control Palette
By Olav Martin Kvern
Adobe PageMaker's misunderstood, multitalented palette may be your key to superior efficiency.

Print
115 Retrain Your Fingers
By David Blatner
Draw simple shapes without leaving the comfort of your QuarkXPress file.

Graphics
117 The Power of Photoshop's Pen Tool
By Chris Lehan
Conquer your confusion over the complexities of Adobe Photoshop's pen tool.

ON THE COVER
Illustration by Glenn Matsumoto/Studio MD

Get online no matter where you travel, page 99.

CD player and backup device in one, page 91.
Reviews

40 Adobe Premiere 5.0 Video-editing software
42 Quid Pro Quo Plus 2.1; WebStar 3.0; WebTen 2.0.4 Web-server software
44 Flash 3.0 Web-vector-graphics animation tool
53 CyberStudio 3; Dreamweaver 1.2 Web-page editors compared
55 Director 6.5 Multimedia-authoring software
57 CoolDVD DVD-ROM upgrade kit
59 BarbaBatch 2.4; QDesign Music Encoder Pro 1.0 Audio-compression/conversion software
60 Retrospect Express Backup utility
60 Text Cleaner 1.0 Text-handling utility
62 Tools Plus 4.0 Code libraries
64 HyperCard 2.4 Multimedia-authoring software
66 InstallAnywhere 2 Java-application packager
68 Power MachTen 4.1 Unix environment


99 Freddi Fish 3
99 Jump Start Fifth Grade
103 Kid Pix Studio Deluxe
103 Slam Dunk Typing
103 Success Builder: Math Library
103 LanguageNow
103 Where In Time Is Carmen Sandiego?
103 Ultimate College Money Guide
103 Zap

News

27 Macworld Takes Manhattan
We bring you the hottest news from the Big Apple as Macworld Expo debuts in New York.

28 Macworld Expo Best of Show
Macworld's editors pick the hottest hardware and software products at the New York conference.

29 Do Floppies Have a Future?
As Apple preps its floppy-less iMac, three technologies vie to replace the venerable 1.44MB disk.

32 Lasers on Parade
A troop of new color and monochrome laser printers marches into the Mac market.

32 More Mac Outlets?
CompUSA's acquisition of Computer City could add up to new Apple stores.

Opinion

13 Letters

25 The Vision Thing
BY ANDREW GORE The joy of six. Slots, that is.

180 The Desktop Critic
BY DAVID POGUE Confronting the guilt over liking Microsoft software.

10 How to Contact Macworld

Secrets

99 Online on the Road
BY TED LANDAU Elude the hassles and hazards of connecting while traveling.

103 Quick Tips
BY LON POOLE Tips, tricks, and shortcuts.

Get ready for a flurry of new laser printers, page 32.
UP TO 2400 x 2400 DPI
And Line Screens Up To 175 lpi
Paper Or Film

LAGGER OUTPUT
Custom Size Output to 13" x 35.5"

In addition to higher-quality, oversized printing, and faster output, the Accel-a-Writer™ 3G gives you an extraordinary graphics package that includes precise dimensional accuracy with patent pending X-ACT™, Halftone Calibration Technology, Densitometer Support, and much more! Plus, Ethernet is included for networking capabilities in fast-paced printing and graphic environments.

XANTE's Accel-a-Writer 3G...
Improves your image by improving your output!
With XANTE’s New...

35.5 Inches

FASTER
Up To 20 Pages-Per-Minute
High Speed RISC Processor

BREAKTHROUGH FILM-MAKING
For Single, Spot, Or 4-Color Work

Accel-a-Writer 3G

To purchase a XANTE Accel-a-Writer 3G, Call Toll Free
1-800-926-8839 Ext. 2154
Dealers Call Ext. 2155 • Fax 334-342-3345
www.xante.com

Also, ask about XANTE’s Accel-a-Writer 3 and 3N which are designed for general office and medium-sized workgroups, providing fast, quality printing in business or engineering environments.

© 1993 XANTE CORPORATION. XANTE, Accel-a-Writer, and X MT are registered trademarks of XANTE CORPORATION. Accel-a-Writer 3 and 3N are trademarks of XANTE Corporation, registered or unregistered in the United States and/or other countries. Other product names are trademarks or registered trademarks of their respective owners. XANTE CORPORATION, 904 North Fairview Blvd., Union, AL 36201 USA. Tel: 334-342-4200. Fax: 334-342-5880.

Choose 112 at www.macworld.com/getinfo
Now for the iMac™

Introducing SuperDisk.
To you it’s a 120MB diskette.
To floppies, it’s "Mr. Compatibility."

Get a fast, floppy-compatible SuperDisk™ USB Drive for your iMac™ and give your floppies a new buddy: the SuperDisk Diskette, with 120 big, friendly megabytes of room. With as much room as 83 floppies, SuperDisk™ still knows how to share. You’re thinking, "How touching—but what’s in it for me?" This is what: a hassle-free way to use both standard floppies and 120MB SuperDisk diskettes in a single drive. SuperDisk™ Available now for the iMac. Save a little, save a lot, save the world.

IMATION

Find out where to get SuperDisk
www.supersedisk.com or
1.888.222.2294 ext. 120
The Right Choice for Easy Project Scheduling.

Why waste time struggling with complicated project management or spreadsheet programs? FastTrack Schedule 5.02 is easy to use, intuitive, and extremely flexible. So whether you need to plan a day's worth of activities or a year's worth of projects, you'll stay organized and achieve project goals.

FastTrack Schedule has the tools to track and revise progress and costs as changes occur — even link activities to establish dependencies. Add your schedules to proposals, reports, or use the web publishing features to turn your schedules into HTML tables or web graphics. FastTrack Schedule is also available for Windows 3.1/95/NT, so everyone in your office can stay on schedule.

Choose 203 at www.macworld.com/getinfo
“I'm sick of having to settle for a slower Mac just because my budget sucks.”

Sometimes Newer Is Smarter Than New.

In a perfect world, we all would buy a new, top-of-the-line Mac right now. Of course, there's that little thing called money, the stuff most of us don't have coming out of our ears. That's why you need a Newer Technology MAXpowr G3 processor upgrade card. They're easy to install and save you thousands of dollars compared to buying a whole new system.

Newer Technology makes processor upgrade cards for almost every Power Mac and are adding more machines to the list with faster processor speeds as you read this. With a MAXpowr G3 card, you'll have a faster processor with a much faster cache. In fact, the MAXpowr G3 card can make your old Mac one of the fastest desktop computers available even compared to Apple's new screaming G3 machines. Thanks to Newer Technology, your older, slower Power Mac has new life which makes waiting for a brand new machine a lot less painful.

To find out how to make your old Mac newer visit www.newertech.com or call 1-316-943-0222
Choose 55 at www.macworld.com/getinfo
LIFE ON THE ROAD JUST GOT EASIER.

G3 Hard Drives
2GB, 3GB, 4GB

G3 Charger

G3 Zip*100 Drive

Get out of the office this summer.
There really is no reason why you have to work cooped up inside.
And to make it easier, we're giving away Zip100 drives at MacWorld NY.

VST TECHNOLOGIES Incorporated
Visit us at www.vsttech.com for our complete line of quality portable essentials.

Choose 73 at www.macworld.com/getinfo

Macworld
HOW TO CONTACT MACWORLD
Subscription Services
Phone 303/664-8930, U.S. only
303/664-7445, outside the U.S.
U.S. Mail
Macworld Subscription Services
P.O. Box 54525, Boulder, CO 80322-4529
World Wide Web
www.zdnet.com/subscriptions/macworld/service

Subscription Rates
The one-year (12 issue) subscription rate is $39.97 in the U.S. and $59.97 in Canada and Mexico; for all other countries, send either $59.97 for surface mail or $109.97 for airmail. Checks must be made payable in U.S. currency to Macworld. Please allow 6 to 8 weeks to receive your first issue.

Back Issues of Macworld
Back issues (subject to availability) are $8 per issue for U.S. delivery ($12 outside the U.S.). Prepayment in U.S. currency to Macworld is required. Send check or money order to Back Issues Department, Ziff-Davis Inc., P.O. Box 53131, Boulder, CO 80322-3131.

Reprints and Permissions
You must have permission before reproducing any material from Macworld. Write to Macworld, Reprints and Permissions, 301 Howard St., 16th Fl., San Francisco, CA 94105, include a phone number. To order reprints of your company's editorial coverage, call 800/225-4387.

Mailing Lists
We periodically make lists of our customers available to marketers of goods and services that may interest you. If you do not wish to receive such mailings, please write to us and include a copy of your mailing label.

Macworld on Microfilm
Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346; 313/761-4700.

Macworld Editorial
The editors of Macworld welcome your tips, compliments, or complaints. We are unfortunately unable to look up stories from past issues, recommend products, or diagnose your Macintosh problems by phone, e-mail, or fax. Contact Apple toll-free at 800/237-9999, ext. 500, for information on user groups in your area.

Our offices are located at 301 Howard St., 16th Fl., San Francisco, CA 94105; 415/442-0766; e-mail quicktips@mac.com. Please include your name, address, and telephone number.

LETTERS TO THE EDITOR
Direct all comments and suggestions regarding any aspect of the magazine to letters@macworld.com. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all submissions. All letters published in Macworld or Macworld Online become the property of Macworld.

QUICK TIPS
Send your questions or tips on how to use Mac computers, peripherals, or software to the attention of Macworld, Quick Tips, 301 Howard St., 16th Fl., San Francisco, CA 94105; fax 415/442-0766; e-mail quicktips@mac.com. Please include your name, address, and telephone number.

BPA

10 September 1998 MACWORLD
Take Home The Professional’s Choice: The ViewSonic PT771.

ViewSonic proudly presents the latest member of our award-winning family, the PT771 Professional Series SonicTron monitor. This 17” (16.0” viewable) monitor is tailor-made for professionals who require the excellent quality, high resolutions and superb performance that ViewSonic delivers.

Quality and Craftsmanship.

ViewSonic is acclaimed for its quality, and the PT771 is a fine example. It has an ultra-fine, 0.25mm aperture grille pitch, sophisticated SonicTron technology that delivers clear, crisp images, and a SuperContrast feature for brilliant, bold colors. The PT771 also offers a super fast 86Hz refresh rate at a 1,280 x 1,024 resolution, OnView controls for fast, push-button screen adjustments and Plug & Play which supports easy installation under Windows® 95 and 98.

Ask for the better monitor at the better price. ViewSonic, the leader in quality and craftsmanship. And that’s not just one opinion. It’s 375.

For the dealer nearest you, call ViewSonic at (800) 888-8583 and ask for agent 81328, or visit our website at: www.viewsonic.com. Choose 59 at www.macworld.com/getifno
Of the countless problems with Jaz, losing your irreplaceable data to something as trivial as spilled coffee is the most senseless.

Fortunately, DynaMO° 640 SE removable storage from Fujitsu resists such tragedies. Our media is so durable, it withstands moisture, x-rays, magnets — and can be rewritten an unlimited number of times. It wins on price, too. A 640MB cartridge costs $19.95,* which is 3¢ a megabyte compared to Jaz's 10¢. DynaMO 640 SE is backward compatible, unlike Jaz, so you can save your work on different media capacities. And with our No Excuses™ limited warranty, you'll get a replacement drive in two business days in the event of a defect. DynaMO 640 SE. It's a serious solution. Not a serious problem. For more details, call, or visit our website.
Passionate about PowerBook G3’s

I just bought a new Apple PowerBook G3, and it is a laptop marvel (“Desktop Invaders,” June 1998). The design is the most impressive of any notebook computer from any manufacturer. The 13.3-inch active-matrix screen is sharp, bright, and clear. The keyboard is comfortable and has the best feel of any I’ve used. My page layouts and image files fly with the G3 chip. My assistant is green with envy, as he still uses the 120MHz 603 desktop Mac we used to share.

The recent story in the New York Times claiming that fewer and fewer Mac owners would consider buying a new Mac is a crock—they never took into account that Apple would come out with this wonderful machine.

John A. Chermark
New York, New York

The new G3 PowerBooks are an ergonomic disaster. They are the size of Mack trucks! Perhaps an aging Steve Jobs didn’t have his glasses on when he approved the blueprints for their footprints. After waiting all this time for an insanely great PowerBook, I am disappointed that Apple was unable to match the compact designs of Wintel machines. Think small, Apple.

James L. Percelay
New York, New York

Your feature on the new PowerBook G3 didn’t mention whether Apple brought back true dual-monitor support when an external monitor is connected, like the 500-series PowerBooks had.

This is part of what really made my PowerBook 540c viable as a desktop machine. The continual omission of this feature is why I have not purchased a new PowerBook so far. Do the new PowerBook G3’s have dual-monitor support?

M. Oppenheim
Via Macworld Online

The PowerBook G3’s don’t support dual monitors directly, but you can hook up an additional monitor by installing a display card such as iXMicro’s ix3D Road Rocket (www.ixmicro.com) into the PowerBook’s CardBus slot.—Ed.

Looks Aren’t Everything

I was disappointed by the emphasis on interface in the Macromedia FreeHand 8 review (Reviews, June 1998). Your reviewer said “FreeHand is the best drawing program on either platform, but at times I’d still rather be using Illustrator” because of its interface. That’s like complaining that the clutch on a Mercedes feels a bit different from the clutch on my Honda—but if I get my hands on a Mercedes, I’ll adjust.

Besides, if you want to complain about interface, let’s talk about CorelDraw—yeesh.

Justin Wills
Dallas, Texas

Deliver Me from Office 98

Sorry, David Pogue, but I don’t buy Microsoft’s turning over a new leaf with Office 98 (Reviews, June 1998). For what little the program does, the hardware and RAM requirements are onerous. ClarisWorks/AppleWorks still captures the spirit of Mac computing better than Microsoft can ever hope to.

Tom Seibold
Overland Park, Kansas

No PDFs, Please

As a service-bureau owner, I cringe every time I read an article informing people that they can send PDF files to their service bureau (“Get Prepress-Ready PDFs from QuarkXPress,” Create, June 1998). I want to explain why that is a waste of time.

First, many service bureaus (like mine) already have hundreds of thousands of dollars invested in their existing PostScript Level 2 RIPs. A PDF file is worthless unless you have a PostScript Level 3 RIP. There is currently not enough incentive to go another $50,000 into debt, and many service bureaus will not upgrade for a few years.

Second, there is no advantage to PDF which is not also given by PostScript print (PRN) files. And even so, both PDF and PRN can be problematic, since they take...
control out of the hands of the service-bureau technicians—who image hundreds of jobs per day and know the ins and outs of preparing film that printers can use. It puts responsibility for the film output in the hands of designers, whose job does not demand that same expertise.

Third, there are many possible settings when creating the PDF file. PDF was originally designed for use on RGB monitors, so you have to be sure to set up the files for high-resolution CMYK. You also need to include the fonts, and not allow ATM to use its generic Serif and Sans-Serif fonts. Incorrect settings can result in low-resolution images, poor color matches, or incorrect fonts. With a PDF, there is nothing the service bureau can do to fix these problems, and it may not be possible to detect them until the film is run.

Sure, PDFs sound like a good thing. You can't forget your graphics or fonts because they're included. But what you get out of the imagesetter is all in your hands, not the service bureau's. The service bureau can only send your file, pray that you did everything correctly, and charge you for whatever comes out.

**Carl Aron**
Columbia, Maryland

PDF has a way to go to become a universal prepress format, but that's clearly the direction the prepress industry is heading. Of course, we're not there yet; so far, only a few printers and service bureaus are managing PDF into their workflow. But the article directs readers to contact their service bureau before preparing a PDF file—if the service bureau refuses them, the readers won't bother.

You also mentioned that you can't produce PDF files without a PostScript 3 RIP. This is not true—you can print to PostScript Level 2 RIPS using Acrobat Reader or Acrobat Exchange; it's just easier to print to a PS 3 RIP because it processes PDF directly. And there is a difference between a PDF and a PRN file—the former is more compact and less prone to PostScript errors, according to Adobe.—Stephen Beale

**Mac Thanksgiving**

DAVID POGUE'S COLUMN ABOUT Windows was perfectly timed (The Desktop Critic, June 1998). Last week, I broke down and bought Virtual PC and Windows 95, just to prepare myself for the possibility of a Mac-less future. I couldn't believe how primitive and horrendously unfriendly Windows 95 is. I had no idea how great we Mac users have it until I spent some time on "the other side."

After spending the better part of last week skirting around error messages, I decided I will never switch from the Macintosh.

**Scott Rose**
Los Angeles, California

**Speaking Up**

I JUST READ YOUR ARTICLE ON multimedia speakers ("Easy Listening," June 1998). I thought it was a shame that you did not include the excellent Aura (www.aurasystems.com) Aspect range of speakers—in particular the Aspect 20's. The sound quality of these small speakers blows away those from Altec Lansing, Labtec, and Yamaha, and for only $60.

**Eliot Lovell**
San Francisco, California

**Easy Listening** did not mention speakers from Cambridge SoundWorks. They make a line of three different computer speakers and corresponding subwoofers that I think blow the socks off the systems you reviewed—all at prices under a few hundred dollars.

**J. Tebo**
New York, New York

**Give Emulators a Break**

AFTER READING YOUR REVIEW OF Virtual PC 2.0 and SoftWindows 95 5.0 (June 1998), I was astounded at the author's disappointment. Then I realized that he was running them on a Power Mac 7300/200. Wouldn't it make more sense to test these emulators on a new G3, especially considering that Virtual PC is optimized for the G3?

**Jeremy Wise**
Nepean, Ontario, Canada

Not testing the PC emulator on Macintosh G3's was a simple matter of timing—G3's were barely in their infancy at the time. But we will be upgrading to a G3 test platform in the near future.—Ed.

**Joseph Schorr's Review of Virtual PC 2.0**

JOSEPH SCHORR'S REVIEW OF Virtual PC 2.0 was right on the money. It's true that an emulation program will be significantly slower than the real thing, so why buy a program like Virtual PC 2.0?

My company bought me a computer of my choosing for home use, and I chose a Power Computing PowerCenter Pro 210. The only stipulation was that it have file compatibility with the computers at work, which is a Windows 95 environment. Most of my files require compatibility are Microsoft Office and Word-Perfect documents; both sets of programs work well with Virtual PC 2.0. For a fraction of the cost of a PC-compatibility card, Virtual PC is a good value. Slow? Maybe a little, compared with the newer Pentium systems, but Virtual PC 2.0 works, I don't have to use a PC at home, and I'm happy.

**Cal Chany**
Bolingbrook, Illinois

**Back in the Saddle Again**

CONGRATULATIONS TO APPLE FOR the speed of Mac OS 8.1 and the G3 systems, to Motorola for the PowerPC 750 chip, and to the team that developed Microsoft Office 98 for Macintosh. With the advent of these three products, our company has decided to forgo a switch to PCs and will now invest in new G3's for the whole staff. It's been a long time since Mac users had reason to be this happy. The glory days are back!

**Bruce Malone**
Grand Rapids, Michigan

Letters should be sent to Letters, Macworld, 301 Howard St., 16th Fl., San Francisco, CA 94105; via fax, 415/442-0766; or electronically via CompuServe (70370,702), MCI Mail (294-8078), AppleLink (Macworld1), or the Internet (letters@macworld.com). Include a return address and daytime phone number. Due to the high volume of mail received, we cannot respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of Macworld.
If you think it takes several graphics programs to create an ad like this, all we can say is, "Sorry."

"By being easier to use than similar products and importing many file formats, Canvas is a good adjunct to tools you may already own -- or a wise initial investment." InfoWorld

"One look at Deneba Canvas' long list of features, and you'll see the great value stuffed in this single box. Canvas... has raised the bar of excellence for all graphic applications." Desktop Publishers Journal

"[Canvas] gives you integrated photo editing, desktop publishing and illustrating. Most software offers you any one of these capabilities, but not all three. Having this kind of versatility in a single application makes it easy to seamlesslly assemble and design an entire project from beginning to end." PC Photo

Why are we sorry? Well, if you're a graphics pro, you're probably already figuring out how that photo effect would be easy in PhotoShop", the drawing would be cake in Freehand", and the whole layout plus matching color separations would be simple in Quark XPress". You might be right, but we're sorry you think it's so complicated -- and expensive. We did it all using nothing but Canvas. Quickly and easily. • And if you're not a graphics genius, you're probably thinking, "Wait a minute, shouldn't every $500-plus graphics program let me do all that?" You're absolutely correct -- they should, but they don't.

• Canvas 5 is the only program -- at any price -- that offers the convenience and power of pixel-level photo editing, precision drawing, and page layout in one program, in one document, at one time. You can even take Canvas to the web with Colada", a free Java"-based tool for Canvas. You get all the features you need to create everything from a cool logo to an eye-catching ad. Want proof? You're looking at it. • So before you even think about spending thousands of dollars on all those other programs and investing countless hours learning each of them, get Canvas 5. • You won't be sorry.

Call 800.6CANVAS or visit www.deneba.com/macworld/ for your Canvas 5 Evaluation Kit. Try it out for 30 days, FREE!
Apple and MacConnection
Two Originals.
One Mission.

MacConnection
The Original Macintosh Mail-Order Source!

1984
Apple introduces Macintosh.
MacConnection makes its debut.
The innovative Macintosh turns the computer industry on its ear by delivering what the customers want — ease of use, unsurpassed graphics capabilities and sheer fun.
MacConnection turns the direct marketing industry on its ear by delivering what the customers want — ground-breaking service, unparalleled technical support, great low prices and innovative practices that are now standard throughout the mail-order industry. Oh yeah, we sold some pretty great Mac products, too.
A truly customer-centric partnership was born.

1998
iMac
Today Apple continues to make history with six new lightning-fast PowerBook G3 models, an award-winning new ad campaign, and coming soon, the cutting-edge iMac!
MacConnection continues to offer overnight delivery, low prices, unequaled service, and support that remains the best in the business. Oh yeah, we still sell some pretty great Mac products, too.
Some things never change.

Need it tomorrow?
Order as late as 2:45 a.m. ET (that's in the morning) and still get delivery next day!

Need it installed?
We'll do it FREE!
When you purchase a new Macintosh from us, we will configure it for you at no additional charge.

Need a Great Price?
Just call us!

20,000 HOT PRODUCTS 24 HRS A DAY!
800-800-6958

Macintosh
- 68000 8MHz processor
- 8" monochrome screen
- 128K RAM
- 400K single-sided floppy storage
- A mouse

*Pricing, technical specifications and availability are subject to change by Apple. Scheduled to ship in August.
The G3 Power Mac
The Power to Do More.

Choose Your Weapon.
The G3 Power Mac is available in desktop, minitower and all-new PowerBook models—the fastest notebooks on the planet. Each model incorporates numerous features designed for a variety of needs and uses, but they all deliver unparalleled power, performance and flexibility. Most importantly, they’re ideal for running the latest, most powerful software programs, like Microsoft Office 98, Adobe Photoshop 5 or Premier 5, Connectix Virtual PC, and Macromedia Dreamweaver or FreeHand 8.

G3 Power to Go.

Apple® Macintosh PowerBook G3

PowerPC 262MHz G3 processor
14.1" TFT color screen
64MB RAM
8.0GB hard drive
56k modem
56128 $5599

Starts At
$2299

No Compromises, No Limits.

That’s what you’ll get with a new Apple G3 Power Mac. It will deliver the power you need to run the most data-intensive graphics applications, cruise the Internet at optimal speeds, work faster and more efficiently, share information easily, and push gaming to the cutting edge—and beyond!

G3. The third generation of the PowerPC processor.

Pentium® II Toasting Speeds.

It all starts with scorching speeds up to twice as fast as the Pentium II®, made possible by an innovative Level 2 Backside Cache design that dramatically boosts performance. Plus, the G3 Power Macs are specially optimized for the Mac OS, resulting in increased efficiency. Add to that a revolutionary system architecture, high-quality communication and multimedia support, outstanding flexibility and expandability, and you have a machine that delivers the power you need not just for today, but into the next millennium.

* According to BYTEmark integer tests

www.macconnection.com

CALL or CLICK!

24 HOURS
7 DAYS A WEEK!
Thought You'd Seen It All?
Think Again

iMac. Far Beyond the Ordinary.

Leave it to Apple to create a computer as unique as you are.
Introducing iMac, the computer that combines all the possibilities of the Internet with all the magic of the Macintosh. From its translucent white and Bondi blue exterior to the 233MHz Power PC G3 processor inside, the iMac is anything but ordinary.

*Technical specifications and availability are subject to change by Apple. Scheduled to ship in August.

---

ACCESSORIES

Apple

56129 Power AC Adapters.................. $79
56131 Lithium-Ion Rechargeable Battery...... $2.99
56133 iMac Floppy Disk Drive Expansion Bay Module .......................... $109
56134 iMac Lithium-Ion Battery.............. $259.95
56135 1400 mAh Battery.................... $125.95
56136 2400 Lithium-Ion Battery............. $165.95
56138 3400 Lithium-Ion Battery............. $199.95
56139 PowerBook 500 Battery ................ $259.95
56140 PowerBook AC Adapter 1400, 2400, 3400... $49.95
58235 PowerBook 100 Battery ................ $85
58240 2400 Spare Floppy Drive ............. $149.95
5929 PowerBook 1000 Video Out .......... $149.95

COMMUNICATIONS

Simple Technology

56110 56K Communicator PC Card Modem w/SimpleJack....................... $149.95

DATA STORAGE

Imonga

19867 Zip Disk 10-Pack .................. $129.95
34777 iMac 2GB External Drive ............ $499.95
47802 iMac 3GB 3-Pack ................. $399.95
50354 iPod USB w/Free Carrying Case ........ $179.05
50469 iPod USB w/Free Carrying Case $179.05
50470 iPod USB w/Free Carrying Case $179.05
51424 iPod USB w/Free Carrying Case $179.05
53929 iPod USB w/Free Carrying Case $179.05

DIGITAL CAMERAS

Connectix

20854 Color QuickCam ....................... $189.95

Kodak

52680 DC260 Digital Camera (adapter reqd.) $499.95
54428 DC210 Digital Camera (adapter reqd.) $189.95

Olympus

46634 C-220L Digital Camera ............... $299.95
46635 C-300L Digital Camera ............... $299.95
46636 C-350L Digital Camera ............... $299.95

Polaroid

53598 PKC200/40 Camera ...................... $189.95
49805 PKC200/40 Camera ...................... $189.95

INPUT DEVICES

Kensington

25998 Mouse in a Box ......................... $39.95
25999 Mouse in a Box ......................... $39.95
26597 Turbo Mouse 5.0 ......................... $99.95
16164 Kensington Deluxe Computer Carrying Case .......... $49.95
17692 MicroSaver Security Cable System .......... $99.95
48211 Sky Runner Nylon Carrying Case .......... $99.95
35268 Saddle Bag Black w/Black Trim .......... $99.95
33443 Saddle Bag Black w/Brown Trim .......... $99.95
39859 Executive Computer Case .......... $99.95

Macally

43890 2-Button Mouse ....................... $39.95
43891 New Wave Keyboard w/TouchPad .......... $79.95
47100 W Keys Enhanced Keyboard .......... $49.95

MDS

21456 2-Button Encompass Mouse .......... $189.95
21457 2-Button Trackball .......... $39.95
22799 10S Key Soft-Touch Keyboard .......... $99.95
40330 2-Button Joystick .......... $39.95
40331 Bat Wing GamePad .......... $29.95
Art That Works.
The purpose of the iMac is to make Internet access easy, and it does that with one-button simplicity. It also does a lot more. It kills the PC competition with data-crunching G3 speed.

You Want Speed? You Got Speed!
With its 233MHz PowerPC G3 chip and 512K backside cache, the iMac is up to twice as fast as comparable Pentium® II- or Celeron-based systems. Plus, the 66MHz system bus speeds information through the computer.

~With its built-in modem and integrated 10/100BaseT Ethernet support, it’s ideal for both home and office use. And it opens a whole new world with dual USB (Universal Serial Bus) ports, which enable peripherals to communicate with your iMac as higher speeds than ever before.

Buying an iMac Will Give You X-Ray Vision.
(not really)
Actually, it’s just the translucent keyboard (included). It has two 1240bps USB ports. One is used to connect the mouse, while the other can be used to daisy-chain peripherals such as scanners, digital cameras, external modems, disk drives, and monitors — up to 12” (not included) devices!

Whoa.
This Mouse Is Alive!
For a mesmerizing effect, drag the new round mouse across your mousepad, and through its translucent case watch the two-color ball spin and rotate in kaleidoscopic designs.
Pentium-crushing speed, a full array of networking and communications ports, two expansion bays, 24-bit video-out...we could go on. But the point is this. No computer—desktop, tower or notebook—is worth the material it's made of if it doesn't do what you want it to—and do it fast and easily. And that's where the new PowerBook G3 excels. It's not just the fastest notebook in the world—it's the fastest notebook in the world that runs the Mac OS. And that makes all the difference.
Power Trip!

Starts At

$2299

233MHz or 250MHz G3 processor
32MB SDRAM
2GB or 4GB IDE Hard Drive
4MB SGRAM Video Memory
20X CD-ROM
K56flex Modem

Starts At

$2999

56117

56115 PowerBook G3 233/32/2.0/20X/12.1" DSTN .................. $2299*
56126 PowerBook G3 233/32/2.0/20X/56K/12.1" DSTN .......... 2599
56117 PowerBook G3 233/32/2.0/20X/13.3" TFT ............... 2999
56127 PowerBook G3 250/32/2.0/20X/56K/13.3" TFT ......... 3099
56119 PowerBook G3 233/32/2.0/20X/14.1" TFT .............. 3499
56128 PowerBook G3 292/64/8.0/20X/56K/14.1" TFT ......... 5599

Authorized Apple Reseller and Service Provider

ORDER ONLINE!
www.macconnection.com

CALL or CLICK
24 HOURS 7 DAYS A WEEK!

TOLL FREE ORDERING
800-800-6958

MacConnection®
The Original Macintosh Mail-Order Source—Since 1984!

998MW"
**A breakthrough in mainstream computing.**

The Power Macintosh G3 Desktop 233 and 266 computers deliver outstanding performance at prices you can afford. Designed to meet the needs of a wide range of users, they incorporate the PowerPC G3 processor, 512K Level 2 backside cache on chip, PowerPC G3 processor, 512K Level 2 backside cache on chip, of HAM expandable to 192MB, 4GB hard drive and additional capabilities for graphics and audio support.

**Microsoft**

<table>
<thead>
<tr>
<th>Office 95 Upgrade</th>
<th>$260.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office 98</td>
<td>$420.95</td>
</tr>
<tr>
<td>Office 98 At A Glance</td>
<td>$16.95</td>
</tr>
<tr>
<td>Office 98 Gold Upgrade</td>
<td>$350.95</td>
</tr>
<tr>
<td>Office 98 Gold Edition</td>
<td>$350.95</td>
</tr>
</tbody>
</table>

**NetObjects**

| NetObjects Fusion 3.0 Upgrade | $870.95 |
| NetObjects Fusion 3.0 | $185.95 |

**NewTek**

| Inspire 3D | $399.95 |
| LightWave 3D Upgrade | $489.95 |
| LightWave 3D 5.5 | $179.95 |

**Niles**

| Endnote 1.0 | $199.95 |

**Microsoft**

| Excel 98 Upgrade | $128.95 |
| Excel 97 | $359.95 |
| Office 98 Upgrade | $128.95 |

**Power Mac* (G3 Media)**

<table>
<thead>
<tr>
<th>Processor/Speed</th>
<th>RAM Std/Max</th>
<th>Hard Drive</th>
<th>HD Type</th>
<th>VRAM Std/Max</th>
<th>Backside Cache</th>
<th>Bus Speed</th>
<th>Expansion Slots</th>
<th>Int/Zip</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>G3/233 Desktop</td>
<td>G3/233MHz, G3/266MHz</td>
<td>0.625GB, 1.25GB</td>
<td>40X</td>
<td>10E</td>
<td>2MB/64MB</td>
<td>512K</td>
<td>117MHz</td>
<td>3PC/2 bay</td>
<td>$1699</td>
</tr>
<tr>
<td>G3/266 Desktop</td>
<td>G3/266MHz</td>
<td>1.25GB</td>
<td>40X</td>
<td>10E</td>
<td>2MB/64MB</td>
<td>512K</td>
<td>117MHz</td>
<td>3PC/2 bay</td>
<td>$1999</td>
</tr>
</tbody>
</table>

**Pantone**

| Pantone Formul.1Gulde | $59.95 |
| Pantone Solid 10Process Guide | $79.95 |
| Pantone ColorWeb | $339.95 |

**Quark**

| QuarkXPress 4.0 | $879.95 |
| QuarkXPress 3.13 | $849.95 |

**Symantec**

| Norton Antivirus 2.0 | $298.95 |

**Thursby Software**

| Daver 2.0 | $124.95 |

**UPGRADES**

**Nuver Technology**

| Maxpower G3 Series 25XMHz/125X125 | $745 |
| Maxpower G3 Series 30XMHz/100X100 | $989 |
| Maxpower G3 Series 25XMHz/125X125 | $495 |
| Maxpower G3 Series 30XMHz/100X100 | $599 |
| Maxpower G3 Series 30XMHz/100X100 | $989 |

**Think different.**

We carry more than 20,000 Products!

Don’t see something? Just give us a call!

**A breakthrough in mainstream computing.**

The Power Macintosh G3 Desktop 233 and 266 computers deliver outstanding performance at prices you can afford. Designed to meet the needs of a wide range of users, they incorporate the PowerPC G3 processor, 512K Level 2 backside cache on the processor module, 66MHz system bus, 24X CD-ROM, 2MGB of RAM expandable to 192MB, 4GB hard drives and additional capabilities for graphics and audio support.

**Powerful Technology! Affordable Price!**

Start Saving Now!

Ask about... LEASING OPTIONS for BUSINESS

CALL 800-800-0014

Y"Despite identical chip speeds, the Apple G3 processor outperforms the Pentium." —Newsweek May 1999

**UPGRADES**

**Nuver Technology**

| Maxpower G3 Series 25XMHz/125X125 | $745 |
| Maxpower G3 Series 30XMHz/100X100 | $989 |
| Maxpower G3 Series 25XMHz/125X125 | $495 |
| Maxpower G3 Series 30XMHz/100X100 | $599 |
| Maxpower G3 Series 30XMHz/100X100 | $989 |
Up to 300MHz G3
Up to 128MB SDRAM 384 Max
Up to (2) 4GB Ultra/ Wide
SCSI Hard Drives
Up to 8MB VRAM
24X CD-ROM

Powerhouse Publishing!

With features like 128MB of SDRAM, two 4GB 7200RPM Ultra/Wide SCSI drives and a 128-bit 2D/3D graphics PCI card with 8MB of EDO VRAM, G3s can do everything in record time! You can even run two monitors at once! This latest addition to the G3 line also includes a 10/100 Base-T Ethernet card to keep your network humming along as fast as your Mac.

"The latest Power Macintosh G3 Workstation takes advantage of Motorola Corp.'s 300MHz 750 Power PC chip to deliver better graphics performance than a desktop system based on Intel Corp.'s new 400MHz Pentium II processor."

—PC Week April 1998

www.macconnection.com
NEW VERSION!

MiniCAD®

Windows/Macintosh
The Easiest, Most Cost-Effective Way to Design

For more than a decade, professionals seeking an out-of-box CAD solution have selected the award-winning Minicad. This stand-alone program lets you create everything from precise working drawings to sophisticated client presentations.

Now this total CAD solution speeds your design process with these new features:
- True 3D Boolean
- Solid Modeling
- DWG and DXF Import/Export
- Dual-Unit Dimensioning
- Auto Wall Framing
- QuickDraw 3D Rendering
- Associative Drawing
- Automatic Hatching
- Automatic Wall Joining
- Next-Generation SmartCursor

To learn more about MiniCAD's extensive feature set and why the program has been called "the easiest, most cost-effective way to design," call 1-888-MINICAD or visit our Web site: www.dichlgraphsoft.com

MiniCAD 7, which retails for a suggested price of $795, comes with 18 months of FREE Tech Support and a 30-Day Money-Back Guarantee!

Choose 46 at www.macworld.com/Getinfo

Minicad is a trademark of Dichl Graphics, Inc. All other brands and product names are trademarks of their respective holders.

MiniCAD 7 — The only thing small is the price.
Six Slots of Separation

WHAT’S KEEPING APPLE FROM ITS MOST AVID USERS? THREE LITTLE SLOTS.

Six Degrees of Separation is a popular phrase based on the theory that everyone on Earth is connected to everyone else by no more than five people. For example, Bob is friends with Barry, who does taxes for Jeff, who plays golf with Anita, who works with Mark, Carol’s son. And I know Carol. Therefore, even though Bob and I don’t know each other, we are connected by only five other people.

The Six Degrees theory was devised to show that the world is a much smaller place than any of us realizes. In fact, all it might take to bring any two people together is one really good party. (And at that party, you could show off your knowledge of movie trivia by playing Six Degrees of Kevin Bacon...but I digress.)

That’s why I wish someone would throw a really good party and invite both Apple’s decision makers and its customers. It’s time we got these kids together, if for no other reason than Apple might discover just how cut off it is from the needs of the Macintosh power user. Let’s call this the Six Degrees of Kevin Bacon...but I digress.

That’s why I wish someone would throw a really good party and invite both Apple’s decision makers and its customers. It’s time we got these kids together, if for no other reason than Apple might discover just how cut off it is from the needs of the Macintosh power user. Let’s call this the Six Degrees of Kevin Bacon...but I digress.

Gee...Three?

While the iMac and PowerBook G3 both represent great strides for customer categories long neglected by Apple—consumers and mobile professionals—they do little to help the customers who’ve been most faithful to the Mac during its darkest days. I’m talking about Macintosh power users, the professionals and enthusiasts who must squeeze every last bit of potential out of their desktop Macs. And the current maximum number of slots on a Power Mac G3—three—is simply not enough to support the expansion needs of these users.

To illustrate just how quickly Mac power users hit the ceiling in current G3 desktop systems, let’s play a little game of Six Slots of Separation: You’ve just bought a Power Mac G3, and you want to add on a few capabilities. So, naturally, you turn to add-on PCI cards. First you get a high-performance video card, to drive that 21-inch color monitor in 24-bit color at maximum resolution. And because you need the fastest hard drive subsystem possible for your G3 Mac, you get a RAID card. And because you want to send those big files you’re rendering on that big screen and storing on those fast drives as fast as possible, you get a 100BaseT Ethernet card.

Next you want to get on the Internet, and fast, so you want to add an ISDN card. But not so fast, buddy! You’ve run out of slots. Not only does ISDN fall by the wayside but you can also forget about a high-end audio card. Or a digital-video card. Or a 3DFx game-accelerator card. Or an MPEG card for DVD playback. Or a FireWire card. You get the picture.

No Room at the Inn

In hindsight, few people could question the wisdom of the decision to shut down Mac OS licensing last year. Apple’s recovery over the last 12 months has largely been because Apple has consolidated the Mac platform and is now moving it forward again, both technologically and in terms of Apple’s bottom line.

But when licensing ended, Apple made a promise to Macintosh customers—that while the end of licensing was critical to Apple’s survival, the Macintosh installed base would not be asked to sacrifice all the benefits the cloners provided just so that Apple could live on. To Apple’s credit, it has mostly lived up to that bargain, giving Mac customers better, less expensive products than those available in the heyday of Mac cloning. Except in one critical area—the six-PCI-slot Mac.

Right now, the only way to get six slots in a G3 Mac is to stick a G3-processor upgrade card in an older, six-slot Power Mac or clone. While this solution might be OK for now, in the long run users won’t be willing to continue recycling old machines just to get expansion slots—especially if Mac OS X will run only on new G3 systems, which Apple has said is a possibility. They’ll want a new Mac, and making due with three slots or buying an add-on external expansion chassis is not going to be enough.

All Apple has to do to reconnect with these users is deliver a box with more than three slots. It makes sense—after all, users want it and are willing to pay for it. By delivering such a machine, Apple will make them happy while making a nice profit on those high-margin, high-end systems.

But if Apple doesn’t address this pressing need, and soon, the company may find that its customers are no longer content to play games. Then the separation between Apple and the Mac’s power users may just become permanent.

If you mail visionthing@macworld.com, you’ll join the lucky few who are only one degree of separation removed from Andrew Gore.
Some people think that Norton Utilities for Macintosh is the most advanced troubleshooting utility in the world.

Not quite.

TechTool Pro 2 checks more aspects of your Macintosh than any other utility available. Besides repairing and recovering damaged drives (including those with the new HFS+ format), you can also test all those other critical parts of your system that our famous competitor ignores like RAM, CPU, floppy drives, scanners, modems, internet connections, CD-ROM drives and much, much more.

However, just because TechTool Pro is the most advanced Macintosh troubleshooting utility available doesn't mean that it's difficult to use. In fact, we've added an easy-to-use interface that makes checking and fixing your Macintosh a snap. For the advanced user, our expert mode allows you to control and configure TechTool Pro in almost any way you wish.

TechTool Pro 2: Because you've got better things to do with your time than waste it on a broken computer.
Industry

Jobs Touts Apple Comeback in Expo Keynote

APPLE CEO EXPECTS
I MAC SALES TO BOOST MARKET GROWTH

by Stephen Beale

Apple is back on its feet and ready to ride the iMac to a bigger share of the computer market. That was the message delivered by Apple CEO Steve Jobs as he made a surprise live appearance July 8 during the keynote session at Macworld Expo New York.

While there were no dramatic announcements to equal last year's Microsoft deal, Jobs still had plenty of good news for Mac loyalists. Citing developers' renewed interest in the Mac, he noted that since the iMac's May 6 introduction, vendors have announced 177 Mac applications (see "Developers Bullish on Apple," in this section). These include many computer games, as well as Universal Serial Bus peripherals (see "Vendors Line Up with USB Peripherals," in this section) whose development was prompted by Apple's switch to USB for the iMac.

Hot Sellers Apple expects massive shipments of iMacs to bolster its position in the education market and also, Jobs hopes, to drive consumer purchases. Although an estimated 10 million consumers currently use Macs, many of these machines are older models ripe for upgrading.

The company's new G3 PowerBooks appear to be hot sellers; so much so that Apple is struggling to fill orders. This —along with Jobs's expectations of a third consecutive quarterly profit, to be reported July 15—is likely to cause more smiles on Wall Street.

Jobs also revealed some additional product plans:

• When the iMac ships August 15, it will include a 56-Kbps modem, not the 33.6-Kbps version originally planned—a clear response to earlier objections of Mac pundits to the initial choice.

• For the PowerBook G3, Apple will offer a DVD-ROM drive, whose software features parental controls and an on-screen remote. For his demo, Jobs played a brief scene from The Wizard of Oz, saying that this is "the coolest way to watch movies on airplanes."

• Apple plans to ship Mac OS X Server—essentially the Rhapsody OS—later this year. Beta versions of Mac OS X will be available in early 1999, with the official release of the...
ONCE AGAIN, MACWORLD’S editors have selected the hottest new products introduced at Macworld Expo. To be eligible, the product had to make its public debut at Macworld Expo New York. We also had to see the product in action, although software evaluations were often based on beta versions.

iMac
Apple (408/996-1010, www.apple.com) announced its sleek new consumer Mac several months ago but saved the official rollout for Macworld Expo. Few products at any Expo have generated as much excitement.

RAM DOUBLER 8
This $45 memory-management utility from Connectix (415/571-5100, www.connectix.com) has a new interface, is faster, and is more flexible in allocating memory resources. Plus it’s optimized to run Microsoft Office 98.

CONFLICT CATCHER 8
Upgraded to support Mac OS 8.1, Casady & Greene’s (408/484-9228, www.casadyg.com) popular $100 system utility adds improved file display and backtracking during conflict tests. It also simplifies system updates by letting you merge a newly installed “clean” System Folder with an existing System Folder.

QX-TOOLS 4
This $150 package of handy QuarkXtensions from Extensis (503/274-2020, www.extensis.com) adds several enhancements to QuarkXPress, including object styles and the ability to import Microsoft Word tables, Microsoft Excel charts, and PDF files.

FONT RESERVE 2.0
The latest version of the DiamondSoft (415/381-3303, www.fontreserve.com) font-management utility offers faster performance than its predecessor and supports AppleScript for workflow automation. The $100 package also lets you print type specimens sorted by type foundry and other criteria.

WEBPAINTER 3
This upgrade from Totally Hip Software (604/685-6525, www.totallyhip.com) offers a full set of painting and Web animation features for just $99.

MACLINK PLUS 10
The $99 file-conversion utility from DataViz (203/268-0030, www.dataviz.com) offers a new stand-alone application that lets you preview the contents of a file before you convert it. The software also decodes e-mail attachments—including .zip files—and features translators for Microsoft Word 98 and Excel 98.

PalmPilot Software
Thanks to improved MacPac 2 software (based on Claris Organizer) from Palm Computing (650/237-6000, www.palmpilot.com), Mac users are no longer second-class citizens when using a Palm III or PalmPilot organizer.

IX3D ROAD ROCKET
This $349 CardBus-based graphics accelerator from IXMicro (408/369-8282, www.ixmicro.com) lets a pint-size PowerBook drive a big-screen monitor.

systems

Vendors Line Up with USB Peripherals

As Apple prepares to ship its much anticipated iMac, a host of vendors has announced plans to introduce products that support the iMac’s Universal Serial Bus (USB) interface. Some of these products are USB peripherals, while others are PCI cards and external hubs that allow current Macs to use USB devices.

• ADS Technologies (562/926-1928, www.adstech.com) plans to ship three USB products: a $49.95 PCI card adapter for desktop Macs, an $89 adapter for PowerBooks, and an $89 external hub that adds four USB ports to your Mac.

• Alps Electric (408/432-6000, www.alpsusa.com) is showing the Alps MD-1300 Photographic-Quality Color Printer, a USB device that produces 8-by-10-inch dye-sublimation prints. Estimated street price is $549.

• Creative Solutions (410/766-4079, www.creativesolutions-inc.com) has introduced a $79 PCI card with two USB connectors.

• Iomega (801/778-1000, www.iomega.com) plans a USB version of the Zip drive, which Imation (888/466-3456, www.imation.com) has announced a USB version of its SuperDisk drive (see “Does the Floppy Have a Future?” in this section).

• Newer Technology (316/943-0222, www.newertech.com) plans to offer several USB products, including an adapter, two floppy drives—one with two serial ports and one without—a PCI card that allows PCI Power Macs to use USB peripherals, and a hub with seven powered ports (see “Developers Are Bullish on Apple,” in this section).

• Hewlett-Packard (619/487-4100, www.hp.com) has announced a $69 USB kit that lets you use its DeskJet 670 and 690 ink-jet printers with the iMac.

• Kodak (716/724-4000, www.kodak.com) has introduced two USB digital cameras, the DC220 and DC260 (see “More Cameras for Your Mac,” in this section), as well as a $169 USB video camera, the DVC232.
Does the Floppy Have a Future?

NEW FORMATS SEEK TO REPLACE 1.44MB DISKS

by Henry Bortman

A re floppies dead? You might think so, judging from Apple’s consumer-targeted iMac, which will ship sans floppy drive. Apple figures that multimedia files are growing too large to fit on a single 1.44MB disk, and backing up a 4GB hard drive onto low-capacity floppies can be an exercise in absurdity (you’d need just under 3,000 disks to complete the job). Reasonably priced alternatives, such as Iomega’s Zip drive, better fit the needs of today’s users. Furthermore, the argument goes, as more people become networked, either on LANs or over the Internet, they’ll have less need for removable disks.

Alive and Kicking Nevertheless, analysts at Disk/Trend, which monitors the storage industry, believe the floppy’s future is assured for years to come. They note that word processing still accounts for 75 to 80 percent of the work done on personal computers—and that’s not likely to change soon. For text documents, floppies work well as an exchange medium.

According to Disk/Trend’s research, only 5 to 10 percent of the CPUs currently being sold ship with high-capacity removable-media drives. The analysis also notes that while about 9 million high-capacity disks were sold last year, customers purchased 95 million floppy disks.

Still, no one doubts that the 1.44MB 3.5-inch floppy eventually will be phased out. But what will replace it? Three technologies are vying for the honor: Iomega’s (801/778-1000, www.iomega.com) Zip, Imation’s (888/466-3456, www.imation.com) LS-120, and Sony’s (800/222-7669, www.sony.com) HiFD. All three drives sell (or are expected to sell) in the $100-to-$250 range. Their accompanying disks can be had for (or are expected to be available for) about 10 cents per megabyte. Each has unique advantages and disadvantages.

Get Zipped To hear Iomega tell it, the contest is already over, and Zip has won. With 13 million Zip drives sold, and every major PC vendor (including Apple) offering an internal Zip drive as an option, Iomega has a credible case. Zip can also lay claim to being the accepted medium of exchange at service bureaus. An informal poll of a half dozen prepress houses in the San Francisco area yielded consistent responses: 80 to 90 percent of all jobs come in on Zip cartridges, regardless of whether the customers are Mac or PC users.

Zip’s major drawback: it’s not backward-compatible with existing floppy disks, so you’re likely to need both a Zip and a floppy drive to handle all your removable-storage needs. And no matter how inexpensive Zips become, two drives cost more than one.

SuperDisk Designed jointly by Imation, Compaq, Panasonic, and O.R. Technology, LS-120 drives (also known as SuperDisk drives) have a major advantage over Zips: they can read and write to standard floppy disks as well as SuperDisk diskettes.

However, this advantage has yet to be turned into a solid win for the LS-120. The drives—slower and more expensive than Zip drives—are offered as an option by only a handful of PC vendors. No U.S. vendor has yet taken the leap of offering SuperDisk as standard desktop equipment in place of a floppy disk drive. For Macintosh users, the picture is even weaker. Only one company, Winstation Systems (509/765-7759, www.winstation.com), offers a Mac-compatible SCSI version of the drive. However, Imation and Panasonic are working on a Universal Serial Bus version of the SuperDisk drive that should be available when the iMac ships in August.

Sony’s Dark Horse The dark horse in this race is HiFD. Designed by Sony, with help from Fujifilm on the media, HiFD drives will support existing 1.44MB floppies and 200MB HiFD disks. Sony claims the new drive will offer a sustained transfer rate of 3.6MB per second, more than seven times the speed of an LS-120.

Originally slated to appear this spring, HiFD now is not expected to be available until the end of 1998. However, the first crop of HiFD drives will be available only with a parallel-port or ATAPI interface for PCs. Sony won’t say when a SCSI model will come to market.

Which drive will win out? Zip has a commanding lead, but its lack of backward compatibility could undermine its advantage. In the Mac market, removable-storage standards are often set by local service bureaus, but ultimately PC vendors will be the ones who determine the new storage standard for the industry. With HiFD not yet available, and with some serious price-jockeying certain to occur once it is, this is one race whose outcome is simply too early to call.

Developers Are Bullish on Apple

OS X, G3, iMac Give VENDORS NEW HOPE

by Cathy Abes

A fter some lean times, developers are finally voicing optimism about the Mac platform. Pointing to such promising trends as the G3 processor, the consumer iMac, and Mac OS X, many see the Mac figuring prominently in their future product strategies.

Bryan Lamkin, vice president of Adobe Systems’ graphics products division, says that Apple is “doing the right things to serve the needs of professional publishing and digital-content creators,” Adobe’s prime market. He applauds Apple’s new OS strategy, which makes it easier for developers to migrate to the next-generation Mac OS X.

Also bullish on Apple is MetaCreations’ Frank Casano-
va, vice president of product management and design. A nine-year Apple veteran, Casanova thinks the company is more focused now than it ever was during his tenure and is "doing better than it has in the last five years."

**Developer Focus** Many vendors sense Apple's renewed interest in developers' concerns. Norm Meymwitz, president of Macromedia Products, previously saw Apple as focused inward, competing with itself, whereas now the focus is where it should be—on developers and customers. Macromedia president and CEO Rob Burgess recalls that when Apple CEO Steve Jobs recently visited Macromedia headquarters to meet with executives, the staff gave him a standing ovation. Jobs joked that perhaps it had been a while since they last seen an Apple executive.

**iMac Spurs Product Plans** Roger Kasten, Newer Technology's chief technical officer, is enthusiastic about Mac OS X as well as Mac OS 8.7, both due in 1999. The latter, he says, will include most of the functionality of Mac OS X, but unlike Mac OS X, it will run on older Macs.

Kasten also believes the iMac will make Apple "the driving force in the USB market." Newer plans to offer a Universal Serial Bus converter supporting serial-port printers and modems, a USB floppy drive with two serial ports, and a USB hub with seven powered ports.

Heartened by Apple's revitalized consumer strategy, Terry Kunysz, president of Casady & Greene, says his company is "getting back in the game market" and is planning to launch several new products early next year. He says he is looking at other potential products the company "wouldn't have even considered six months ago."

---

**Graphics Products Refocused**

**VENDORS SHIFT TOWARD WEB-SAVVY SOFTWARE**

by Cathy Abes

As they gaze upon an increasingly competitive landscape, Adobe Systems (408/536-6000, www.adobe.com), Macromedia (415/252-2000, www.macromedia.com), and MetaCreations (805/566-6200, www.metacreations.com)—the three largest vendors of graphics software for the Mac—are redefining their product lines to march the needs of a changing, and more demanding, audience.

**A Stronger Lineup** For MetaCreations, this means consolidating a wide range of products that originated in various pre-merger companies. Frank Casanova, vice president of product management and design, says the company will focus on fewer but bigger products rather than a slew of smaller ones. However, the company plans to develop new product lines even as major brands, such as the Painter family, continue to evolve. Casanova says that MetaCreations is also repurposing some products, such as KPT Show, which is evolving from a slide-show program for consumers into a business presentation tool.

Also moving ahead is the company's 3-D line. Poser 3, the latest version of the company's 3-D figure-animation tool, provides a customizable interface with improved light, camera, and movement controls. The $199 package also lets you import motion-capture data, and it offers real-time 3-D previews.

**"Web-Centric" Strategy**

Macromedia's strategy, according to president and CEO Rob Burgess, is to transform itself into a "Web-centric" company whose business will become about 80 percent Web-related within the next few years.

Director 6.5, a recent update to the company's multimedia-authoring program, adds new Web-related features, such as the ability to export Java applets and to prepare movies for Java playback (see Reviews, in this issue). The update also includes Aftershock 2 (to prepare Director files for playback via browsers) and supports Macromedia Flash. Burgess estimates that about 30 percent of Director users are producing Web content, a number he expects to grow rapidly.

Macromedia is also shipping Flash 3, a new version of its Web animation tool that adds vector and bitmap transparency, sprite animation, and shape morphing. This summer, the Flash player will be built into Netscape Navigator, so Web surfers won't have

---

**More Cameras for Your Mac**


Sony’s $599 MVC-FD51 and $799 MVC-FD71 (pictured) both store images on a floppy disk. Thanks to extra memory in the cameras, you can even use the internal drive to make disk copies. Both cameras offer 640-by-480 resolution; the MVC-FD71 also features a 10x optical zoom. Kodak’s latest, the DC220 and DC260, feature Universal Serial Bus interfaces for easy connection to the iMac. The $1,100 DC220 features a 2x optical zoom and 1,152-by-864-pixel resolution; the $1,300 DC260 offers a 3x zoom and 1,536-by-1,024 resolution. Agfa’s $900 ePhoto 1680 features a 3x optical zoom and 1,280-by-960-pixel resolution. Toshiba’s $700 PDR-M1 offers 1,280-by-1,024-pixel resolution and a 2x optical zoom.

Meanwhile, Olympus (516/844-5000, www.olympus.com) has dropped the price of its popular D600L camera from $1,300 to $1,000.—MACWORLD STAFF
New lower drive price. 2GB cartridges as low as $99.95.

Mark Tinley has heard it all. And recorded it. As the sound designer for Duran Duran, he's constantly searching for, creating, and recording interesting, often bizarre sounds for the band. From shrieking peacocks to a mishmash of electronic ambient noise, Mark safely stores it all on new 2GB Jaz disks. His incredibly portable Jaz drive gives him the ability to transport, edit, mix, and share even the largest sound files from wherever he may be. Because when you deal with sounds as big as all outdoors, you need space, big space. And that's exactly what he gets with his Jaz 2GB, The Super-Fast, Extremely Vast Professional Storage Drive. Get your Jaz 2GB drive through your local reseller and visit our Web site at: www.iomega.com

“How I fit several Baby Grands, an enormous mass of aural chop suey, and the entire London Zoo into a 4 INCH SQUARE.”

Mark Tinley, Sound Designer, Duran Duran
Adobe stays focused
Meanwhile, Adobe continues to strengthen its software arsenal with new versions of Photoshop and Premiere; the latter received a complete overhaul to make it competitive with professional-level systems. Recognizing the growing dominance of the Web, Adobe has also introduced ImageReady, a competitor to Macromedia’s FireWorks, and is promoting its PGML format as a Web standard for vector graphics (see “XML Drives Web Graphics Proposal,” News, July 1998).

A Flurry of Laser Printers
MONOCHROME AND COLOR MODELS BOOST QUALITY AND SPEED
by Macworld Staff

There may be a dearth of ink-jet printers for the Mac right now (see “Apple Shifts Imaging Strategy,” News, August 1998), but laser printers are a different story. In recent months, a host of vendors have unveiled monochrome or color laser printers that work with your Mac — although you may need extra hardware to make the connection.

In Black and White NEC’s (408/433-1200, www.nec.com) monochrome SuperScript 870 (pictured), the successor to the popular SuperScript 860, features 600-dpi resolution, 8-pages-per-minute print speed, and an improved paper-handling mechanism, all for $349. However, Mac users will need to add a $249 Ethernet kit. The printer uses Adobe’s PrintGear technology but can be upgraded to support Adobe PostScript 3. If you need the extra speed of a network printer, the $1,400, 600-dpi FS-3700+ from Kyocera (800/232-6797, www.kyocera.com) blazes along at 18 ppm. Equipped with a PostScript Level 2 interpreter, it uses Kyocera’s Ecosys technology to reduce reliance on consumables; the company claims a consumables cost of less than a half-cent per page.

Living Color For users with more colorful printing needs, the new 600-dpi Color PageWorks EX from Minolta (201/512-5800, www.minolta.com) features 3-ppm print speed (12 ppm in color) and supports PostScript 3. The printer sells for roughly $4,000; Mac users will also need to purchase an Ethernet option.


CompUSA to Get Computer City Outlets

MAC USERS COULD EVENTUALLY HAVE new places to buy hardware and software thanks to CompUSA’s recent announcement that it will acquire Computer City, the 100-store retail chain currently owned by Tandy. CompUSA, presently the only national computer dealer that sells Mac products, operates Apple stores within each of its 160 outlets.

Safe Assumption? Although the company has not announced specific plans for converting the Computer City locations, “the assumption would be” that most will become CompUSA outlets with their own Apple stores, says Carol Elfstrom, CompUSA’s director of corporate communications.

CompUSA disclosed the $275 million acquisition June 22 and said it expected the deal to be completed within 90 days. Apple and CompUSA announced the Apple “stores within stores” in November 1997. Three months later, Apple anointed CompUSA its primary national retailer and said it would phase out sales in other major chains, including Computer City.

Dealer Crackdown The CompUSA deal comes at a time when Apple is getting tough with its other dealers. In May, Apple canceled contracts with nearly one-third of its U.S. dealer network, citing those “who do not offer value-added solutions and who are not advocates of Apple products.” The company has also launched a crackdown on gray marketers — unauthorized Mac resellers who often sell the machines at discount. Apple has identified 24 suspect­ed gray marketers and has threatened to cancel the contracts of any authorized dealers who sell Macs to the targeted outlets. — Macworld Staff
Imagine

impressing your audience with big screen multimedia presentations
effortless hi-res editing in Photoshop® with no waiting
the fun of playing the coolest, most realistic 3D games
working with fully textured 3D models in real time

You can

with an ATI graphics accelerator.

Improve your graphics instantly with ATI.

POWERED BY ATI

You’ll be blown away when you see how adding a graphics accelerator dramatically upgrades the graphics on your Mac. Just plug in any one of our accelerator boards powered by ATI 3D RAGE PRO graphics, and you’ll instantly see more colours, higher resolutions and faster, smoother 2D & 3D graphics than you could imagine. Choose the ATI graphics accelerator that suits you best.

**ATI XCLAIM VR** is the only 5-in-1 accelerator board that gives you 2D, 3D and video acceleration PLUS video capture, and video out for big screen presentations or arcade-style gaming.

**ATI XCLAIM 3D** provides fast 2D and 3D performance, hi-res true colour graphics and full screen, full motion video. Perfect for design and content creation professionals who typically use resolutions up to 1152x870.

Developed with the professional designer in mind, **ATI NEXUS GA** is a 2D & 3D graphics accelerator featuring ultra-high res true colour and workstation-class 3D performance. Get Nexus GA to supercharge your graphics performance. Ideal for working in resolutions above 1152x870 up to 1920x1080.

To find out more about how you can upgrade your graphics with ATI check out our website at www.atitech.com/macwo.

Choose 256 at www.macworld.com/getinfo
### ELITE 12/600
- 600 x 600 dpi resolution
- 12 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum Print Area 8.5" x 14"
- Letter, legal, A4, envelope
- 250 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 80 PostScript fonts, 15 PCL fonts
- 8 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- EtherNet® (10 BaseT)
- Bi-directional Parallel, LocalTalk®, RS422

**Platinum Exchange Warranty Program:**
- Additional Year: Add $99
- Two Additional Years: Add $150
- Three Additional Years: Add $213

**Cost:** $999
**Lease:** $35 Month/36 month lease

---

### ELITE 1212
- 1200 x 1200 dpi resolution
- 12 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum Print Area 8.5" x 14"
- Letter, legal, A4, envelope
- 250 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 80 PostScript fonts, 15 PCL fonts
- 16 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet (10 BaseT, 10 Base2)
- Parallel, LocalTalk®, RS422

**Platinum Exchange Warranty Program:**
- Additional Year: Add $129
- Two Additional Years: Add $194
- Three Additional Years: Add $275

**Cost:** $1299
**Lease:** $45 Month/36 month lease

---

### ELITE XL 608 LC
- 600 x 600 dpi resolution
- 8 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum Print Area 11" x 17"
- Ledger, letter, legal, A3, A4, envelope
- 250 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 80 PostScript fonts, 15 PCL fonts
- 8 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Netware®
- Bi-directional Parallel, LocalTalk®, RS422

**Platinum Exchange Warranty Program:**
- Additional Year: Add $159
- Two Additional Years: Add $239
- Three Additional Years: Add $339

**Cost:** $1599
**Lease:** $56 Month/36 month lease

---

*The Elite 12/600, Elite 1212, Elite XL 608 LC, and Elite XL 1208 support one additional paper feeder. The Elite XL 20/600 and Elite XL 20/800 support two additional paper feeders.*
A logo's contribution to the printing process is modest. It just sits there and congratulates itself. The question is, how much are you willing to pay for this service?

We're GCC Technologies, and our printers go head-to-head against some of the most famous names in the business. Which creates a buying opportunity for those who understand a basic principle of free enterprise: When you aren't better known, you'd better be better at something else. Such as printing.

GCC printers turn out vivid halftones, poster-sized graphics, printshop-quality text, and perform various other noteworthy feats noted below.

But these aren't the only rewards for people willing to look beyond the nameplate. GCC printers are sold direct, eliminating many prosperous middlemen and lowering the cost.

We're also compassionate hand-holders. We offer free technical support, not just on business days, but Saturdays too—throughout the one-year warranty period. And if during that period you have a problem our support people can't solve, our Platinum Exchange Program guarantees you a replacement printer by the next business day. All GCC printers come with a thirty-day, money-back guarantee as well.

For complete details, call the 800 number below. And for the record, yes, our printers come with logos too. It's just that you don't have to pay extra for them.

---

**To order call 1-800-422-7777, or visit our web site, www.gccctech.com**

---

**Elite XL 1208**
- 1200 x 1200 dpi resolution
- 20 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum Print Area 11.69" x 20"
- Ledger, letter, legal, A3, A4, envelope
- 500 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 285 Post Script fonts, 15 PCL fonts
- 24 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 BaseT, 10 Base2), Netware® Parallel, Local Talk®, RS422

- 2nd Paper Feeder* (Includes 250 sheet Universal Tray) Add $319
- 2nd Paper Feeder* (Includes 500 sheet Universal Tray) Add $419
- Extra 8 MB Memory Add $ 49

- Platinum Exchange Warranty Program:
  - Additional Year Add $259
  - Two Additional Years Add $388
  - Three Additional Years Add $551

**Price: $2599**
- Business Lease $91 Month/36 month lease

---

**Elite XL 20/600**
- 600 x 600 dpi resolution
- 20 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum Print Area 12.75" x 35.25"
- Ledger, letter, legal, A3, A4, envelope
- 500 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 285 Post Script fonts, 15 PCL fonts
- 16 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 BaseT, AAUI), Netware® Bi-directional Parallel, Local Talk®, RS422

- 2nd or 3rd Paper Feeder* (Includes 500 sheet Universal Tray) Add $299
- Extra 8 MB Memory Add $49

- Platinum Exchange Warranty Program:
  - Additional Year Add $179
  - Two Additional Years Add $269
  - Three Additional Years Add $381

**Price: $1799**
- Business Lease $63 Month/36 month lease

---

**Elite XL 20/800**
- 800 x 800 dpi resolution
- 20 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum Print Area 12.75" x 35.25"
- Ledger, letter, legal, A3, A4, envelope
- 500 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 285 Post Script fonts, 15 PCL fonts
- 24 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 BaseT, AAUI), Netware® Bi-directional Parallel, Local Talk®, RS422

- 2nd or 3rd Paper Feeder* (Includes 500 sheet Universal Tray) Add $299
- Extra 8 MB Memory Add $49

- Platinum Exchange Warranty Program:
  - Additional Year Add $199
  - Two Additional Years Add $299
  - Three Additional Years Add $424

**Price: $1999**
- Business Lease $70 Month/36 month lease

---

GCC Technologies is a registered trademark of GCC Technologies, Inc. Elite 12/600, Elite 12/1200, Elite XL 608 LC, Elite XL 1208, Elite XL 20/600, and Elite XL 20/800 are trademarks of GCC Technologies, Inc.

All other trademarks or registered trademarks are trademarks of their respective companies.

Choose 43 at www.macworld.com/getinfo
Freddi Fish 3
FURTHER ADVENTURES WITH A FAVORITE FISH

Freddi Fish is back and ready for more underwater adventure in Freddi Fish 3: The Case of the Stolen Conch Shell ($29.99 list price), the third installment of the popular series from Humongous Entertainment (423/486-9258, www.humongous.com). This time, Freddi and his little green friend, Norman, must locate a missing conch shell, which the towns-fish need to launch the Founders' Day Festival. Freddi's Uncle Brenn is the guardian of the shell and gets thrown in jail when it comes up missing. Your 3-to-8-year-old's job is to find the missing shell pieces and then rescue Uncle Brenn and start the festival. FF3 features the outstanding graphics and ease of use that have been the hallmarks of the series. Unfortunately, it also suffers from the same abbreviated playing time: you'll get little more than an hour of quality computer time with your youngster. Fortunately, some sections let your child spend as long as she likes recording music or drawing underwater creatures. Our four-year-old liked it, and she thinks your child will, too.—PHILIP AND LAUREN DYER

Jump Start Fifth Grade
HEAD-START PACKAGE AIMS TOO HIGH

It sounds great on paper: a series of educational programs that help kids through the transitions between grades while providing a welcome diversion from the dog days of summer. Unfortunately, Jump Start Fifth Grade ($19.99 direct price), from Knowledge Adventure (310/793-0600, www.knowledgeadventure.com), is more likely to frustrate your soon-to-be fifth-grader than fill him with anticipation for the upcoming school year. Playing the part of a kid detective, you try to save your city from the evil Dr. X, a villain set on blowing up all the factories and power plants. Clues hide all over the place, but they require solving math, science, history, geography, and language puzzles. Alas, many of these puzzles are simply too difficult for the intended age group, using inappropriately advanced vocabulary and concepts. The program's poor interface requires kids to remember unfamiliar words they discover in one area to fill in a puzzle that is two or three screens away. My son and some of his friends were unable to get through the program without constant adult help. The mediocre animation and soundtrack aren't likely to keep a kid's interest. In fact, Jump Start Adventures elicited a show-stopping assessment: "Boring."—TOM NEGRINO AND SEAN SMITH

Kid Pix Studio Deluxe
ARTISTIC FUN FOR KIDS . . . AND PARENTS

This year's model of the long-running Kid Pix series, from Broderbund Software (415/382-4400, www.broderbund.com), won't disappoint your budding artist. Kid Pix Studio Deluxe ($29.99 company's estimated price) provides megabytes of clip media that make it easy and fun for kids 3 to 12 years old to start creating art. New features include a text-to-speech capability that reads back text in English or Spanish; editable text in your artwork; and the ability to import and export your pictures in a variety of graphic formats. In addition to the main Kid Pix module, Moopies and the Stampimtor animate clip art, stamps, and original drawing. Wacky TV adds special effects to video clips; Digital Puppets offer keyboard-controlled animated characters. A Slide Show feature lets your pint-size Picassos play back their dazzling creations with sound, transitions, and other special effects. And Kid Pix Studio Deluxe's appeal isn't limited to the young; Dad was politely requested more than once to go play on his own computer.—TOM NEGRINO AND SEAN SMITH
Slam Dunk Typing

TYPING TUTOR SHOOTS AND SCORES

Voice-recognition software may make typing obsolete by the time your ten-year-old is ready to enter the workforce, but you never know. With that in mind, Slam Dunk Typing (****; $24.95 list price), from Creative Wonders (617/761-3000, www.creativewonders.com), spices up a dry topic by combining the educational value of a typing tutor with the fast-moving action of a basketball game. Using an entertaining yet instructional arcade-style interface, Slam Dunk features seven different drills and ten skill levels designed to teach keyboarding techniques, emphasizing speed and accuracy. The Horse drill is especially fun: you type words to bounce the ball off the cheerleaders, the sports reporter, the hot dog vendor, and other arena fixtures before it goes into the hoop. In Heads Up, you type words to destroy balls dropping from the rafters. The graphics are old-fashioned, and some of the drills are too slow and tedious to be engaging, but overall Slam Dunk is a winner. And who knows, for your kids, showing off their typing skills may be a cool party trick in the next century.—MICHAEL GOWAN

Success Builder: Math Library

FUN WITH NUMBERS

Grown-ups may not believe it, but a lot of kids think math is fun. Success Builder: Math Library (****; $39.95 company’s estimated price), from The Learning Company (617/494-5700, www.learningco.com), includes six CDs (Math Review, Algebra 1, Geometry, Algebra 2, Trigonometry, and Calculus), giving you lots of math. The box says it’s good for people 14 and up, but even some 10-year-olds will have fun with the Math Review CD. Each CD has 5 to 12 different chapters, each with up to 7 different topics. There’s nothing too fancy, just a short description of each topic and then some problems with links to examples. Some examples aren’t explained very well, and the program doesn’t offer a pop-up calculator or a way to work out problems without having to use a pencil and paper. Overall, though, using Success Builder: Math Library is a great way for kids as well as adults to learn or relearn math, study for tests, or just play around.—RIK AND CAREY MYSLEWSKI

LanguageNow

FLEXIBLE POLYGLOT TUTOR

The LanguageNow series (****; $49.95 list price), from Transparent Language (603/465-2230, www.transparent.com), is a superior language-learning package. Not only does the series offer a long list of languages—Dutch, French, German, Italian, Latin, Portuguese, Russian, Spanish, and Swedish—but the program lets you learn at your own pace and style. LanguageNow completely immerses you in your target language, letting you read stories, vocabulary, and conversation while a movie or slide show plays alongside scrolling text. If total immersion proves frustrating, same-page English translations and grammar lessons can help out. Once you’ve studied, you can test your comprehension with four games, including a crossword puzzle and a fill-in-the-blanks test. Alas, many lessons don’t offer sufficient visual information, some of the pictures don’t match up, and sometimes you get a wrong answer even if your sentences are basically correct.—MICHAEL GOWAN
and a so-so interface hides some excellent content. But overall, LanguageNow offers a highly customizable, effective way to learn new language skills.—NANCY PETERSON

Where in Time Is Carmen Sandiego?
HISTORY GAME LACKS DETAILS

That intrepid thief Carmen Sandiego swaps her normal focus, geography, for matters more temporal, in a new attempt to make history lessons fun. Where in Time Is Carmen Sandiego? (★★; $34.95 list price), from Broderbund Software (415/382-4400, www.broderbund.com), features Carmen and her band of thieves traveling through time, stealing precious artifacts. You track them down, solving puzzles and interacting with famous figures from different time periods along the way. The game covers a wide array of topics, from ancient Egypt to modern Asia, the American colonies up to the space race. Jewels of information pop up along the way—did you know that the first novel was written in Japan? The Chronopedia summarizes each historical period and provides the best opportunity for true learning. But the game only skims the surface of most cultures, concentrating on a few select narrow aspects. This approach may entice the younger members of the recommended audience (ages 9 and up), but it offers little stimulation for anyone who has more than a basic knowledge of world history.—MICHAEL GOWAN

Ultimate College Money Guide
SCHOLARSHIP-SEARCH TOOL FALLS SHORT

The Ultimate College Money Guide (★☆★☆; $34.95 list price), from CollegeView (800/927-8439, www.collegeview.com), bills itself as an essential tool for people looking to finance their higher education. Unfortunately, poor implementation and a lack of insightful information limit its usefulness. The guide provides a database of more than 3,000 private, public, and school-specific scholarships. You can find ones for which you qualify by using search criteria ranging from state of residence to interests and hobbies. Once a match has been found, the program offers a scholarship summary and lets you draft a preformatted letter to request more information. Sample queries, however, had me questioning the efficiency and accuracy of the search engine; the program lacks specific advice about individual scholarships, such as tips on applying. Although scholarships are created and discontinued regularly, the guide doesn't include the ability to dynamically update the database to keep the information current. The non-Mac-standard interface can be confusing for even an experienced user, although help files can walk you through most of the features. Despite its lofty ambitions, this program is useful only to students who are looking for a starting point in their search for financial assistance.—ALAN CHAN

Zap
SCIENTIFIC ADVENTURES IN FUN

Zap (★★★★; $29.95 company's estimated price), from Edmark (425/556-8400, www.edmark.com), features three characters—Riff, Surge, and Blaze—who teach kids ages 8 to 12 about sound, light, and electricity. In Riff's SoundWave Studio, you learn how sound works, but you won't stay there long because Riff is a bit obnoxious. In the ElectroLoft, Surge helps you fix circuits and work with batteries, wires, lightbulbs, switches, and other electrical components. In the Laser Lab—the most fun module—Blaze shows you how to use lenses, mirrors, and filters to bounce laser light around. Each section offers two ways of playing; click on Explore to construct your own experiments or on Questions and Answers for puzzles that get tougher as you go along. It can be hard at first to understand how Zap works, but don't give up—you'll have lots of fun.—RIK AND ROXANNE MYSELEWSKI
Buy DenebaCAD direct from Deneba before December 31, 1998, and save $100.00.

Call 1.800.7DENEBA

If the only thing between you and running, photo-realistic 3D architectural models is your wallet, you need DenebaCAD. Offering features found in CAD applications costing thousands more, DenebaCAD gives you the 2D drafting power to design without limits, and the 3D modeling precision to bring those designs to life. • DenebaCAD's rendering engine is so fast, showing multiple scenarios to your clients is instantaneous. Reflectivity, texture mapping, advanced lighting controls and more are all under your control. • But we understand that at the foundation of any great 3D rendering is a powerful 2D drawing package. Create your entire project in DenebaCAD, or use its flawless DWG/DXF (r14) import and export capabilities to seamlessly integrate DenebaCAD into your current CAD toolset. • Get DenebaCAD now, and make your dreams of a modeling career come true. With our 60-day money back satisfaction guarantee, there's no risk - and with a $100 discount there's no reason to wait. Call 1.800.7DENEBA to order your copy of DenebaCAD today.

DenebaCAD 1.5

For more information visit our web site at www.deneba.com/cadmacworld/

If the only thing between you and running, photo-realistic 3D architectural models is your wallet, you need DenebaCAD. Offering features found in CAD applications costing thousands more, DenebaCAD gives you the 2D drafting power to design without limits, and the 3D modeling precision to bring those designs to life. • DenebaCAD's rendering engine is so fast, showing multiple scenarios to your clients is instantaneous. Reflectivity, texture mapping, advanced lighting controls and more are all under your control. • But we understand that at the foundation of any great 3D rendering is a powerful 2D drawing package. Create your entire project in DenebaCAD, or use its flawless DWG/DXF (r14) import and export capabilities to seamlessly integrate DenebaCAD into your current CAD toolset. • Get DenebaCAD now, and make your dreams of a modeling career come true. With our 60-day money back satisfaction guarantee, there's no risk - and with a $100 discount there's no reason to wait. Call 1.800.7DENEBA to order your copy of DenebaCAD today.
Adobe Premiere 5.0

LONG-AWAITED UPDATE

INVIGORATES DESKTOP-VIDEO POWERHOUSE

Fire up the searchlights and call the paparazzi—there’s a new Premiere in town. Years in the making, Adobe Premiere 5.0 is a major overhaul of the desktop-video world’s most popular editor, a program that’s been around since QuickTime movies were the size of a sticky note and rarely longer than a few minutes.

In recent years, Premiere’s pioneer spirit worked against it. The program’s editing and project-management features were cumbersome for lengthy projects and paled next to their counterparts in professional editing systems, such as Media 100. Worse, video professionals often suffered through sound-synchronization problems caused by an aging architecture that wasn’t built for broadcast video.

Premiere 5 addresses these weaknesses and then some. Adobe has also added new video and audio filters, better title-making features, a wide array of interface improvements, and excellent cross-platform compatibility.

New Ways to Work

Premiere 5 looks different from earlier versions, and Premiere veterans will need some time to adapt. For example, Premiere 4’s Construction window—where you positioned clips and added transitions and effects—has been replaced by the Timeline window, which works more like its counterpart in professional systems. You create simple cuts and add transitions within a single video track, whose sub-tracks hold individual clips and transitions.

The Timeline window sports several efficiency-boosting features. You can give descriptive names to tracks and collapse and hide tracks to reduce screen clutter. A new Navigator palette lets you quickly jump to different areas of the Timeline and change its magnification scale.

Terrific as the Timeline window is, video veterans will want to do most of their work in the new Monitor window, which mimics the editing interface of high-end systems. It lets you set a clip’s in and out points, insert a clip into your project, quickly apply a transition, preview a project, and scrub clips (play them forward or backward, using the mouse).

You can also perform three-point editing: you fit a clip into a project by specifying only three edit points, and Premiere calculates the fourth point itself. It’s a feature common in high-end video systems but new to Premiere, and it makes for faster, more efficient editing.
**Enhanced Effects**

Premiere 5 retains the plug-in architecture of previous versions and is compatible with third-party filters and effects. It also has new hooks for accelerating effects rendering, although no third-party products use them—yet.

Adobe also added several new video effects. The Horizontal Hold filter simulates a TV on the fritz, Camera View pans and rotates clips, Better Gaussian Blur gives you precise control over blurring, Strobe simulates a flashing strobe light, and Median simulates painterly effects.

Many of Premiere 5's filters let you animate their effects over time—to gradually blur a clip, for example. A new keyframe feature aids in animation, but it isn't as sophisticated as its counterparts in Adobe After Effects or Artel's Boris FX (see Reviews, March 1998). For example, because keyframes don't appear in the Timeline window, manipulating them means repeated trips to the Filters dialog box. Still, filter animation is greatly improved over that in Premiere 4.

Also new to Premiere 5 are many first-rate audio filters, including reverb, flanging, compression, digital delay, and both graphic and parametric equalization. Most of the new filters have buttons that let you preview settings. Most also support keyframes, so you can, for example, make an echo louder over time. Unfortunately, you can't save effects settings as presets for subsequent projects, as you can in the wonderful audio plug-ins from Waves (www.waves.com).

Speaking of sound, Premiere 5 offers improved control over audio levels and left/right stereo placement. And a new resampling routine yields better fidelity when you're creating low-bandwidth audio tracks for CD-ROMs or the Web.

**Turning Pro**

The Monitor window isn't the only aspect of Premiere 5 that will appeal to video pros; the most important enhancement is true support for NTSC-standard 29.97-frame-per-second video. Previous versions fudged the frame rate up to 30 fps, causing sound synchronization to drift over time. Premiere 5 can also handle longer projects—up to three hours, compared to previous versions' one-hour limit. A built-in database lets you give clips descriptive keywords and phrases that you can then search for; a convenient new Libraries feature lets you store and recall frequently used media.

Video pros will also appreciate Premiere 5's revamped titling features. You can now apply font, style, and color attributes on a character-by-character basis. You create rolling titles without all the workarounds required in previous versions and then preview them directly in the Title window. One small gripe: you can't select words in the Title window by double-clicking on them.

Web-video producers will find only modest improvements in Premiere 5. The new version incorporates the Web-oriented add-ons that Adobe released for Premiere 4.2, such as the ability to output a project as an animated GIF file. Those features are now more tightly integrated into the program, but they don't go beyond their predecessors.

**Interface Enhancements**

Premiere was long overdue for an interface lift. The new version is more consistent with other Adobe products; the Navigator palette works like Photoshop's, for instance. But the new families go deeper than the interface—Premiere can now import individual layers from Photoshop documents.

The Transitions palette is also greatly improved. You can turn off the distracting animated transition icons and hide the transition descriptions to create a smaller, more efficient palette. You can also remove transitions from the palette and create customized palettes.

Other refinements include pop-up tool tips that appear whenever you point to a tool-bar button and terrific online help—a first for the Mac OS version of Premiere. With 32 levels of Undo, you can now experiment with abandon—and if necessary, abandon your experiments.

The best part of the new interface is that its power doesn't come at the expense of simplicity. New users can hide the more complicated Monitor window and simply work in the Timeline view, and they can ignore the more advanced concepts of media bins and libraries.

**Better on Windows?**

I tested both the Mac and Windows versions; Premiere 5 installs smoothly on both platforms. (The Macintosh version runs on PowerPC-based machines only.) In the Windows version, Adobe's installer automatically adds Apple's QuickTime 3 and Microsoft's latest DirectX software drivers if neither is present. Both versions include Photoshop LE 4.0.

Premiere 5 looks and works nearly identically on both platforms, although the Mac version can feel sluggish; in particular, users have complained about slow performance with long-form projects.

You can swap project files and most types of settings files between the two versions.

**Macworld's Buying Advice**

Regardless of platform, Premiere 5 is a winner. Adobe has succeeded in bringing Premiere's editing features up to date without making the program too daunting for beginners. Premiere is the best general-purpose video editor available, and now it's a solid choice for professionals, too.—JIM HEID

**RATING:** ★★★★★ **PROS:** Professional-level feature enhancements; excellent cross-platform compatibility. **CONS:** Keyframes don't appear in Timeline; can't save audio filter presets. **COMPANY:** Adobe Systems (408/536-6000, www.adobe.com). **LIST PRICE:** $895; upgrade from any earlier version (including Premiere LE), $199.
Web Servers

LATEST OFFERINGS PROVE VERSATILE AND FAST (ENOUGH)

EVERYONE ACKNOWLEDGES THE Mac's leading role in creating Web content. But as a platform for serving Web sites, the Mac gets a bum rap. According to surveys conducted by Netcraft, less than 2 percent of publicly accessible Web sites are served using Mac OS machines (see www.netcraft.com/Survey/). Unix dominates with more than 50 percent, and Windows NT places second at about 24 percent. The reasons behind this disparity range from corporate and ISP bias against the Mac to genuine technical concerns about the platform's performance—Mac OS Web servers tend to bring up the rear in benchmark tests.

But benchmark graphs don't tell the entire story. As a Web-server platform, the Mac has some real advantages over other platforms. It's more resistant to most forms of hacker attacks, and it's often easier to set up and administer.

For this roundup, Macworld Lab tested three Mac Web-server packages: Social Engineering's Quid Pro Quo Plus 2.1, a reasonably priced but sluggish offering; StarNine Technologies' WebStar 3.0, the latest version of the most popular Mac Web server; and Tenon Intersystems' WebTen 2.0.4, a fast but sometimes funky Mac adaptation of Apache.

Set Up for Serving

All three programs are easy to get up and running. Quid Pro Quo Plus is particularly beginner-friendly; when you launch it for the first time, dialog boxes walk you through the specifying of various settings.

When it comes to administering the server, WebStar and Quid Pro Quo Plus have an edge over WebTen; both provide well-designed administration programs (see "Setting Up Servers"). With WebTen, you configure nearly every server setting with a Web browser. There's nothing wrong with browser-based administration, but WebTen's interface is crudely designed and often confusing.

Another aspect of setup deals with configuring the server to handle special data types. Servers preconfigured for QuickTime and Shockwave movies, RealMedia clips, and Flash animations get up faster, so it's surprising that Quid Pro Quo isn't set up for these and other common MIME types. Adding them isn't brain surgery, but it is grunt work fraught with the potential for typos. WebTen offers the most complete MIME configuration list, with WebStar close behind.

Besides ditching out content with HTTP, each program has a unique mix of additional features. WebStar and WebTen also offer FTP services (which let visitors transfer files to and from your site without requiring you to run a separate FTP server), along with proxy servers that can act as intermediaries between a local network and the Internet. WebTen's proxy server handles HTTP and FTP; WebStar's is limited to HTTP—but that's not a significant drawback, since proxy servers are most commonly used for HTTP requests.

All three programs now support the HTTP 1.1 specification's keep-alive option. This enables the server to send several files to a browser in a single connection cycle, speeding the transfer of pages containing numerous graphics.

For electronic commerce and other security-sensitive tasks, both WebStar and WebTen support the Secure Sockets Layer (SSL). Quid Pro Quo Plus doesn't, but Social Engineering's $350 Quid Pro Quo Secure does.

There's No Place Like Multihome

The new versions of WebStar and Quid Pro Quo Plus join WebTen in support-

Mac Web Servers: Slower than NT, but Fast Enough

<table>
<thead>
<tr>
<th></th>
<th>NT Server IIS 4</th>
<th>WebTen 2.0.4</th>
<th>WebStar 3.0</th>
<th>Personal Web Sharing</th>
<th>Quid Pro Quo Plus 2.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requests handled per day (in millions)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>120</td>
<td>90</td>
<td>60</td>
<td>50</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>110</td>
<td>80</td>
<td>50</td>
<td>40</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>100</td>
<td>70</td>
<td>40</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>8</td>
<td>90</td>
<td>60</td>
<td>30</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>16</td>
<td>80</td>
<td>50</td>
<td>20</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>20</td>
<td>70</td>
<td>40</td>
<td>15</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

Behind Our Tests

For detailed information on our methodology, see www.macworld.com/tests/—Macworld Lab testing supervised by Kevin Mitchell
ing multihoming—the ability to use one server to host multiple domains. All three programs support IP-based virtual multihoming.

A key part of multihoming involves supplying each domain's address to a domain-name server (DNS). WebTen edges out WebStar and Quid Pro Quo Plus here, providing built-in DNS services that eliminate the need to run a separate DNS package or hassle your ISP to make the necessary tweaks to its DNS.

Quid Pro Quo Plus allows for more multihoming-configuration flexibility than does WebStar. With WebStar, the same server settings—security passwords, MIME setups, cache and connection settings—apply to every domain you host. Quid Pro Quo Plus, by comparison, permits separate settings for each domain. And WebStar's SSL security features don't work with virtual hosts, whereas WebTen's do. Thus, WebTen is better suited to Webmasters who need to serve secure pages through multiple domains.

Bells and Whistles

One key to the growing power of Mac Web servers is their support for plug-in modules that add new features. All three servers support the WebStar-format plug-in architecture and include plug-ins for handling server-side image maps, converting files into MacBinary and BinHex formats, creating page counters, and displaying Finder-like directory listings.

All three also support Server Side Includes (SSIs), which use specialized tags to display the current time and date, and much more. WebTen's SSI implementation uses the latest Apache Extended SSI (XSSI) standard, which is far more powerful than the SSI plug-ins in WebStar and Quid Pro Quo Plus.

WebStar 3 includes a great new plug-in for adding search features to a site. The plug-in can index the contents of HTML files and Acrobat PDF documents. WebStar's SSI plug-in provides a &quot;search&quot; tag that makes it easy to add search capabilities to a page and display search results. Thanks to its Unix heritage, WebTen is the extensibility champ. Besides supporting WebStar-format plug-ins, it also supports Apache modules and the Perl scripting language.

Manual Labor

Feature-laden servers can be complicated beasts, and you can't tame them without good documentation. WebStar 3's manual is thorough, well-written, and packed with examples and tips. It's also delivered in HTML form, with extensive hyperlinks for jumping from section to section.

Quid Pro Quo Plus's manual is a single Adobe Acrobat PDF file. It's thorough and well written but lacks Acrobat bookmarks for fast navigation. But Quid Pro Quo Plus itself provides good balloon help—the only program of the three to do so.

WebTen's manual is also thorough, but it's written in engineer-speak. Combine this with WebTen's often-confusing browser-administration interface, and you have a steep learning curve.

Performance: WebTen's Revenge

Macworld's Labs testing showed exactly why so many Webmasters dismiss the Mac as a server platform (see "Mac Web Servers: Slower than NT, but Fast Enough"). WebStar and Quid Pro Quo Plus were dramatically slower than a Windows NT box running Microsoft's Internet Information Server (IIS). Quid Pro Quo Plus was especially slow, finishing behind even Apple's free Personal Web Sharing software.

We also found that Mac OS servers required extensive tweaking to optimize performance. Running Microsoft's IIS is a set-it-and-forget-it proposition, but the Mac servers require the juggling of cache settings and memory allocation to get the best performance.

Two of the worst performance inhibitors are the Mac OS's aging file system and the platform's crude multitasking architecture; this is where WebTen, with its Unix-based Mach kernel and Apache heritage, shines for its complexity. WebTen utterly humbled its Mac-based competitors and held its own against the NT server.

To put the performance numbers in perspective, though, remember that any of these Mac servers can meet the requirements of all but the busiest Web sites. Even Quid Pro Quo Plus can handle tens of thousands of hits per day. In fact, you'll probably saturate your network connection before you tax your server software.

Macworld's Buying Advice

The latest Mac Web servers have gone beyond spewing out HTTP to become complete, well-rounded serving systems. Though reasonably priced, Social Engineering's Quid Pro Quo Plus 2.1 lacks its competitors' range of features. Tenon's WebTen 2.0.4 proved to be an extremely powerful contender: if you're familiar with Unix but want the flexibility of using WebStar-format plug-ins and AppleScript—not to mention downright sizzling performance—WebTen is an excellent choice. But in the end, StarNine's WebStar 3.0 shines brightest. It isn't the fastest Mac Web server, but it's by far the most polished and should be any Mac Webmaster's first choice.—Jim Heid

Flash 3.0

EXCELLENT WEB VECTOR-GRAPHICS TOOL MATURSES

STANDARDS CHANGE DAILY, but Macromedia's Flash is a rare breed—on its way to becoming a solid standard for Web animation. Flash's highly efficient vector-graphics files are rasterized and animated as they arrive at a browser, which maximizes visual impact and keeps download times short. This efficiency is part of why Netscape announced in June that Flash technology will be automatically supported in future versions of its browsers.

Flash's 3.0 upgrade delivers new creative features, bug-fixes, interface revisions, and alternative playback methods for finished Flash projects—confirming Flash as a powerful Web graphics tool.

More Creation Capability
Flash 3.0's robust improvements begin with the addition of object transparency, an effect difficult to achieve easily in traditional PostScript-based illustration programs such as Adobe Illustrator and Macromedia FreeHand. You can vary the opacity of any shape, brushstroke, line, or fill with a transparency setting from 0 percent to 100 percent. And transparency can be animated over time—great for fading graphic objects onto or off the screen.

Even more powerful is Flash's new ability to use a layer's shapes as a mask for the layer immediately beneath the overlapping layer. For example, an animated square in a top layer can determine the opacity of an image in the underlying layer. However, Flash supports only one level of transparency per layer with mask layers.

Flash's new shape-tweening feature blends one shape into another over time. The tweening, or morphing, isn't constrained by the number of control points in an object—a simple square can be morphed into a complex letterform. To each object you can add as many as 26 control points, called Shape Hints, to define a path between a point on the starting shape and the same point on the final shape. Shape Hints aren't sophisticated, but they're better than no tween guides at all. Shape tweening works only on shapes and text created in Flash, however. EPS files and vector drawings imported or pasted from other drawing applications can't be morphed—a limitation for artists used to importing artwork from Illustrator or FreeHand into Flash.

You can assign actions and behaviors to Flash's "symbols"—buttons, graphics, sounds, and looping animations—as before, but now Flash allows each instance of a symbol to have different actions and behaviors. For example, create a looping animation, define it as a symbol, and put it in three different places in a Flash file. By using Flash 3.0's Modify>Instance command, you can give each symbol independent actions—link one to a URL and another to a Flash Scene, and have the third play an animation when clicked. This makes it simpler to use symbols for tasks such as creating interface elements.

Other new enhancements include the Object Inspector, which shows in a single dialog box the object types, sizes, positions, and actions attached to objects; a floating color/gradient palette; and support for the PNG (Portable Network Graphics) file format.

Expanded Playback Options
Like its larger multimedia cousin, Macromedia Director, Flash is now capable of creating stand-alone projector files. Previous versions of Flash required either the Flash Player or a browser armed with a Shockwave Flash plug-in to view Flash movies. Now that Flash movies are self-playing, Flash is a viable option for delivering compact desktop multimedia or interactive presentations.

Perhaps the most important addition to Flash is Macromedia's utility AfterShock 2.0. AfterShock automatically generates HTML code for Shockwave and Flash movies, but its most powerful feature is its ability to detect the required Shockwave Flash plug-in or ActiveX control in a browser and, if it is absent, designate alternative methods of displaying a Flash file. AfterShock can convert a Flash animation to JavaScript or a GIF file (static or animated) and even preserve embedded hyperlinks. The new Bandwidth Profiler also helps you serve the Web audience by providing playback simulation for different Internet-connection speeds.

Flash 3.0 is not without its limitations, though. Its animation tools aren't exactly up to professional standards—for example, Flash's timeline is still missing velocity graphs—but their simplicity helps make up for reduced control. Another issue is that you can't import Adobe Illustrator 7.0 files into Flash 3.0, but you can paste them in from the Clipboard. You can directly import files from FreeHand 8.0, however, complete with layering and color specifications.

Macworld's Buying Advice
Flash is a Web-animation cornerstone and has become an important technology for delivering compelling animated Web content. At its core is an ingenious technology surrounded by a host of stable playback environments, cross-platform support, and an ever-improving set of tools. Flash 3.0 isn't perfect, but for Web-content creators, it's a capable, eminently useful tool for creating lean animation and multimedia.

—NATHAN MOODY AND DAVID BIEDNY

RATING: 4½/5

PROS: Object masking; tweening and transparency effects; files can be played as stand-alone animations; Object Inspector facilitates object editing. CONS: Morphing doesn't work with imported graphics; can't directly import Illustrator 7 documents; needs more finely tuned animation controls. COMPANY: Macromedia (415/252-2000, www.macromedia.com). COMPANY'S ESTIMATED PRICE: $299; upgrade from any previous version, $99.
IN THE BATTLE OF THE WEB EDITORS, CYBERSTUDIO TRIUMPHS

OLIVE’S CYBERSTUDIO HAS been the pick of the WYSIWYG tools among Web editing pros since its original release last year. The excellent CyberStudio 3.0 sets a new standard for Web design tools, raising the bar far above version 2, which has been rechristened CyberStudio Personal Edition ($99). Macromedia has also updated its analogous offering: Dreamweaver 1.2 is a free, incremental upgrade that smooths some of the program’s initially rough edges (see Reviews, April 1998).

Bossing Your Site Around
CyberStudio 2’s site-management features were good (see Reviews, December 1997), but the revamped site manager in version 3 is phenomenal. For example, the new Site Window is completely integrated with the Finder; moving files around in the window changes their physical location on your hard disk. You can now create, move, rename, and link pages in the graphical site view, and all assets are easily accessible from the Site Window. You can even open multiple Site Windows to move assets between sites more easily. And the built-in FTP tool now uploads only files that have changed.

The most important improvement in Dreamweaver 1.2 is automatic link checking, the key component of site management. Macromedia has also speeded up Dreamweaver’s FTP site uploading. CyberStudio has always offered automatic link checking, but version 3 checks links to all sites, local and otherwise.

Both CyberStudio and Dreamweaver help prevent nasty layout surprises by letting you preview your site in different browsers. CyberStudio now lets you set a target browser for your site and then adjusts its layout display, JavaScript behaviors, and HTML-syntax checking to match that browser’s capabilities.

Dreamweaver has always been able to check sites for compatibility with different browser versions, but it no longer assumes that users will have a version 4.0 browser. The new version makes sites compatible with earlier browsers by replacing layers and style sheets with a single table that preserves, as closely as possible, the original positioning of page elements.

With its layout grids, CyberStudio already offered precise positioning of page elements. The new version adds desktop publishing-style tools for such tasks as selecting, grouping, aligning, and distributing multiple elements. You can also create and reuse master elements, format multiple cells in a table at once, and import tab-separated ASCII files. Dreamweaver still does a fine job of table and frame formatting, but it lacks support for master-page elements and the ability to group and align multiple elements.

Getting Dynamic with HTML
In supporting Cascading Style Sheets and Dynamic HTML, CyberStudio 3 is playing catch-up with Dreamweaver. However, these cutting-edge technologies are significantly easier to understand and use in CyberStudio than in Dreamweaver. For example, CyberStudio uses a floating Inspector palette to set up styles, giving you immediate feedback as you modify style attributes. In contrast, Dreamweaver’s clunky modal dialog box usually requires multiple passes to get a style the way you want it. This isn’t an isolated occurrence; Dreamweaver’s interface often seems awkward and inelegant.

Interface aside, the programs’ support for style-sheet formatting is now roughly equivalent; CyberStudio 3 adds floating layer boxes and a Timeline window to handle style-sheet positioning.

Like Dreamweaver, CyberStudio 3 can automatically generate JavaScript-based animations. CyberStudio includes 18 predefined actions, and you can easily insert common JavaScript-based actions into your page by dragging their icons from the tool palette.

Adding behaviors in Dreamweaver isn’t any easier than before, but version 1.2 improves its rollover behavior by letting you preload images so users don’t experience annoying delays.

Each of the programs offers improved HTML editing with better syntax coloring. CyberStudio also adds smarter, more convenient syntax checking and line numbers, and Dreamweaver now lets you choose a code editor other than the included BBEdit 4.5.

Macworld’s Buying Advice
Dreamweaver users will be happy with the 1.2 upgrade; the improvements make it more suitable for larger sites and those targeted at older browsers. If you haven’t already made the investment in Dreamweaver, however, this upgrade probably won’t tempt you.

GoLive has successfully integrated difficult technologies such as Dynamic HTML into an already terrific program without compromising CyberStudio’s ease of use. The new browser-previewing capabilities alone are worth the cost of the upgrade; the rest of the improvements make CyberStudio 3 the clear choice for Web professionals.—TOM NEGRINO

CyberStudio 3

Dreamweaver 1.2
INTRODUCING THE
EPSON EXPRESSION™ 836XL
LARGE-FORMAT SCANNER:
STRIKING 12 x 17 FULL-BLEED IMAGES FOR UNDER $3000.
To carry the world, you need to be big and powerful. Like the Expression 836XL with 800 x 1600 true optical resolution and 36-bit color. AutoFocus optics along with high 3.3 dynamic range captures every detail in the world. So scans from photos, transparencies, and even small 3-D objects become professional-quality reproductions. Our exclusive LaserSoft SilverFast® driver gives you the power to control color balance, tone curves, highlights, shadows, sharpening and descreening. And batch scanning along with incredible scan speeds means you’ll be more productive. You could say the Expression 836XL is so powerful it’ll change your entire view of the world. Well, at least when it comes to scanning. For more information on our award-winning line of scanners, call 1-800-241-5747 and ask for Operator 3214. Or visit us at our website: www.epson.com.
**Director 6.5**

**MULTIMEDIA AUTHORIZING HEAVYWEIGHT GETS MODEST UPGRADE**

Some software upgrades break new ground, and others just till the soil a bit. Macromedia Director 6.5 falls into the second category. The latest version of this multimedia authoring powerhouse isn't radically different from its predecessor, but instead incorporates a collection of new add-ons and feature tweaks. Director 6.5 is a solid update, but some of its new features have frustrating limitations.

The latest version retains the identical timeline-authoring style of Director 6.0 (see Reviews, September 1997). But although this approach is ideal for creating animations, it has always been more cumbersome for slide-show-style projects. So to give business users a head start, Director 6.5 includes an Xtra (plug-in module) that converts Microsoft PowerPoint presentations into Director format. Each element in a PowerPoint project becomes a Director cast member, and each slide becomes a section in the Score. You can then use Director's arsenal to add sounds, animation, and scripts.

Unfortunately, the PowerPoint Xtra has significant limitations. For starters, it works only with PowerPoint 4 presentations—it can't import presentations created in PowerPoint 7 (included with Office 95 for Windows) or PowerPoint 98 (in Office 98 for the Mac). Nor can the Xtra import sounds, animations, or interactivity settings from PowerPoint. These shortcomings severely hobble your ability to use Director to polish a project's design and interactivity that you've fleshed out in PowerPoint.

Director 6.5 also introduces support for Apple's QuickTime 3. You can import any QuickTime 3-compatible media into Director projects, and Director's new QuickTime 3 behaviors library enables you to take advantage of QuickTime 3's ability to rotate and scale movies on the fly.

You can also now save projects as Java applets, enabling playback that doesn't require the Shockwave plug-in. The Java export feature doesn't support many advanced Director features, but it's still useful for creating applets containing animations, user-interface elements, and simple games.

Director 6.5 includes version 2.0 of Macromedia's Aftershock utility, which greatly streamlines the task of embedding Director projects in Web pages. You specify a Director project and check a few boxes, and Aftershock generates HTML and JavaScript, allowing reliable playback regardless of browser version or plug-ins.

Along with these enhancements come some nice tweaks, such as a new cursor editor that lets you create animated color cursors for your projects, and support for Macromedia Flash 2.0 files. While Director 6.5's documentation of its enhancements is clear and thorough, it's supplied only electronically—in more than 40MB of HTML files.

**Macworld's Buying Advice**

If you're already a Director user, the QuickTime 3, Flash, and Java support alone in Director 6.5 are worth the upgrade price. But if you're a PowerPoint user fantasizing about effortlessly migrating your projects into Director, forget about it. Director 6.5's PowerPoint import Xtra is promising, but it needs to support the latest PowerPoint versions and capabilities before it can be considered truly useful.—Jim Heid

---

**RATING:** 4/5 **PROS:** Well-rounded array of enhancements and feature tweaks. **CONS:** Some add-ons have frustrating limitations; new features lack printed documentation. **COMPANY:** Macromedia (415/252-2000; www.macromedia.com). **LIST PRICE:** Director 6.5 Multimedia Studio, $995; upgrade from Director 6.0, $199; upgrade from Director 4.0 or 5.0, $399.
Consistency. It’s what every graphics professional wants, but seldom achieves. Until now. The SpectraView 1000 color calibrated display system from Mitsubishi Electronics provides monitor-to-monitor color matching throughout the entire prepress process. Unsurpassed color accuracy results in less time and materials needed to complete a job, which improves your productivity and adds more profit to your bottom line. The SpectraView 1000 combines Mitsubishi’s award-winning 21” (19.7” diagonal viewable image) DIAMONDTRON™ CRT display with a precise, high-speed SpectraSensor™ colorimeter and custom software to achieve accurate, reliable, repeatable and consistent color performance. Plus, it’s available for either PC or Mac, providing a complete cross-platform display-matching solution. To find out how the SpectraView 1000 can make a major difference in your color-critical applications, contact Mitsubishi Electronics today.

USA: 800-843-2515 • Canada: 800-387-9630 • QW/KFAX: 800-937-2094
World Wide Web: www.mitsubishi-display.com/pb/mwd/sv

Choose 261 at www.macworld.com/getinfo
NEW TECHNOLOGIES OFTEN take time to catch on, and DVD is no exception. DVD-ROM upgrade kits have been available on the PC platform for months, and E4 is the first company to ship a Mac version. But although the CoolDVD upgrade kit is a promising rookie, it doesn’t yet deliver solid performance.

The CoolDVD replaces your internal CD-ROM with a DVD-ROM drive that reads everything your old drive could and adds support for playing back DVD titles with the help of a hardware decoder. E4 officials tell us they’re working on a SCSI version of the kit, but the current offering is ATAPI-only, restricting its use to G3 Macs and a few older systems.

In addition to the DVD-ROM drive, the kit includes a PCI card that decodes the compressed DVD video, mixes it with the video from your Mac, and sends it out to your monitor. You also get a companion card with output jacks for sending the DVD video directly to a television monitor.

Installing the hardware is simple enough, so long as you’re comfortable manipulating cards and cables and turning a few screws; the manual provides detailed installation instructions and helpful diagrams. The software installation was similarly painless until we couldn’t get the player application to work. A phone call to the company revealed that our installation disk was missing an essential code library, which we downloaded from E4’s Web site.

To play a DVD title, you pop it into the drive and fire up the player application. The CoolDVD player uses a familiar VCR-like interface, adding DVD-specific controls for accessing subtitles, alternative audio tracks, and camera angles. You can play a movie at full-screen size or place the video into a resizable window on your desktop.

Unfortunately, wrangling the CoolDVD to do your bidding can be a challenge. The finicky player software occasionally refused to recognize a disc mounted before the application was launched. E4’s decoder card had some trouble integrating the DVD video signal with the Mac video signal; the control interface and the mouse cursor sometimes refused to appear when a movie was running in full-screen mode.

The CoolDVD’s video playback is adequate but not impressive. We tested several titles, running the video through both our Mac’s monitor and a high-end consumer NTSC monitor (the CoolDVD supports both connections simultaneously). The computer monitor displayed pixilated artifacts, and some ghosting occurred on the NTSC monitor. Neither problem made the video unwatchable, but the defects were distracting even to casual observers. The video playback also froze momentarily four or five times over the course of a two-hour movie.

Performing as a 20X CD-ROM drive, the CoolDVD behaved much better. But as you’d expect, the device and drivers are optimized for reading back streams of uninterrupted data; the CoolDVD fared poorly when we tried to retrieve small chunks of randomly placed data, as a database application might do.

E4 engineers say they’re working to cure some of the CoolDVD’s hiccups. And to be fair, some interface oddities can be chalked up to DVD vendors’ inconsistency in implementing the new standard.

Macworld’s Buying Advice
If you’ve got a G3 Mac and you absolutely must be the first on your block to own a DVD-equipped Macintosh, the CoolDVD will do the job. But you can bet that in six months there will be better, cheaper devices available.—CAMERON CROTTY

RATING: $$$
PROS: Plays DVD titles on select Macs; adequate playback quality.
CONS: ATAPI-only device; interface glitches and video glitches.
LIST PRICE: $499.
How many creative thoughts have you lost waiting for your Mac? Patience is no virtue when your creativity is at work. Adaptec® PowerDomain® Ultra2 SCSI cards and Remus® RAID software can boost disk performance to a staggering 80MB/sec. This means you can manipulate files in a fraction of the time it takes with the SCSI built into your Mac. And to store and distribute your work, burn it to CD with Adaptec Toast or DirectCD™ software. It's easy and anyone can read CDs. So spend less time waiting and more time creating with Adaptec. Call 1-800-804-8886 x9977 or visit: www.adaptec.com/mac
Professional Audio Tools
CAPABLE COMPRESSION AND CONVERSION SOFTWARE

CONTENT PROVIDERS USING audio on the Web or in multimedia projects have two new professional sound tools to make audio-optimization tasks less onerous. QDesign Music Encoder Professional Edition 1.0 gives you control over parameters of file compression that the free QDesign Music tag. Granted, SoundApp handles many of the same file types as BarbaBatch—AIFF, AU, WAV, Sound Designer I and II files, and MPEG audio layers I and II. However, BarbaBatch not only produces better-sounding files but can also batch-process them, performing one or more different conversions on multiple files in one pass.

You can change file type, sample rate, bit depth, and number of channels in one pass; add fade-in and fade-out; remove extraneous low-level sounds through gating; normalize a file; and employ a peak limiter to avoid distortion. BarbaBatch’s limiter can be adjusted from 0.1 dB to -12 dB.

On BarbaBatch’s downside, you can’t capture a portion of a CD audio track, as QuickTime’s capture engine allows—it’s all or nothing. Another glaring drawback is the program’s cumbersome copy-protection scheme.

Whether you decide to stay with your Mac or go to Windows, DataViz makes it easy. If you’re staying on your Mac, MacLinkPlus keeps you compatible with the rest of the world. It lets you open and use Windows files right on your Mac. If you’re moving to Windows, we make your move easy with Conversions Plus. It lets you use Mac disks and files right on your PC. Whether you stay or go, is your business; helping you stay compatible is ours.

Call to learn more: 1-800-270-0030 ext. 146. Or visit our website: www.dataviz.com/whatever

Choose 151 at www.macworld.com/getinfo
Retrospect Express

PERSONAL BACKUP MADE SIMPLE

LIKE EATING RIGHT AND GETTING regular exercise, backing up our hard disks is one of those chores we all know we should do but always find some excuse to avoid. A simple, inexpensive backup product such as Dantz Development's Retrospect Express is probably the best hope for motivating more Mac users to get on the backup bandwagon.

Priced at $290, Dantz's five-mouse-rated Retrospect 4.0 (see Reviews, October 1997) proves too pricey for many home- and small-office computer users, especially those who don't want or need all of the high-end aside from tape backup and remote-client support. All of Retrospect's other features—including unattended and incremental back-ups and support for all desktop-mountable removable-media drives and selected packet-recording CD-R drives—remain in the Express version, but at a dramatically reduced, sub-$50 price.

Retrospect Express's straightforward manual walks you through backing up and restoring your system. Clear, understandable screen shots and detailed explanations ensure that new users won't struggle with confusing concepts.

Informal tests bear out Dantz's claims that Retrospect Express's performance is identical to that of its full-featured sibling. More important for home computer users, backing up with Retrospect Express does not take appreciably longer than it would to manually copy the same files to a floppy or Zip disk. And Retrospect Express's built-in compression shrinks archives to anywhere from three-quarters to one-half the size of the original documents.

Dantz guarantees that, like Retrospect 4.0, Retrospect Express supports Mac OS 8.1 and its HFS+ file-management protocol. (In contrast, representatives of Charis-Mac Engineering said that its engineers haven't verified that Charis/Mac's Retrospect Express competitor, Backup Mastery, is 100 percent compatible with OS 8.1 and HFS+; although they expect it to work fine for most users.)

Even though its installer takes up a mere 1.5MB of disk space, Retrospect Express ships on CD-ROM. Dantz claims that only a handful of users out of thousands have requested floppy disks, but the company is considering a segmented, floppy-based option for the next version.

Macworld's Buying Advice

It's a rare consumer-oriented program that serves the needs of a wide variety of users without compromise; Retrospect Express is among this select group. Although network administrators who manage several machines and those who need to back up to a tape drive should continue to use the full version of Retrospect, everyone else can take the Express.—KEVIN MITCHELL


Text Cleaner

TYPOGRAPHICAL TOOL NEEDS WORK

ALONG WITH LAST-MINUTE deadlines and demanding clients, one of graphic designers' biggest aggravations is improperly formatted text—straight quotes instead of curly, hyphens rather than en and em dashes; and multiple spaces, returns, and tabs—which often requires repeated and time-consuming search-and-replace operations. Studio 405's Text Cleaner 1.0 offers a quick fix for this problem, purporting to correct common typographical errors in one pass.

In addition to the mistakes listed above, Text Cleaner performs such esoteric functions as removing spaces before and after a hyphen, changing curly quotes to straight quotes for foot and inch measurements, and stripping out e-mail quote symbols (>).

To make changes, you select from 20 different cleaning options and then either click on the Clean File button to select and clean an ASCII text file or choose Clean Clipboard to repair cut or copied text. You can also drag text files onto Text Cleaner's DropClean AppleScript applet; Text Cleaner then launches automatically, cleans the text, and creates a new document with the suffix (Clean) appended to the file name.

Alas, the phrase "too little, too late" aptly describes Text Cleaner's abilities. Many programs already offer a built-in utility that addresses some of these typographical issues. Microsoft Word 98, for example, sports an AutoFormat feature that makes, in one pass, many of the same repairs. Casady & Greene's Spell Catcher likewise allows you to remove extra spaces, line breaks, and tabs as well as straighten or curl quotes. And Newer Technology's SpellTools does a fine job of normalizing spaces and returns in a text file.

But Word 98 doesn't offer as many kinds of corrections as Text Cleaner, and neither Spell Catcher nor SpellTools tackles multiple errors at once—you must invoke a separate command for each operation. The limitations of its competitors might give Text Cleaner the edge if it offered comprehensive cleaning to every file. Regrettably, it doesn't.

In my e-mail test file, Text Cleaner refused to remove multiple quote characters (>), for example. In an ill-formatted document downloaded from the Web, Word 98 did a far better job of creating logical paragraphs—Text Cleaner jammed most of the text together into several long paragraphs. Text Cleaner's Clean Clipboard command is limited to files no larger than 32K, and because Text Cleaner deals only with ASCII text files, you must reformat Word and AppleWorks documents as plain text files before cleaning.

Macworld's Buying Advice

Although Text Cleaner offers more text-cleaning options than the competition, it's limited in the kinds of files it cleans and doesn't clean as completely as I'd like.—CHRISTOPHER BREEN

Power! Speed!
The Best deal!

Direct From Vimage®.

- Make your PowerLook 1400 scream with Vpower PB 1400 G3 featuring groundbreaking backside cache technology.
- Vpower G3 PB 1400 brings you 4x to 5x the CPU performance and up to 2x floating point and video performance.
- Vpower PB 1400 G3/233 makes your PowerBook the same speed as your Power Mac G3 233.
- Vpower PB 1400 cards support the latest Mac OS (requires 7.5.2 or later version of the Mac OS).

Vpower G3 300
G3/300MHz/1MB Cache
$1099

KICK OFF PRICE!!

Vpower G3 233
G3/233MHz/512KB Cache
$499

Vpower PB 1400 G3/266
G3/233MHz/512KB Cache
$699

KICK OFF PRICE!!

Product Compatible Machine CPU Cache Price
Vpower G3/300 Power Mac 7300,7500,7600,8500,8550,8600,9000,9600,9650,UMAX S900,S910 G3/300MHz 1MB/150MHz $1,099
Vpower G3/266 Power Mac 7300,7350,7500,7600,8500,8550,8600,9000,UMAX S900,S910 G3/266MHz 1MB/133MHz $799
Vpower G3/233 Power Mac 7300,7350,7500,7600,8500,8550,8600,9000,UMAX S900,S910 G3/233MHz 512KB/117MHz $499
Vpower PB 1400 G3/266 Power Book 1400 G3/266MHz 1MB/133MHz $1,099
Vpower PB 1400 G3/233 Power Book 1400 G3/233MHz 512KB/117MHz $699

Visit us at MacWorld EXPO/NY Booth #756 July 8-10, 1998

To Order Call Toll Free:
1-877-4VIMAGE
Mon-Fri 8AM to 5PM(PST) or FAX:(310)225-3989
www.vimagestore.com

Choose 44 at www.macworld.com/getinfo

Vimage is registered trademark of Interware Co., Ltd. All other trademarks and registered trademarks are the property of their respective owners.

Visa, MasterCard accepted no surcharge. Government, corporate and educational P.O.'s welcome. Vimage products are covered by a two years limited warranty. Prices are subject to change without notice. Returns require an authorization and are subject to a restocking fee. Vpower is a trademark of Vimage. ©1998 Vimage Corporation.
Tools Plus 4.0

FAST CODE MODULES FOR C/C++ AND PASCAL APPLICATIONS

ALL THE HYPE ABOUT JAVA notwithstanding, most of the programs you use every day were probably written in C++, and a surprising amount of vertical-market software is still based on Pascal. Water's Edge Software has updated its excellent collection of software tools for these mainstream languages to work with Mac OS 8 and the latest compilers from Metrowerks and Symantec. Tools Plus 4.0 incorporates dozens of changes developers have suggested since the last release, from alerts to zeroing methods, and includes megabytes of code you won't have to write for yourself.

All Mac programs share thousands and thousands of lines of code—for window-handling and mouse operations, for example. There are visual-programming methods for coding application-interface basics, but for producing compiled applications that run fast—with minimal overhead for basic tasks—Tools Plus 4.0's highly optimized pieces of plain-text code are better than any visual-programming alternatives. The code libraries include routines for creating pop-up menus, floating tool palettes, sliders, buttons, and progress indicators, all with the 3-D platinum look of OS 8. (Minor appearance anomalies under OS 8.1 will be resolved in online updates.)

Among the improvements in version 4.0 are pop-up menus that can be hierarchical; drop-down menus that work as well as the pop-ups; dialog boxes that use the new DFTB table, which supports font color; PowerPC code rewritten with the latest version of the headers format; and simplified code for switching among open windows. The improvements (and the underlying code) are showcased in an interactive demo that helps even programming novices understand how to add interface elements.

Tools Plus 4.0 is available in several bundle options, ranging from the C/C++/Pascal tool kit for the latest CodeWarrior Pro to a version for the old Symantec Think Pascal (discontinued by Symantec but now free from the Water's Edge Web site). All the packages offer thorough and friendly paper documentation, helpful tutorials, and diligent online support.

Macworld's Buying Advice Tools Plus is the first professional programming tool for beginners, in the sense that it lets you add commercial-quality interface details to modest projects. It offers smaller, faster code modules than you could write yourself (unless you've had years of practice), along with expert advice on how to use them. If you work in C/C++ or Pascal, 'Tools Plus 4.0 will help you produce better shareware or commercial applications.—CHARLES SEITER

The word is out. Microtek's ScanMaker® 9600XL color flatbed scanner is larger than other tabloid (A3) scanners on the market. With a reflective scanframe of 12" x 17" now anyone who needs to get a large image into a computer can do so in full 36-bit color depth (input and output). For production scanning environments, batch scan up to ten 3.5" x 5" photos on the bed at one time. With the Transparent Media Adapter (included with the ScanMaker 9600XL) you can also scan film positives, negatives or x-rays.

**FEA T U R E S**
- FREE Transparent Media Adapter
- Full 36-bit input/output
- Scans up to 12" x 17"
- 600 x 1200 dpi optical resolution
- Up to 9600 x 9600 dpi interpolated
- FREE UPGRADE to ScanWizard™ Pro scanner controller software (direct CMYK or RGB scanning, built-in Kodak color matching system, Auto Dynamic Range Detection and Optimization, prescan tonal curve and unsharp masking, batch scanning, descreening, downloadable gamma curves)
- Adobe Photoshop LE (Windows or Macintosh models)
- MetaCreations® Painter™ 5 (Windows or Macintosh)
- DCR™ color calibration software with reflective and transparency targets
- OmniPage Limited Edition OCR software for scanning text
- High grade optically flat first surface mirrors yielding 95% reflective light
- SCSI interface for Windows or Macintosh models (Windows models include an Adaptec SCSI interface card)

Bundled software and manuals on CD-ROM. All products mentioned are trademarks or registered trademarks of their respective holders. Specifications and software bundles are subject to change without notice. SM9600XL-998

MICROTEK
Better Images Through Innovation.

www.microtekusa.com • 1-800-654-4160
WHEN APPLE INTRODUCED HyperCard in 1987, the easiest-to-use computer suddenly became the easiest-to-program computer. Eleven years later, programming with HyperCard is still amazingly easy. You simply design cards (screens), add buttons to link the cards, fill in dialog boxes to program the buttons and cards, and perhaps write a little HyperTalk code, and you've got a stack—an interactive HyperCard document that can be compiled as a stand-alone application.

With Version 2.4, HyperCard now takes full advantage of QuickTime 3.0's wealth of new features and offers automatic linking to the Web. But this new version still looks a bit too old-fashioned to stand out among today's slick multimedia authoring tools.

During HyperCard's golden age, Apple bundled the program with every new Mac. HyperCard is still a uniquely powerful, flexible environment for creating custom software and interactive documents. Beginners can create rich multimedia with minimal training, and seasoned programmers can build customized database-driven applications with ease.

But it's hard to take HyperCard seriously when, after 11 years, it still sports the black-and-white interface designed for the original 9-inch Mac screen. You can create color stacks, but not without complications or compromises. And because there's no Windows player for HyperCard stacks, your applications aren't accessible to anyone using a Windows-based machine.

HyperCard 2.4 doesn't solve these problems, but its support for QuickTime 3.0 is a significant step in the right direction. HyperCard can now open and display any file type supported by QuickTime 3.0, including GIF, MPEG, WAV, AVI, and QuickTime VR. HyperCard's Find command lets you jump to any spot in a QuickTime movie that contains a match in the text track. And HyperCard's QuickTime Toolkit stack contains tools and documentation for controlling all kinds of movie parameters, including location, speed, volume, and start and stop points. You can also now easily establish links from HyperCard stacks to the Web.

Macworld's Buying Advice If you own HyperCard 2.3, the upgrade is a no-brainer: just download the free 2.4 updater from www.apple.com/hypercard/. If you've decided to dabble with programming and you seek an easy-to-learn, friendly authoring tool, HyperCard 2.4 is a good choice—provided your audience is all-Mac. But if you need a state-of-the-art, cross-platform multimedia environment, stay tuned—the HyperCard team is still hard at work.

—George Beekman and Todd Shechter

A clear choice from any point of view.

Look what we've done. We've designed an entire series of feature-rich, award-winning monitors in all the popular sizes. Our superior engineering makes our products the choice of an overwhelming number of experts. If you're looking for a reliable resource for monitors, made by an innovative, quality-driven company, the choice is easy...iiyama.

<table>
<thead>
<tr>
<th>CRT monitor Model/Viewable Area</th>
<th>TCO</th>
<th>Dot Pitch/ Type</th>
<th>Max. Horizontal Scan Rate</th>
<th>Max. Resolution</th>
<th>Est. Street Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>VisionMaster Pro 560 (19.5&quot; VIS)</td>
<td>TCO 95</td>
<td>0.27mm AG</td>
<td>1024 x 768 @ 70Hz</td>
<td>$990</td>
<td></td>
</tr>
<tr>
<td>VisionMaster Pro 560 (19.5&quot; VIS)</td>
<td>TCO 95</td>
<td>0.27mm AG</td>
<td>1024 x 768 @ 70Hz</td>
<td>$990</td>
<td></td>
</tr>
<tr>
<td>VisionMaster 500 (19.5&quot; VIS)</td>
<td>TCO 95</td>
<td>0.27mm AG</td>
<td>1024 x 768 @ 70Hz</td>
<td>$990</td>
<td></td>
</tr>
<tr>
<td>VisionMaster 450 (18.0&quot; VIS)</td>
<td>TCO 95</td>
<td>0.29mm/AG</td>
<td>1024 x 768 @ 70Hz</td>
<td>$990</td>
<td></td>
</tr>
<tr>
<td>VisionMaster Pro 450 (16.0&quot; VIS)</td>
<td>TCO 95</td>
<td>0.29mm/AG</td>
<td>1024 x 768 @ 70Hz</td>
<td>$990</td>
<td></td>
</tr>
<tr>
<td>VisionMaster Pro 400 (15.0&quot; VIS)</td>
<td>TCO 95</td>
<td>0.29mm/AG</td>
<td>1024 x 768 @ 70Hz</td>
<td>$990</td>
<td></td>
</tr>
<tr>
<td>VisionMaster 400 (13.7&quot; VIS)</td>
<td>TCO 95</td>
<td>0.29mm/AG</td>
<td>1024 x 768 @ 70Hz</td>
<td>$990</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TFT/LCD monitor Model</th>
<th>TCO</th>
<th>Pixel Pitch</th>
<th>Max. Horizontal Scan Rate</th>
<th>Max. Resolution</th>
<th>Est. Street Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pro Lite 3B &amp; Pro Lite 3B (with USB &amp; Speaker)</td>
<td>TCO 95</td>
<td>0.279mm</td>
<td>1024 x 768 @ 70Hz</td>
<td>$998</td>
<td></td>
</tr>
<tr>
<td>Pro Lite 3B &amp; Pro Lite 3B (with USB &amp; Speaker)</td>
<td>TCO 95</td>
<td>0.279mm</td>
<td>1024 x 768 @ 70Hz</td>
<td>$998</td>
<td></td>
</tr>
<tr>
<td>Pro Lite 3B &amp; Pro Lite 3B (with USB &amp; Speaker)</td>
<td>TCO 95</td>
<td>0.279mm</td>
<td>1024 x 768 @ 70Hz</td>
<td>$998</td>
<td></td>
</tr>
</tbody>
</table>

TFT LCD ProLite Series

Great for graphics and business applications. Aperture Grill and Shadow Mask. TCO95 Standard.

A great space saver for all applications. Lightweight and Portable. TCO95 Standard.

For the name of your local dealer call: (800) 394-4335 • www.iiyama.com

© 1998 iiyama North America, Inc. All rights reserved. iiyama, the iiyama logo, and the RIS mark are trademarks of iiyama North America, Inc. All other trademarks are the properties of their respective owners. Estimated Street Price is shown. Actual price may vary. Prices do not include shipping, handling and any applicable taxes. Specifications are subject to change without notice.

For more information, please write us at 1073 Anrau Blvd., Suite 510, Costa Mesa, CA 92626. 800/394-4335, 714/437-5111; Fax: 714/437-5982

Choose 39 at www.macworld.com/getinfo
InstallAnywhere 2
SOLID JAVA-APPLICATION PACKAGER

For developers, getting Java applets to run in a Web browser is easy; getting Java applications to run independently is considerably more difficult. That's particularly true for Mac-based developers, who have to learn dozens of file-structure details to make Java applications open and run correctly on Windows and Unix platforms. Zero G Software's InstallAnywhere 2 solves these Java-installation problems by automatically bundling Java application code with the appropriate platform-specific files, guaranteeing that if a Java app runs on your Mac, it will run correctly on other platforms as well.

InstallAnywhere lets you work in Advanced or Wizard mode. With the intelligent Project Wizard, all you do is specify the installation platforms; the Wizard examines your project files to identify the main classes, specify class paths, bundle the appropriate Java virtual machine, and package all the extra files for each platform into final applications. Each application has a double-clickable icon and can be distributed via CD-ROM or the Web.

In Wizard mode, InstallAnywhere is slow—you'll spend several minutes grinding through screens as the program works through a set of decisions (which you create for yourself in Advanced mode). However, this approach is faster and less error-prone than determining the correct order of archived files and folders on your application's Java class path by yourself. Another minor annoyance is the Windows look of interface details, such as folders with up and down arrows and occasional awkward fonts.

InstallAnywhere is available in two forms. The best choice for distributing commercial applications is the Standard Edition, which offers three install options (minimum, typical, and full) and includes “billboards” that are displayed while the application is being installed. It also packages upgrades for Web downloading. The Express Edition creates a single, no-options installer and doesn't support incremental upgrades (you need to repack the entire application each time), but it's a good choice for in-house projects and shareware developers. Zero G is also preparing an ambitious $3,995 Commercial Edition—essentially a self-contained Java development environment—for release later this year.

Macworld's Buying Advice InstallAnywhere has given the Macintosh a welcome boost as a Java development tool. For Mac Java developers who want to ship code to Windows and Unix clients without studying other operating systems in elaborate detail, InstallAnywhere 2 is the only game in town. Idiosyncrasies and all, it's a great improvement over guessing your way through Windows and Unix Java setups.—Charles Seitter


Introducing a New Service to Readers...

Macworld's NEW Online Reader Service

www.macworld.com/getinfo

Macworld's NEW
Online Reader Service

1.800.688.2446 x622
www.agiodesigns.com/mw
free catalog

AGIO DESIGNS

Choose 265 at www.macworld.com/getinfo

66 September 1998 MACWORLD
Because one day you’ll need to print to a PC-printer and you won’t remember where the heck you saw this ad

The day is coming when you’re going to need to print from your Macintosh to a PC-compatible printer. After all, your clients use them. Your co-workers use them. Even your favorite hotels use them.

For only $99, PowerPrint has the software and smart cable that makes it all possible. You can print from your Mac to over 1500 different printers from companies like Canon, Epson, HP, Lexmark, Okidata, Panasonic and more.

So, if you think you’ll be needing to print to a PC-printer anytime soon, call us now. If not, keep this ad handy. Because the day will come...

Now supports the HP Deskjet 890C

Call us: 800-817-9155
Or visit: www.infowave.com

PowerPrint
Power MachTen 4.1
UNIX AND THE MAC OS TEAM UP

The least expensive path to running Unix on a Power Mac is PowerPC-native Linux—just be prepared to spend some time partitioning your hard disk, configuring drivers, and setting up your system. If you have Mac OS software you’d like to continue using and want to avoid configuration hassles, a better option might be Tenon InterSystems’ Power MachTen 4.1.

A BSD Unix version running on a Mach microkernel, Power MachTen 4.1 coexists with the Mac OS rather than supplanting it. Unlike PowerPC Linux, which requires a dedicated Mac, Power MachTen runs as a Mac application. As such, it’s bound by the limitations of the Mac OS environment—for example, it doesn’t offer memory protection or preemptive multitasking as Linux does. Still, using Power MachTen feels just like using a BSD Unix on a workstation.

The package includes standard networking software, utilities, and other useful Unix software, such as Perl 5 and the Apache Web server. In addition, it automatically installs a full suite of Unix development tools; much (but not all) of the open-source software that compiles under other BSD Unices will compile under Power MachTen.

After you install the 350MB of software and perform minimal configuration in the MachTen control panel, you can launch Power MachTen just like any other Mac application. After logging in, you’re in a fully functional Unix environment with network access—and without painful driver configuration and setup hassles. If you prefer a graphical user interface or want to run software that requires one, starting up the built-in X Windows environment takes only a keyboard shortcut.

Unlike an emulator, Power MachTen runs natively on the PowerPC, offering performance competitive with that of many workstations. The compilers that come with Power MachTen generate native PowerPC code as well; software ported to Power MachTen will execute as fast as your Mac can run it.

Macworld’s Buying Advice
Power MachTen 4.1 is an eminently usable version of Unix that—unlike PowerPC Linux—doesn’t ask you to forfeit the Mac OS. Although it doesn’t offer memory protection or preemptive multitasking, features many Unix users rely on, Power MachTen is a good solution for anyone who wants to run or develop Unix software on a Macintosh.—STEPHAN SOMOGYI

RATING: ★★★
PROS: Excellent Mac OS integration; offers a full-featured Unix distribution.
CONS: Moderately expensive; no memory protection; some Unix source will not compile easily.
Nothing Lasts Longer

APC Back-UPS Pro: Power User and Must-Have Safety Features

Automatic Voltage Regulation (AVR) let you work through the deepest prolonged brownouts without wasting battery power.

CellGuard™ intelligent battery management, extends battery life, and speeds recharging and automatically tests battery status.

APC's innovative multipath protection guards against damaging surges carried on both AC power lines and network/telephone/modem lines.

The QuickSwap™ user-replaceable battery system lets you renew the UPS system and avoid factory service delays. (Batteries typically last 3 - 6 years)

A push-button circuit breaker means quick recovery from overloads caused by surges.

The Site Wiring Fault Indicator lets you know when APC UPS units automatically identify building wiring problems.

You have a better chance of winning the lottery than of avoiding the sting of bad power. How often you save files is a good indicator of how valuable your data is. Unfortunately, you can't make a complete backup copy of your entire hard drive every two minutes. Worse, you know a power related computer crash could turn your hard work, applications and even your operating system into electronic garbage. But why worry? APC Back-UPS Pro easily stops bad power from ruining your day.

The leading cause of data loss: Sags

Power sags are the single largest reason power users end up pulling out their hair over lost data. These undervoltages are easily corrected through APC Back-UPS Pro's Automatic Voltage Regulation. Of course, if the sags turns into a complete outage, you're still covered. Back-UPS Pro gives you instantaneous battery backup and enough time to save your files and shut down safely. So why redo a hard day's work when you can prevent the problem with APC?

Multipath: one unit protects everything

APC protects everything: CPU, monitor, external modem, laser printer, fax machine, zip drive, you name it. And since phone and network lines carry dangerous surges, your CPU and modem benefit from APC Back-UPS Pro telephone/network surge suppression.

It's no wonder APC is the world's best-selling desktop power protection.

FREE! Guide to Power Protection

Just mail or fax this completed coupon for your FREE Solutions Guide.
Better yet, order it today at:
http://promo.apcc.com

I KEY CODE D9132

YES! I'd like more information. Please send my FREE catalog.

NO. I'm not interested at this time but please add me to your quarterly newsletter mailing list.

Name: ____________________________
Title: ____________________________
Company: _________________________
Address: __________________________
City/Town: _________________________
State: __________________ Zip: ______
Phone: _____________________________

Brand of UPS used? ____________________

# of Macs on site? ____________________

Brand of Server used? __________________

APC

AMERICAN POWER CONVERSION

FRANCE 98 OFFICIAL POWER PROTECTION SOLUTIONS PROVIDER

(888) 289-APCC x8425 • FAX: (401) 768-2787

Choose 72 at www.macworld.com/getinfo
Completely original engine, ruthless AI, hyper-realistic environmental effects, portals, and an endless

UNREAL IS REAL

Your Fears Unleashed

Your Senses Expanded

Your Reality Altered...
FOREVER

800-229-2714
Call for a free catalog or visit our website at:
www.wizworks.com/macsoft
multiplayer universe of user-created, hot-linked levels...welcome to the Bermuda Triangle of the Galaxy

IN AUGUST

"The best looking game of all time."
—Next Generation

"Unreal for Mac sizzles! Yet another mega-hit for Mac gamers."
—Macintosh Gamer’s Ledge

"...the game is simply stunning."
—MacAddict

"The future of gaming."
—PC Gamer

"Looks Awesome."
—Mac Home Journal

"Unreal is all too real."
—Inside Mac Games

Actual Gameplay Screen

Choose 30 at www.macworld.com/getinfo
OUR TEAM OF EXPERTS UNCOVERS 101 WAYS TO WORK BETTER

WHEN IT COMES TO THE MAC, NOBODY'S A KNOW-IT-ALL. Today's applications are so full of features, even grizzled veterans may not realize that they could be taking better advantage of the programs they thought they'd mastered. That's why Macworld called on 17 top Mac experts to unearth startling secrets that are sure to boost your Macintosh productivity. The result: 101 great ways to make your Mac and its applications work more efficiently.

GENERAL MAC TIPS

1. **HOT-WIRED PAGE PREVIEW** Not all programs have a Print Preview function. But you can add it to those that don't by installing a copy of the DeskWriter 500 series driver from ftp://ftp3.hp.com/pub/printers/software/dw110en.hqx—even if you don't own a DeskWriter! Once you've installed the software and restarted your Mac, select the DeskWriter icon in the Chooser, choose Print, and click on the Preview button to see a preview of your document.—CB

2. **MAKE WORDS STICK TOGETHER** It's annoying to find words and numbers that should be linked—such as a date and time—torn apart because the entire group couldn't fit at the end of a line. Many applications let you use a nonbreaking space to keep text grouped. To make your words stick together, type option-spacebar between each of the words in the group.—CB

3. **THE ONE-STEP ALIAS** You rarely need an alias in the same folder as its original item, but that's where the Make Alias command puts it. Then you have to drag the alias where you really want it. To create and place an alias in a different location, press #-option while dragging the original item. As you do this, a small curved arrow appears at the base of the cursor to indicate you're producing an alias.—LP

4. **COLLAPSE BACKGROUND WINDOWS** A window's handy windowshade box disappears if the window is in the background. But you can still roll up the window—just double-click on its title bar. If the window is part of the currently active application, it'll stay in the background.—LP
6. EASY-TO-DRAG WINDOWS
That thicker border around the sides and bottom of a Mac OS 8 window is more than decorative. Grab a window anywhere along its thick border to drag it to a different location.—LP

6. REALLY CLOSE THOSE WINDOWS
It’s no secret that ~-W closes a Finder window and ~-option-W closes all Finder windows. In Mac OS 8.1, ~-shift-W not only closes a pop-up window but gets rid of its tab as well. ~-option-shift-W closes all Finder windows and gets rid of all pop-up window tabs.—LP

7. SAMPLE COLORS ANYWHERE
Need to grab a color from some other application? With Mac OS 8, it’s no problem; once the Apple color picker is open, hold down the option key to get an eyedropper tool, with which you can sample any on-screen color.—JS

8. COLLAPSE OR EXPAND ALL WINDOWS
Collapse all of an application’s windows by option-double-clicking the title bar of any expanded window. Conversely, option-double-click a collapsed window’s title bar to expand all the windows in the same application. Option-clicking the frontmost window’s Collapse box collapses all the windows in the same application (or expands them, if the frontmost window is already collapsed).—LP

9. HIDING BUTTONS IN OS 8
To easily place one button over another in the Mac OS 8 Finder (a nifty trick for hiding a button), under the View menu choose View Options and then select Always Snap To Grid. Now place the “covering” button over the button you wish to hide. For complete coverage, be sure that the name of the covering button is longer than the name of the hidden button.—CB

10. TIDYING UP LOOSE BUTTONS
In Mac OS 8, you can place scattered buttons in neat order in the upper-left corner of a window. First select any of the Arrange entries in the View menu. Then, to allow buttons a little more headroom, click on the window’s size box (the box-within-a-box icon on the right side of the window’s title bar).—CB

11. HIDDEN CHARCOAL CHARACTERS
You can generate keyboard characters such as the ~ and option-key symbols in OS 8’s Charcoal font, using the following key combinations: control-Q, for ~; control-G for the option symbol; control-W, backward-delete symbol; control-J, forward delete; control-D, shift symbol; control-Y, up-arrow symbol; control-P, down arrow; control-Z, right arrow; control-X, left arrow; and control-T, Apple symbol.—CB

12. THE FLOPPY SWAP
To copy a file from one floppy disk to another without using the hard disk as an intermediary, you must eject the floppies without dismounting them. To eject a floppy without dismounting it in Mac OS 8, select the disk icon and then hold down the option key as you select Eject (which changes to Eject And Leave Behind). Or, just press ~-option-E.—ACE

13. RESIZING DESKTOP PICTURES
If your picture isn’t exactly the right size for your monitor, the pop-up menu in Desktop Pictures offers several options for resizing it. Tile On Screen repeats your too-small picture, side by side and top to bottom, until the screen is completely filled. Center On Screen puts the picture in the middle of your desktop and fills the leftover margin with whatever desktop pattern you’ve chosen.—DP

14. THE UNKNOWN POSITIONING KEYS
In Mac OS 8’s Desktop Pictures control panel, the pop-up menu controls the size of your image, but not its position. If your chosen picture is smaller than your screen, you can slam your image against the top, bottom, left, or right side of the screen by pressing the arrow keys while holding down the option key. For example, if you choose the pop-up menu’s Center On Screen option, press option-up arrow to align your picture with the top of the desktop (against the menu bar). With the Tile On Screen option selected, you can use the same keystrokes to determine the starting point for tiling a picture.—DP

15. MANAGE EXTENSIONS YOURSELF
Behind the scenes, Extensions Manager moves files from the Extensions folder into a folder named Extensions (Disabled), where the Mac ignores them. Likewise, control panels you turn off get moved into a folder called Control Panels (Disabled). Knowing about these folders is a troubleshooting advantage; you can restore an extension by moving it back into the Extensions or Control Panels folder, even if Extensions Manager isn’t around.—DP

16. HIGH-POWERED LAUNCHER
Your Launcher window can be a lot smarter than you might think. Just open your System Folder, open the Apple Menu Items folder, and drag the Recent Documents folder into the Launcher Items folder. While you’re at it, make an alias of that Recent Documents folder and put it back in the Apple Menu Items folder. Back in the Launcher Items folder, put a bullet (*) in front of the Recent Documents icon’s name by pressing option-8. Now you have a new window of continuously updated Launcher icons displaying the documents you most recently worked on. Do the same with your Recent Applications and, if you’re on a network, Recent Servers folders.—DP

17. APPLETALK TOGGLE SWITCH
Here’s how to put a handy on/off switch on your Control Strip for AppleTalk in OS 8: Open your Apple—
Talk control panel; choose Configurations from the File menu; and duplicate the currently selected configuration, naming it AppleTalk Off. Click on Make Active to return to the main control panel. Now, from the Edit menu, choose User Mode, click Advanced, click OK, click Options, click Inactive, and click OK. Close the control panel, and save changes. Repeat these steps—but name this configuration AppleTalk On and choose Active (instead of Inactive) in the final rush of clicks. Now when setting up your Location Manager locations, you can use your two new AppleTalk settings as part of an AppleTalk & TCP/IP location setting.—DP

18. CHECKING UP ON RETROSPECT

If you’re using Dantz Development’s Retrospect on a remote server to back up the office’s computers but would rather not hike across the office to check Retrospect’s log, there’s a way to save yourself the trip. Log on to the server from your desktop Mac, navigate to the Operations Log (System Folder: Preferences: Retrospect: Operations Log), create an alias of the log, and copy it to your Mac. If you have Retrospect on your Mac and you double-click on the file, the server’s Operations Log opens within Retrospect.—CB

19. A LEVEL PLAYING FIELD

If you find Bungie Software’s Myth: The Fallen Lords a bit too challenging, just start the game at an easier level. Hold down the spacebar while selecting New Game, and you’ll see a list containing the name of every level in the game. Click on the level you want and press OK to start.—CB

20. RIVEN MOVIES REVEALED

Cyan’s Riven game contains hundreds of movies, which you can supposedly see only by playing the game. But there is another way: download a copy of Bo Lindbergh’s freeware application Riven Movie Snoop (from www.macdownload.com), launch it, insert one of the Riven CDs, and open one of the files contained within the Data folders. A window appears with a numbered list of movies. Select one of the numbers and click on the Play button at the bottom of the window to view the movie.—CB

21. EASIER QUAKE AIMING

For players of MacSoft’s Quake who don’t have the truest aim, there’s an easy aid built right into the game. With Quake open, press the tilde (‘-) key to reveal the Command Console. When it appears, type Crosshair 1, press return, and then press the tilde key again. A small crosshair appears on your screen, indicating exactly where your shots will hit.—CB

22. NUKE ‘EM EVERY TIME

Graphic Simulations’ F/A-18 Hornet and F/A-18 Korea let you outfit your fighter with nukes in only a few missions. Here’s how to cheat your way to a nuke on each wing: In the Station Loadout area of the preflight section, set each weapon station to empty. Click and hold just to the right of the last check box in the Empty row, and a red check mark will appear in the margin. You can now place a B-57 (tactical nuke) on pylons 2 and 8.—CB

23. FLEXIBLE TYPE EFFECTS

ALTHOUGH ADOBE PHOTOSHOP 5 LETS you add effects such as bevels and embossing to type while maintaining the type’s editability, you can’t directly apply image effects such as gradients, textures, photos, and filters to text without converting it to pixels. But using a color layer and a clipping group, you can add these effects to your text without losing its editability.—LD and JD

STEP 3
To add a color layer above the type, click on the New Layer icon at the bottom of the Layers palette. (We made a gradient of several greens with the gradient tool and applied Filter, Distort, and Twirl; then we adjusted the layer’s opacity.)

STEP 4
Make a clipping group of the new layer and the type by option-clicking on the boundary between them in the Layers palette. With all the layers still intact, you can edit the type (by double-clicking on the “T” icon), change the dimensional effect (by double-clicking on the “I” icon), or change the color (by modifying the top layer).

FINAL IMAGE
24. SLIM DOWN CONVERTED • WORD 98 FILES
When you use Microsoft Word 98 to convert Word 6.0 files by opening and saving them, their size tends to double. However, if you create a new file with the Save As command, the file will be roughly the same size as the original.—ACE

25. SELECTIVE PROOFING IN WORD
If you have text that you know Word 98’s spelling and grammar checkers will choke on (such as product names), you can force the checkers to ignore it. Select the text, and then from the Tools menu, choose Set Language from the hierarchical Language menu. At the top of the list of languages in the Languages dialog box, select No Proofing, and click on OK.—ACE

26. OK, GO AWAY
Are you sick of having to click on OK when Word 98 tells you it’s finished searching a document? Just turn on Word 98’s Office Assistant. Even though the assistant presents an OK button when informing you that Word has finished searching, you don’t actually have to click it; just click anywhere in your document to make the dialog box disappear.—ACE

27. VIEW FOOTNOTES, COMMENTS, AND REVISIONS
With support for revision marks turned on, Word 98 lets you see footnotes, comments, and revision marks, even in Normal view. Just place the cursor over an item, and you’ll see the text of the footnote, the text of the comment, or the name of the person who made the revision, all in a yellow pop-up window.—ACE

28. EDITING URLS IN • WORD 98
Although you can click on a URL in Word 98 to open it in a Web browser, you can’t click within the URL to edit it. Instead, click on either side of the URL and use the appropriate arrow key to move it into the URL, at which point you can add or delete characters.—ACE

29. CHANGE HYPERLINK STYLES
• Word 98 automatically colors and underlines all URLs, which is fine on screen but usually not fine for printed documents. To change the default settings, open the Style dialog box, Select Hyperlink from the style list, click on the Modify button, and choose Font from the Format pop-up menu in the Modify Style dialog box. Choose Black from the Underline pop-up menu in the Font dialog box and Back from the Color pop-up menu. Back in the Style dialog box, select Followed Hyperlink and repeat the process.—ACE

30. VALIDATING DATA IN EXCEL
You can prevent entry of invalid data in Microsoft Excel 98 by turning on data validation for any range of cells to have Excel display a warning when an incorrect value is entered. Select a range of cells, and then choose Validation from the Data menu. From the Allow pop-up menu, choose the type of data to allow, and using the Data menu and fields below, set your data ranges.—ACE

31. TAB FOR TABS
To navigate Microsoft Office 98’s tabbed windows without the mouse, hold down the control key and press the tab key. To reverse that direction, hold down control-shift and press the tab key.—CB

32. MAKING THE WORD CONVERTER WORK
Word 5.1 users, take note: Do not simply copy the Word 97-98 Import converter from the Office 98 CD-ROM to your Word Commands folder—it won’t work. Instead, run the Word 97-98 Converter Installer, which you’ll find in the Text Converters folder under Value Pack.—CB

33. USING THE RIGHT LAYOUT
To make a FileMaker Pro database always open to a specific layout, click on the pull-down menu at the top of the Preferences dialog box and choose Document. In the Document Preferences dialog box, click on the box next to Switch To Layout and choose a layout from the pop-up menu.—WS

34. ADDING INSTRUCTIONS TO FIELDS
With its Define Fields command, FileMaker Pro lets you include instructions or reminders that disappear when data is entered into a field. In the dialog box, create a calculation field. Click on the Options button to specify an equation that states if(IsEmpty(Customer Name), "Type the customer name here", ""). In Layout mode, position the calculation field over the Customer Name field, and then send it to the back of the layout (Control-J).—WS

35. PRECISELY POSITIONING ELEMENTS
You can precisely position fields, buttons, and other elements with FileMaker Pro’s layout tools. In Layout mode, click on an element and choose Size from the Show menu to bring up a palette that lets you reposition and resize the element by pixels, inches, or centimeters. For a bit less precision, you can use the arrow keys to nudge an element in one direction or another.—WS

36. MULTIPLE REQUESTS IN FIND
In FileMaker Pro’s Find mode, typing Smith in a name field and California in an address field yields all clients named Smith in California. But you can also look for all clients named Smith and all clients in California by typing your first request (Smith in the name field) in Find
mode and then pressing %\textasciitilde N. In the blank record, type your next request (California in the address field). To find all Smiths except those in California, type Smith in the name field on your first Find screen, press %\textasciitilde N, click on the Omit box, and type California in the address field.—WS

37. ADD SIMILAR ELEMENTS TO YOUR LAYOUT
It's easy to add a field or button that shares characteristics (such as size, shape, font, or style) with fields or buttons that you've already placed in your FileMaker Pro database. In Layout mode, click on the element and copy and paste it. Double-click on the copy to bring up the Specify dialog box to change the field or button.—WS

38. DIALOG BOXES AT YOUR COMMAND
You can double-click on elements in ClarisWorks Office 5's text ruler to instantly summon the Paragraph, Tab, and Section dialog boxes. Double-click on a paragraph-alignment icon or on the center of the line-spacing icon (for the Paragraph dialog box), on any tab icon (Tab dialog box), or on the center of the columns icon (Section dialog box).—SAS

39. KEEP YOUR HANDS ON THE KEYS
Tired of reaching for your mouse to click on dialog-box buttons in ClarisWorks Office? Instead, press the % key. Most buttons in ClarisWorks dialog boxes have keyboard equivalents that are shown when you hold down the % key.—SAS

40. SHOW ME THE BUTTONS
Unless you have a very large monitor, you probably aren't able to see all the buttons in ClarisWorks Office's default button bar. To display them all, drag the inner edge of the button bar to increase its number of rows or columns.—SAS

41. MAKE YOUR LINKS DO MORE
The URL links feature in ClarisWorks lets you place clickable links to Web pages in your documents. However, you can specify a prefix other than http:// to make the link perform other functions, such as download files from an FTP site (use the prefix ftp://) or launch an e-mail program and send mail to a designated address (mailto:).—SAS

42. MASTERING MASTER-PAGE ELEMENTS IN FREEHAND

MACROMEDIA FREEHAND 8'S LENS FILL AND CENTERPOINT OPTIONS TOGETHER give you a way to outfit multipage documents with master-page elements such as headers and footers, similar to those you can create in publishing programs such as QuarkXPress and Adobe PageMaker. You can then edit an element on one page while simultaneously updating all the other pages.—AH

STEP 1 After creating your multipage document, make the first page your Master Elements Page by creating all your repeating elements—type and FreeHand-created or placed graphics—on that page. Then, on page 2 of your multipage document, draw a rectangle that fills the entire page. With this rectangle selected, open the Fill Inspector (%-option-F) and choose Lens for the fill type and Magnify for the type of lens fill.

STEP 2 Set the magnification level to 1\times and select the Centerpoint check box, and you'll see a center point in the middle of your rectangle. Select the center point and move it to the center of the Master Elements Page. Everything from that page now shows up in the rectangle you drew on page 2.

STEP 3 To place master elements on other pages, just clone (or duplicate) the rectangle with the lens fill and move the copies to those pages. The center point always stays the same relative to your Master Elements Page. Now any changes you make to the elements on the Master Elements Page (such as specifying a different tint) are instantly reflected on each of the other pages.

BONUS One additional step is needed to make new elements drawn on the Master Elements Page show up in lens fills on the other pages. Using Paste Inside, simply put your master-page elements into a rectangle on that page. Then when you create a new element on the master page, cut and paste it inside that same rectangle to make the new element show up in all those other lens fills.
43. **USE PC FILE EXTENSIONS**
If you work in a cross-platform environment, be sure to always add the PC file extension (such as .tif for TIFF files, .qd for QuarkXPress files, and .doc for Microsoft Word files) to your file names. That will let PC users see the correct icon when they get those files. —GG

44. **SHORTCUT ALIASES**
Programs with versions on both platforms generally have identical keyboard shortcuts. On a PC, think of the Alt key as option and Ctrl as &. Try affixing labels with the Mac keys’ names on their PC counterparts. —GG

45. **MAC-INTIZE YOUR PC**
To make Windows act more like a Mac, drag the Start menu to the top of your screen; then the pull-down menus really will pull down. To simulate the Mac desktop, drag the icons for your various drives from the My Computer and Network Neighborhood folders to the desktop; this will create for each drive an alias that works like the Mac’s desktop drive icons. —GG

46. **ZIP OR JAZ FROM PC TO MAC**
To work with PC-formatted Zip or Jaz disks on your Mac, be sure to download the version 6 driver from Iomega’s Web site (www.iomega.com). If you’re using Software Architects’ DOS Mounter 95 instead of Mac OS 8’s PC Exchange, you can use the existing Iomega Driver. Just rename it nIomega Driver; this lets DOS Mounter 95 handle PC-formatted disks while Iomega Driver handles Mac-formatted disks. —GG

**GRAPHICS AND PUBLISHING**

48. **INSERTING OBJECTS INTO A MASK**

**HERE’S AN EASY WAY TO INSERT ADDITIONAL objects into a mask in Adobe Illustrator, using either Paste In Front or Paste In Back, depending on whether you want the new object placed in front of or behind an existing object within the mask. Before starting, make sure that Paste Remembers Layers (in the Layers pop-up menu) is off.** —SS

**STEP 1**
Position the object where you wish to place it within the mask.

**STEP 2**
After cutting the new object to the Clipboard, select an object within the mask.

**STEP 3**
Choose Paste In Back to place the new object within the masking group.

49. **ADDING A SPOT-COLOR CHANNEL**
Photoshop 5 now supports spot-color overlays, letting you place the separation in a separate channel. You can create a spot-color channel by holding down the & key while clicking on the little page icon at the bottom of the Channels palette. Click on the Color swatch and then on the Custom button to select a Pantone ink or other predefined color. —DM

50. **WHEN HISTORY CAN’T BE REPEATED**
In Photoshop 5, everything you do is temporarily saved as a “state” in the History palette. However, if you change the dimensions or physical orientation of the document—such as by using the Rotate Canvas, Image Size, or Canvas Size commands—you won’t be able to paint with previous states using the new history brush. So it’s best to perform such changes before you start working with the History palette. —DB and NM

51. **PAINTING BACK THE HANDS OF TIME**
Although you can use Photoshop 5’s history brush to paint back previous History states of your image, it can be a tedious process, especially with large image regions. Fortunately, there’s an easier way: choosing the Fill With History option of the Fill command replaces any selection (or, if no selection is defined, the entire image) with the History state you specify. —DB and NM

52. **DUELLING SHADOWS**
Photoshop 5’s layer effects offer an easy way to produce two different kinds of shadows. To create and offset the angled shadow you get from a directional spotlight, use the...
Drop Shadow or Inner Shadow effect. To make the diffused “pool of darkness” shadow thrown by overhead lighting, apply the Outer Glow in black or another dark color with the Mode set to Multiply.—LD and JD

53. TRANSFORMING PATHS

Before Photoshop 5, it was sometimes a toss-up whether to import a simple Adobe Illustrator graphic as paths or as pixels. Pasting as paths took up very little memory, and you could do things like stroke the paths with painting tools. But placed as a layer of its own, the artwork could be scaled, skewed, or otherwise distorted before rasterizing—transformations that couldn’t be done to paths. Since Photoshop 5’s Transform and Free Transform commands now work on paths, it makes sense to bring in simple Illustrator artwork as paths by pasting it into Photoshop with the Paste As Paths option selected.—LD and JD

54. JUST DRAG THOSE SHADOWS

In Photoshop 5, when you use the layer effects’ Drop Shadow and Inner Shadow commands, you don’t have to enter numbers in the Effects dialog box. Just move the cursor into the working window and drag the shadow where you want it to go. The Angle and Distance settings in the dialog box will automatically reflect what you’ve done. If you check the Use Global Angle option in the Effects dialog box, then dragging the shadow will change the angle of all the bevel, emboss, and other shadow effects as well.—LD and JD

55. EASY MEASURING

To measure the angle of crooked scans and photos in Photoshop, you’d typically set the line tool to a weight of 0 and then draw an invisible line, noting its angle in the Info palette. Depending on the direction of your drag, you might need to subtract 180 degrees or invert the value to straighten the image. But now Photoshop 5’s measure tool does those calculations for you. After drawing a measure line and dragging its endpoints to adjust it, choose Numeric from the Transform submenu. The angle appears in the Rotate option box, automatically converted to its complimentary value between 45 and -45 degrees.—DM

56. UNCOVER WRAP PATHS

To find out whether the image you’re importing into QuarkXPress has an alpha channel or an embedded path that can be used as a text-wrap, look at the Information section of the Runaround or Clipping pane. It indicates any alpha channels or embedded paths.—GG

57. NO MATH NEEDED

For fractional dimensions, don’t pull out your calculator—QuarkXPress 4.0 can do the math for you. For example, if you want a page width of 7 7/8 inches, enter 7+7/8, rather than 7.875. Note the plus sign: It’s essential. Quark reads 7 7/8 as 77/8, or 9.625.—GG

58. UNEVEN TEXT INSETS

If you press the % key while resizing a text box in QuarkXPress 4.0, the text inset is resized along with the rest of the box. You can use this trick to create a box whose horizontal text inset is greater than its vertical text inset.—GG

59. CHANGE ALL NODES

In QuarkXPress 4.0, you can change all segments or points in a curve by double-clicking on the curve and then choosing the new point or segment type in the Measurements palette. The entire curve will be modified accordingly.—GG

60. WEB-SAFE COLORS

When creating Web-bound QuarkXPress documents, be sure to create colors whose hex values are composed only of 00, 33, 66, 99, CC, and FF. Better yet, use Apple’s HTML picker with the Snap To Web Color option checked. Other values may not display properly in some Web browsers.—GG

61. REPEAT APPENDS

In QuarkXPress 4.0, you can import from several documents by clicking on the Append button after importing styles from a document; this action reinvokes the Append Style Sheets dialog box. Repeat the import for each document.—GG

62. CHANGING ONLY SOME STYLES

Here’s how to edit selective characteristics on multiple selected objects in Adobe Illustrator. Using palettes, you can set one specific style for all selected objects without affecting any other characteristics.—SS

**STEP 1**

With the original objects selected, the toolbox indicates that different styles are selected.

**STEP 2**

The selected objects remain unchanged until you designate new settings.

**STEP 3**

Entering a new stroke weight of 1 point affects only the stroked objects and leaves the (unstroked) pink object unchanged.
63. **Rotating Around an Object's Center**

Ordinarily, Adobe PageMaker 6.5's Rotate tool rotates objects around the point at which you start dragging the tool. To rotate the object around its geometric center point, hold down the control key as you drag the tool. Note that if you've selected a series of objects, holding down the control key makes them rotate around their common center point, not their individual centers. To rotate a number of objects around their individual center points, run the script 'Transform Each Object' (you'll find it in the Transform folder inside the Element folder in the Scripts palette). You can also use this script to skew, resize, and reflect objects.—OMK

64. **Adjusting Layouts**

Despite what you might think, PageMaker can resize and move objects in a layout in response to changes you've made to a publication's column guides—just turn on the Adjust Layout option in the Column Guides dialog box. To tell PageMaker to adjust a layout when you apply a new master page, turn on the Adjust Layout option on the Master Pages palette's popup menu before you apply the master page (or turn on the Adjust Layout option in the Master Page Options dialog box when you create or edit the master page). You can also use Adjust Layout to automate layout changes based on altered page sizes (from letter to A4, for example). You can control which objects are moved or resized, using the Layout Adjustment Preferences dialog box (choose Layout Adjustment from the Preferences submenu of the File menu).—OMK

65. **Linking and Unlinking Frames**

To create a series of linked text frames in PageMaker, hold down the ⌘ key as you draw the frames. Each new frame you create will be linked to the frame you drew before it. To unlink a frame in a series of linked frames, hold down ⌘-shift as you click on one of the frame's windowshade handles.—OMK

66. **Printer Styles Shortcut**

PageMaker's printer styles give you an easy way of saving and applying different printing settings—you can create one printer style for printing composite-proof pages on your local laser printer, another for printing color-proof pages on a color printer, and still another for printing final pages on an imagesetter at your service bureau. Make the changes you want in the various Print dialog boxes, and then hold down the ⌘ key. PageMaker changes the Print button to the Style button. Click on the Style button, enter a name for your new printer style in the Name Printer Style dialog box, and press return.—OMK

67. **Resizing Grouped Text**

In PageMaker, resizing a group containing text blocks doesn't change the size of the type in the text blocks—only the size of the text blocks themselves. To change the size of the type inside a group as you resize the group, run the Resize Group script (it's in the Group folder inside the Element folder in the Scripts palette), which lets you enter a scaling percentage.—OMK

68. **Selecting Through Objects**

Want to select an object in a PageMaker document that's behind another object or inside a stack of objects? There's no need to drag objects out of the way. Hold down the ⌘ key and click on the object that's on top of the object you want to select. Click again, and PageMaker selects the next object in the stack. Continue clicking until you've selected the object you want. This trick also works when you want to select "through" an inline graphic to select a text block, or when you want to select a graphic that you've placed inside a frame.—OMK

69. **Drag-and-Drop Fills**

To apply a radial fill to a path in Macromedia FreeHand versions 7 and 8, hold down the option key as you drop a color swatch inside a path. FreeHand positions the center of the radial fill at the point at which you dropped the color swatch. (To reset the center of a radial fill to the center point of a path, hold down shift as you click on the Locate Center control in the Fill Inspector.) To apply a graduated fill to a path, hold down the control key as you drop a color swatch inside a path. To apply a basic fill, hold down the shift key instead.—OMK

70. **End-O-Matic**

Hate adjusting Bézier control handles to change the curves in a FreeHand path? Use the pointer tool to select a path, and then hold down option and drag the line segment you want to bend. As you drag, FreeHand changes the curve of the line segment—you never have to touch a control handle.—OMK

71. **Getting Blends Off a Path**

What if, after you've joined a blend to a path in FreeHand, you want to get the objects in the blend off the path but leave each object in the same position as it occupied on the path? Just ungroup. FreeHand drops the objects onto the page in exactly the same positions they occupied on the path.—OMK

72. **From Point to Path**

What can you do when you've selected a point in FreeHand but want to select the entire path? Press ' (the grave accent key; it's to the left of the number 1 on most keyboards), and FreeHand will select the path. This technique also works in other situations: When you've selected an object inside a group and then want to select the group, press ' . When you've selected a single path inside a composite path, press ' to select the entire composite path.—OMK

73. **Easy Palette Navigation**

It can often be a long way from the cursor's position to a field in one of FreeHand's floating palettes. Press ⌘- (grave
accent) as many times as it takes to jump through the text edit fields in the palettes until you’ve highlighted the field you want to edit. This is especially handy when setting type, as you don’t have to take your hand off the keyboard to use the mouse.—OMK

**74. QUICK ACCESS TO LOCKED GUIDES**

In Adobe Illustrator 7, with AI 6 Tool Shortcuts enabled under General Preferences, hold down the shift and control keys and click-drag on a guide to move it. Shift-control-double-click to turn the guide into a selected object that can be deleted.—SS

**75. ENHANCE TYPE SELECTING**

By default, Illustrator 7 activates two new options that affect type: Type Area Select and Anti-Alias Type. Type Area Select allows you to click anywhere on a text block to select it; unfortunately, this may make it difficult to select nearby objects. You can turn it off in the Keyboard Increments section of the Preferences dialog box.—SS

**76. KEEPING BLENDS GROUPED**

You can take Illustrator’s ability to automatically group blended objects a step further. To group the blended objects with the two objects that initiated the blend, group before you create the blend. You can then use the selection tool to reselect the entire group or the direct-selection tool to edit objects within a blend; click twice with the group-selection tool on an object within the blend to select only the blended objects.—SS

**77. GET BACK THOSE ILLUSTRATOR 6 SHORTCUTS**

In Illustrator 7’s General Preferences, enable AI 6 Tool Shortcuts to restore both control-key access to Convert Direction with direct select and Add/Delete Points with the pen tool, and one-handed access to Lock/Hide functions. These new shortcuts do differ slightly from the originals: Lock (⌘-2), Unlock (⌘-option-2), Hide (⌘-3), and Show (⌘-option-3).—SS

**WEB AND E-MAIL**

**78. OPEN NEW WINDOWS WHILE BROWSING**

Often when reading a Web page, you want to follow several links, but you also want to finish reading the current page. If you open those links in new windows, they’ll load while you continue to read. In Microsoft Internet Explorer, just ⌘-click on a link. In Netscape Navigator, click and hold or control-click on a link and then choose New Window With This Link from the menu that pops up.—ACE

**79. BETTER GRAY-SCALE VIA CHANNEL MIXING**

**WHEN ADOBE PHOTOSHOP CONVERTS COLOR images to gray-scale mode, a fixed internal equation specifies the mix of red, green, and blue to produce a monochromatic image.**

Photoshop 5.0’s new Channel Mixer (with the Monochrome option checked in the Channel Mixer dialog box) lets you define exactly how much red, green, and blue to mix together to create a custom gray-scale image. Adding more than 100 percent of a channel to the Channel Mixer increases the brightness of the resulting gray-scale image as if the Add application mode were being used. Setting the Channel Mixer’s sliders below 0 percent will reduce brightness as if the Subtract application mode were being used. Going to either extreme will yield some very interesting special effects; for realistic gray-scale derivation, we recommend a lot of green, some red, and very little (if any) blue.—DB and NM
80. **SAVING GRAPHICS FROM NAVIGATOR**
If you see a Web-page graphic you want to download and you're using Navigator, just drag the graphic to your desktop to download it.—ACE

81. **QUICK SEARCH OF THE NET**
You don't need to go to a search page to search for something on the Internet—you can do it right from your browser's address field. In either Navigator 4.0 or Internet Explorer 4.0, type a question mark (?) a space, and the search term. If you're searching in Navigator for multiple terms, you can omit the question mark, while in Explorer, you'd substitute go for the question mark. For example, typing buffy vampire in Navigator or go buffy vampire in Explorer nets you a list of sites devoted to the TV series Buffy the Vampire Slayer.—ACE and JS

82. **FINDING FORGOTTEN URLS**
Can't remember the address of that Web site you visited last week? In Internet Explorer 4.0 or later, you can search for text in the name or address of Web pages you've bookmarked or recently visited. After opening the History or Favorites window, check the Select All Items That Match Criteria option in the Find dialog box to highlight all items that match your search terms. It's easier to find the item you want when you have to scan only selected items.—ACE

83. **BOOKMARKS ON A PAGE**
Using any program that can save as HTML, you can create an HTML page containing a list of your favorite links. Set this page as your browser's default home page. In Navigator, choose Open Page from the File menu and open your HTML file. Then choose Preferences, choose Navigator, select the Home Page radio button, and click on the Use Current Page button. In Internet Explorer, choose Open File and open your HTML file, select and copy the entire contents of the address box, choose Preferences, click on Home/Search, and paste into the Address window in the Home Page box.—JS

84. **BACKWARD SITE HOPPING**
In Navigator, click on the Back button while holding down the option key to go back to the previous site you visited, rather than the previous page.—JS

85. **GOOD-BYE TO CLICK-AND-HOLD**
In both Navigator 4.0 and Internet Explorer 4.0, you can control-click to immediately see the program's contextual menus, rather than having to use the old click-and-hold method.—JS

86. **STEP UP TO THE FAVORITES BAR**
Don't want to go to the Favorites menu for your frequently accessed Web pages in Internet Explorer 4.0? Just add them to the Favorites bar, which appears in the browser window, instead. Open the Favorites window, and drag bookmarks into the Toolbar Favorites folder (feel free to remove those that are already there). Keep the names short and you'll be able to fit more in.—ACE

87. **ELECTRONIC RemINDERS**
Use Qualcomm's Eudora to send e-mail reminders to yourself and others by option-clicking on the Queue button in the message (or on Send, if you send messages immediately). In the Change Queuing dialog box, set a date (slightly in advance of the event you want to remember) and a time for the message to be sent and then click on OK. Eudora 4.0 will send the message at the date and time you set; version 3.X sends it the first time it sends mail after the date and time you set.—ACE

88. **FIND THAT FILTER**
After you've created numerous filters in Eudora Pro, scrolling through the list to find a specific one to edit or delete can be tedious. But open the Find window just after making Eudora Pro's Filters window the frontmost window, and you can use Find to seek out the filter you want.—ACE

89. **GET RID OF UNUSED FILTERS**
To see when a Eudora filter was last used, select one and look in the gray area between the Match and Actions sections to see the last time Eudora applied that filter to a message. Eudora Pro 4.0 also puts a dinosaur icon next to filters that haven't been used for 30 days or more, which you can remove for faster filtering.—ACE

90. **SELECT SIMILAR MESSAGES**
A fast way to select similar messages in a Eudora Pro mailbox is to option-click on the cell that's the same in all the messages. For instance, option-clicking on someone's name in the Who column causes Eudora to select and group together all the messages from that person.—ACE

91. **EUDORA'S HIDDEN GLOSSARY**
Hidden within Eudora's Address Book is a feature similar to a word processor's glossary that lets you store and retrieve commonly used words and phrases. You can enter almost any text you want as the address of a nickname. Then, in a message, type the nickname, hold down the option key, and choose Find & Expand Address Book Entry from the Edit menu (option-‐, [comma]). Leave empty the Domain To Add To Unqualified Names field in the Sending Mail settings panel, or Eudora will add that domain to the first word of your glossary entry, as in, "What@tidbits.com about this?"—ACE

92. **STYLE-FREE EUDORA**
If you're sending a message containing styled text with Eudora Pro to friends who can't see styled text, select your entire message and press option-T to convert the message back to plain text. You can also use option--' (apostrophe) to paste quoted text with the styles automatically stripped out.—JS
93. **ONE-STEP ENCLOSURES**

To attach a file to an outgoing e-mail message in Claris Emailer, don't bother messing with the Enclosures paper-clip icon. Instead, drag an icon from the Finder desktop into any gray area of Emailer's interface—the border around your message, for example.—DP

94. **QUICK EMAILER ADDRESSING**

If your Emailer Address Book is filled with names but you e-mail only a handful of recipients regularly, edit their names in the Address Book so that the names begin with digits. Turn Bill Clinton into 2 Bill Clinton, for example. When it comes time to send a message to Bill Clinton, you won't have to type Bill Cl (which you'd have to do to distinguish that name from all the other Bills in your Address Book); instead, just type 2 and press tab to fill in the complete address.—DP

95. **PAGE MILL COLOR PANEL**

When designing a Web site in Adobe PageMill, use the Color Panel to apply a uniform set of colors to your site. To access the panel, choose Show Color Panel from the View menu or press \:
\-\- (apostrophe). To customize a color, double-click on it. To apply a color, drag it off the palette to an item on the page.—TIE

96. **A BARE-BONES TOOL PALETTE**

Pare down the HTML Tools palette in Bare Bones Software's BBEdit to a more manageable size by removing commands you seldom use. To do so, click on the pop-up arrow at the upper left of the palette and choose Configure Buttons. \#\-\-click on items to remove them; click on items to add them. To occasionally invoke commands you've removed from the palette, use the Tools menu.—TIE

97. **AVOID BBEDIT REPETITION**

If you frequently type the same HTML tag sequences in BBEdit, use the HTML Custom Markup command to do the work for you. For example, if you often link to URLs that you bring into BBEdit by copying and pasting, the custom markup <a href='\c'>...</a> links selected text in BBEdit to a URL that you've pasted into the Clipboard. (Think of \c as standing for "Clipboard.") The ellipsis indicates where the selected text goes in the HTML sequence (press option-\- [semicolon] to insert an ellipsis).—TIE

98. **ENTER ONCE, REPEAT INDEFINITELY**

You don't have to keep entering an element (such as contact information or a navigation bar) that repeats on each Web page you create in BBEdit. Instead, enter its HTML code in an include file and store that file in the template folder set in BBEdit's HTML Preferences. Say you name the include file Contact; you can make a placeholder for it in another document (or many other documents) by using HTML comment tags like the following:

```html
<!--#include "Contact" -->
<!--end include-->
```

Use the HTML Tools Update command to insert a copy of the include in the placeholder. If you edit the include, broadcast the changes to its placeholders with the HTML Tools Update command.—TIE

99. **PUT HYPERLINKS IN THEIR PLACE**

In any Web publishing program, you can program a hyperlink to automatically open in a new window by setting the link's target (even if you're not using frames) to _new. (If you're using a text editor, the format is &lt;A HREF="#" TARGET="#">.)—JS

100. **DEBUGGING HTML FORM DATA**

When you're designing an HTML form, be sure to set the form's method variable to get. Then, when you submit the form, your browser's URL window shows you all the data your form is sending to the Web server. When you're done debugging, set the method to post.—JS

101. **A SAFER NETSCAPE INSTALL**

• Certain programs, including Netscape Communicator, automatically install the ObjectSupportLib extension, which can conflict with Mac OS 8. To keep that extension from invading your system, open the Communicator Module folder (in the Communicator folder), double-click on the Communicator Module installer, and select Custom Install. To prevent installing ObjectSupportLib, don't check the box next to AppleScript Object Support Library.—CB

Macworld Senior Associate Editor CATHY ABES collected and edited all 101 of these tips. Need more to satisfy your tip appetite? For a steady supply, subscribe to Macworld's Daily Tip mailing list at www.macworld.com/newsletters/.

ABOUT THE CONTRIBUTORS


www.macworld.com September 1998 83
Register to WIN...

When you visit Macworld Online, the ultimate Macintosh buyer's guide, just register and become eligible to win FREE professional Mac hardware and software from APPLE, MACSOFT, or NETOBJECTS!

Apple iMac Computer
MacSoft Civilization II Gold Edition
NetObjects Fusion 3.0
QuickTime Goes Pro

by Christopher Breen

QuickTime used to be simply the means to a movie, but now it's a lot more than that. Apple's multimedia technology has become the star player in the company's lineup and is potentially Apple's most successful cross-platform product ever.

QuickTime 3, released for the Macintosh and Windows this spring, is the strongest version yet. Its strong new editing features and wide support for different file formats have transformed it into a true all-in-one cross-platform media tool.

This is big news for the people who create digital media and those who view it. The new QuickTime allows users on both platforms to see audio, video, QuickTime VR (virtual reality), and graphics without having to load up on a plethora of browser plug-ins. As a result, it's got a fighting chance to rule the multimedia roost on both the desktop and the Web.

QuickTime's new compression schemes also make the application even more effective at delivering high-quality audio and video in small—more Internet-friendly—packages. It can even stream media (including QuickTime VR) over the Web.

When you download QuickTime 3 from Apple's Web site (www.apple.com/quicktime/) you get all of its elements: a new Internet-browser plug-in—QuickTime Plug-in 2.0—as well as a collection of system software and stand-alone utilities, such as MoviePlayer 3.0 and PictureViewer 3.0. With these tools in hand, you can view just about any media file you encounter. If you want to actually do anything with QuickTime 3—from saving or scaling a movie to employing special effects—you'll have to pay $30 to unlock all of its features. This activated version is called QuickTime 3 Pro. (For more details about the differences, see the sidebar “You Get What You Pay For.”) In this tour, we'll hit the highlights of the best that QuickTime 3 Pro has to offer and see why it's become one of Apple's hottest players on both the desktop and the Web.

Getting in the Standards Game
Make no mistake, Apple wants QuickTime to be the multimedia standard for desktop computing and the Web. If Apple hopes to fight the good fight in the cross-platform-standards game, QuickTime must become a one-stop-shopping technology. It must be able to deal with just about any video, audio, or graphics file it happens upon, regardless of platform or application. QuickTime takes a significant step toward that goal with its expanded set of supported file types.
QUICKTIME GOES PRO

Key Plays: A Visual QuickTime Tour

There's a lot going on beneath the surface of QuickTime 3.

Once you purchase QuickTime 3 Pro, you can access the bulk of QuickTime's most important features with the Pro-activated MoviePlayer 3.0. Here's where to find some of the best that QuickTime 3 Pro has to offer.

Importance of Import

The Import command, under MoviePlayer's File menu, is the key to bringing files of various types into your QuickTime movies. Among other types, this includes AVI, OpenDML, DVCam, AIFF, WAV, AU, Sound Designer II, Adobe Photoshop, SGI, MacPaint, PNG, FLC/FLI, PICS, 3DMF, and even Karaoke MIDI. You can also directly capture video, timecode, sound, DVCam, MIDI, and text.

Lest you think QuickTime and MoviePlayer are the ultimate file-conversion solution, be warned that MoviePlayer's export capabilities are far more limited. Currently, you can export QuickTime files as AIFF, WAV, MIDI, QuickDraw, Picture, Text, and DVCam.

One area where QuickTime's cross-platform video support falls short, however, is with MPEG-1, a popular Web-video format that allows you to create highly compressed movies. QuickTime 3 for the Mac fully supports MPEG-1, thanks to the QuickTime MPEG Extension, but the same is not true of QuickTime 3 for Windows. According to Apple, it should be by the end of the year.

There's little such bad news, however, when it comes to other graphics-file formats. Version 3 adds support for the Windows graphics standard Bitmap (BNLP), and for Flic, an animation standard popular on Windows. Graphics pros will also be pleased to know that QuickTime 3 can display another significant kind of graphics file as well—Adobe Photoshop files, complete with their accompanying layers and alpha channels.

The Sounds

Seeing may be believing, but it's nice to hear what your videos and other media have to say, too. QuickTime 3 builds on a solid foundation of support for sound formats such as AIFF/AIFC, WAV, AU, and MPEG Layer 2. Multimedia professionals who use audio samplers and high-end audio-editing applications will be pleased that the new QuickTime adds support for Sound Designer II files, a file format created by Digidesign and commonly used by professional audio-editing applications.

QuickTime has also beefed up its support for MIDI sound—the music format used for creating and playing the synthesized music files popular in games. Previous versions of QuickTime included the limited—and nearly unlistenable—QuickTime Musical Instruments sound set. Your ears will be relieved to know that this time, Apple has licensed a vastly superior set of General MIDI sounds from Roland.

As with video, when it comes to sound, there is one hole in QuickTime's cross-platform support: QuickTime 3 for Windows does not support the popular audio standard MPEG Layer 2.

Squeeze Play

To be the standard for multimedia on the Web, a product has to offer more than just the ability to display files of all sorts. It also has to offer the ability to deliver high-quality media files and do it quickly. The key? Advanced compression schemes.

QuickTime 3 offers significantly beefed-up compression options in the guise of two new codecs (a codec stands for compressor/decompressor): the Sorenson Video codec for video, and the QDesign Music Encoder for audio. Each of these codecs makes it possible to deliver media faster than with traditional compression technologies such as the Cinepak video codec. (This is helpful in those times when you actually care to have people view the work you've slaved over.)
Mighty Sprites With QuickTime 3's sprite track, your movies can contain interactive animation. In the illustration above, I caused the ripple by clicking on the bottom of the fishbowl. You can try this for yourself with the Fish Animation—one of Apple's QuickTime 3 samples—at www.apple.com/quicktime/samples/anim-graphics/fish.html (this URL is case-sensitive). Don't worry, clicking doesn't seem to bother the fish one bit.

Text Tracks Thanks to QuickTime's ability to assign alternate languages to different tracks, you can create custom subtitles and narration tracks to accompany your movies. To add text to a movie, simply string together some syllables in a word processor, copy the text to the Clipboard, choose any movie, hold down the option key, and choose Add from the Pro-activated MoviePlayer's Edit menu. That line of text will be displayed throughout, unless you add another line of text later in the movie.

Better Video Compression QuickTime 3 comes with the Basic Edition of the Sorenson Video codec. When you're saving a video, you can use this to adjust the number of frames per second, determine how often keyframes are written to the movie, and also set the amount of compression applied to the movie.

The Sorenson Video codec can produce files that boast quality superior to that of Cinepak files and that are about one-half the size. The trade-off is that the Sorenson Video codec compresses files far more slowly than Cinepak. Also, files with data rates above 100 Kbps play back smoothly only on G3 Macs (and high-powered Pentium II Windows PCs). You can purchase the $499 Professional Edition with expanded compression capabilities from Sorenson (408/970-0696, www.s-sision.com).

Better Audio Compression QuickTime's new audio codec, the QDesign Music Encoder, allows QuickTime 3 Pro users to compress audio files with greater resulting quality than in previous versions of QuickTime. The QDesign Music Encoder's compression options range from the severely smashed-and-distorted 8 Kbps to the reasonably compressed-and-pleasing-to-the-ear 48 Kbps. If you plan to employ higher compression rates, you'll want to look into QDesign's (604/688-1525, www.qdesign.com) $395 QDesign Music Encoder Professional Edition.

Streaming Savvy In earlier versions of QuickTime, you had to wait for a movie to download before you could view or listen to it. If your connection was slow—or the file big—this could truly be a trial. Now QuickTime movies can start playing while the movie downloads.

This is an exciting prospect for users on both sides of the stream. Visitors to a site no longer have to twiddle their thumbs while waiting for a file to download completely. In addition, because QuickTime doesn't require special server software to stream—unlike the popular Real Audio and Real Video, from competitor RealNetworks (www.real.com)—just about anyone can provide streaming media from an existing Web site.

Another unique aspect of QuickTime 3's streaming technology is its QuickTime VR track. You can begin panning around the scene without waiting for the entire file to download.

Live Limitations As of press time, QuickTime 3 is incapable of live streaming—meaning that unlike RealNetworks' Real Audio and Real Video, QuickTime can't broadcast events as they occur. However, the capability appears to be on the way. During the keynote speech at the recent Worldwide Developer's Conference, Apple demonstrated live streaming via QuickTime. Apple is still keeping the details of this "QuickTime Live" technology under wraps, but sources say that live QuickTime streaming will arrive in late 1998.

Practical Streaming Pointers As a Web surfer, you'll be interested to know that there's one simple way to make QuickTime's streaming features work better for you. Once you've traded up to QuickTime 3 Pro, make sure to indicate your Internet-connection speed in the QuickTime Settings control panel and within QuickTime Plug-in.

When content creators prepare QuickTime 3 media for the Web, they can make multiple copies of movies that are optimized for specific connection speeds—28.8 Kbps, ISDN, and T1, for example—and then create a reference movie that points to these copies. (For more details, see "Optimize Web Video for QuickTime 3," Create, August 1998.) When you click on a link to download a movie, behind the scenes the site queries your copy of QuickTime 3 to see which connection speed you've selected. Then it streams the recommended movie. If your settings are too ambitious—56 Kbps when you have a 28.8-Kbps modem, for example—you'll see the 56-Kbps movie, but it will take a long time to download.

Breaking Away from the Pack QuickTime 3 is truly distinguished from its rivals by its editing tools. Although they're limited, these video filters and transitions offer developers of entry-level video editors a welcome set of free effects to incorporate into their products. Some tools that incorporate QuickTime effects will be out by the time you read this. They include Media Cleaner Pro 3.0, from Terran Interactive (408/356-7373, www.terran.com), and Electrifier Pro,
You Get What You Pay For

FOR THE FIRST TIME, QUICK­TIME has been split into two dif­ferent products: the free Quick­Time 3 and the $30 Quick­Time 3 Pro. If you’re wondering what Quick­Time 3 Pro has to offer over the regular version of Quick­Time 3, we’ve got the answer: everything.

Free Means Meager

Many users of previous versions of Quick­Time have been dis­mayed to discover that every worthwhile editing function they’ve come to expect from Quick­Time is missing from the free version of Quick­Time 3. Versions of MoviePlayer 3.0 and Quick­Time Plug-in 2.0 that haven’t been Pro-activated still play Quick­Time movies—even movies that use Quick­Time’s new codecs and tracks. But that’s pretty much it.

The basic version of MoviePlayer 3.0 contains no Import, Export, or Save As commands—movie creation is definitely out. Nor can you turn Individual tracks of a Quick­Time movie on or off—the Extract Track, Delete Track, and Enable Track commands are history. Want to loop your movies or show them at full-screen size? Forget it. At least, you won’t be able to do so even if you upgraded to Quick­Time 3 Pro. And unless you’re willing to rummage around in your browser’s cache folder to retrieve movies before your browser deletes them, you can’t save Quick­Time movies found on the Web—there’s no Save As Quick­Time Movie option in the basic version of Quick­Time Plug-in 2.0.

Hold On to the Oldies

If you still have MoviePlayer 2.5.1 and its Goodies and Authoring Extras plug-ins, hold on to them. This older version still lets you take advantage of many of Quick­Time 3’s professional features—the Goodies, Import, and Export commands are still available, as are looping and alternate screen sizes. You’ll also have access to all of Quick­Time’s new codecs. You won’t, however, be able to rotate or skew your video tracks as you can with the Pro-activated MoviePlayer 3.0. Not surprisingly, Apple has ceased distribution of Quick­Time 2.5 and MoviePlayer 2.5.1 through its Web site and its licensed developers.

Commercial Restraint

Apple has changed one of the more odious aspects of Quick­Time— the advertisement encouraging you to upgrade to Quick­Time 3 Pro. If you hadn’t paid your $30 yet, this ad appeared as MoviePlayer 2.5.1 was launched each day. The latest version of Quick­Time 3 should play the ad for Quick­Time 3 Pro only once. The limitations you face if you don’t pay to unlock Quick­Time 3’s full abilities should be advertisement enough.


Fancy Effects Footwork

The filters include effects such as blur, tint, edge detection, emboss, sharpen, and film noise (a filter that adds dust and scratch artifacts to a movie). They’re also adjustable—for example, when you use the film-noise fil­ter, you can change the size of the scratch­es and dust particles. To try them in the Pro-activated MoviePlayer 3.0 (not all of MoviePlayer 3.0’s capabilities are turned on until you upgrade to Quick­Time 3 Pro), export a file as a Quick­Time movie, press the Options button in the Save dia­log box, click on the Filter button in the resulting Movie Settings dialog box, and choose an effect.

Alas, Quick­Time 3 transitions are not accessible from the Pro-activated MoviePlayer 3.0. However, you can see a demonstration of Quick­Time’s transitions by downloading Apple’s free EffectsTea­ser application (see “Bookmarks”), which demonstrates such transitions as explode, implode, iris, ripple, and a variety of wipes. If you’d like to see how a particular Quick­Time transition will look in one of your movies, grab a copy of Apple’s MakeEffectMovie utility. This utility layers one movie atop another and then applies the transition you’ve chosen to the two movie layers. For example, one layer can fade or swirl into the other.

It’s about Quick­Time

Quick­Time 3 is rich with features both large and small (see the sidebar “Key Plays: A Visual Quick­Time Tour”). There is still some work to be done, however, and much of it concerns cross-platform parity.

Let’s face it—if Windows users don’t adopt it, Quick­Time will be another wonder­ful Apple technology with unrealized potential, and without MPEG support under Windows, Quick­Time can’t be the one-format-fits-all technology Apple envisions. Omissions like these aren’t holding back Quick­Time right now, however. The International Standards Organ­ization (ISO) has adopted a proposal by Apple, IBM, Netscape, Oracle, Silicon Graphics, and Sun Microsystems to use the Quick­Time File Format as the basis of the upcoming MPEG-4 standard.

The Last Word

Quick­Time 3 is a remarkable piece of tech­nology—Apple technology that, for the first time, has a chance to become as popular on Windows PCs as it is on the Macintosh.

Since its simple beginnings as a movie player for the Mac, Quick­Time has gained ground—from addressing multi­ple file types to streaming video, sound, and virtual reality. And best of all, it can do almost all of it across platforms. With version 3 Pro, Apple has in Quick­Time a major multimedia score.

Contributing Editor CHRISTOPHER BREEN has written about Macs and multimedia since the early years of the Reagan administration.

Bookmarks

MakeRefMovie This utility from Apple creates a reference movie that points to versions of your Quick­Time movie optimized for different bandwidths.

EffectsTeaser Even if you decide not to upgrade to Quick­Time 3 Pro, this Apple application will let you preview its transitions.

MakeEffectMovie With this utility from Apple, see how a Quick­Time transition would look in one of your movies.

88 September 1998 Macworld
Open it in Quark. Edit it in Quark. Even if it wasn't made in Quark.

EPS & PDF

New Extensis QX-Tools 4.0
For QuarkXPress 4.0

Get more into QuarkXPress by opening and editing artwork that wasn't created in XPress. Extensis QX-Tools 4.0 turns Microsoft Excel charts, Word tables, Illustrator, FreeHand and PDF artwork into XPress objects you can edit. If you can print it, QX-Tools can open and edit it.

Get even more out of your new version of QuarkXPress 4.0 with seven more turbocharged productivity tools in QX-Tools 4.0.

Size and Resize groups of objects with precision you won't find in XPress 4.0. Experiment freely without losing the ability to undo.

Download
Free Trial Version of Extensis QX-Tools 4.0

www.extensis.com/mw

Extensis, QX-Tools, and the Extensis logo are trademarks of Extensis Corporation. QuarkXPress is a trademark of Quark, Inc., registered in the United States and other countries. Macintosh is a trademark of Apple Computer, Inc. Windows is a trademark of Microsoft Corporation.

Get even more out of QuarkXPress 4.0 with Extensis QX-Tools.

Organize document elements into layers that you can turn on and off.
Search and replace across QuarkXPress objects to quickly and easily change document design.
Use item style sheets for faster formatting, quickly navigate and fine-tune big documents and reduce screen clutter with dockable palettes.

You'll get more out of XPress 4.0 with Extensis QX-Tools.

Choose 14 at www.macworld.com/getinfo
We Haven’t Lowered Our Standards
Just Our Prices!

**Accl-a-Writer 8300**
- 600 x 600 dpi  
  (Upgradeable to 1200 x 1200)
- Oversized Printing  
  Up to 12" x 25"
- Adobe® PostScript® 3™
- 8 Pages Per Minute
- 16 MB RAM  
  (Upgradeable to 128 MB)
- Optional Ethernet®  
  ($395 value) FREE!
- Other features include: X-ACT, Halftone Calibration Technology, Densitometer Support & Enhanced Screening

**NEW SPECIAL PRICE!**
$1,795

**Accl-a-Writer 8200**
- 600 x 600 dpi  
  (Upgradeable to 1200 x 1200)
- Oversized Printing  
  Up to 11.7" x 25"
- Adobe® PostScript® 3™
- 16 Pages Per Minute
- 16 MB RAM  
  (Upgradeable to 64 MB)
- Optional Ethernet®  
  ($395 value) FREE!
- Other features include: X-ACT, Halftone Calibration Technology, Densitometer Support and Enhanced Screening

**NEW SPECIAL PRICE!**
$1,995

Ask About Our Optional FilmMaking Capabilities!

For more information call:
800-926-8839
Ext. 2152 • Dealers Call Ext. 2153

XANTÉ
Innovations in Printing Technology

Tel: 334-342-4840 • Fax: 334-342-3345 • www.xante.com

©1998 XANTE CORPORATION. XANTE, Accl-a-Writer and X-ACT are trademarks or registered trademarks of XANTE CORPORATION, Adobe, PostScript, and the PostScript logo are trademarks of Adobe Systems, Inc. Other brands and project names are trademarks or registered trademarks of their respective holders. XANTE CORPORATION, Post Office Box 1056, Mobile, AL 36601-1856, Tel: 334-342-4840, Fax: 334-342-3345.

Choose 112 at www.macworld.com/getinfo
Burn, Baby, Burn

by Stephan Somogyi

COMPACT DISCS WERE ONCE MEANT STRICTLY FOR PLAYBACK. ACTUALLY creating CDs was the province of the big software and record companies. But now all of us have the power to make our own CDs. CD-Recordable drives, or CD-Rs, allow you to create (or burn) both audio and data CDs with a minimum of trouble and expense. And an even newer technology called CD-Rewritable, or CD-RW, adds more versatility and flexibility to the compact-disc world.

Although CD-ROMs were once touted as the next big medium, they've evolved into something more akin to high-capacity, read-only floppy disks. Take Apple's new iMac—that colorful compact consumer computer has a CD-ROM drive and no floppy drive.

The appeal of CDs is clear: they're in many ways more rugged than the removable media used on drives from companies such as Iomega and SyQuest, they're cheaper than magneto-optical cartridges, and just about all computers (not to mention most stereos) can read them. By no means can CDs be considered speed demons, but their versatility, low cost, storage capacity, and physical robustness mark a significant space for them in the world of removable mass storage.

To give you a leg up on deciding which CD-writing drive is right for you, Macworld Lab tested 21 CD-R and CD-RW drives for compatibility, reliability, and performance (see the benchmark, “Feel the Burn: CD-R and CD-RW Drives Compared”). We also investi-
gated the compatibility problems caused by the new rewritable format.

**One-Shot Wonders**

With a trusty CD-R or CD-RW drive, some blank CD-R media, and the right software, you can create Mac-native CD-ROMs (even bootable ones) and ISO 9660 CD-ROMs—which are readable by computers running DOS, Windows, Unix, or the Mac OS. You can also create audio CDs that work in any standard CD player. A single, blank CD-R disc costs as little as $2 and holds just as much data—up to 650MB—as any of the CD-ROMs you get when you buy software.

**Slow Going** While creating CDs isn’t expensive, it can be time-consuming. You usually can’t just pop in a blank disc and drag files onto it in the Finder, as you’d do with a floppy. Instead, you prepare the files that are intended for the CD-R on a hard disk and then burn them to a disc, using an application such as Adaptec’s Toast. Depending on how much data needs to be written and how fast the drive is, you might have to wait for more than an hour before the finished CD pops out of the drive. (Some of the drives we tested ship with Adaptec’s DirectCD software, which actually does let you mount a blank CD in the Finder. Nevertheless, this approach has shortcomings. Every time the OS needs to update information on the disc, it has to write a whole new copy of the information—plus all sorts of invisible files and other unseen data—on the CD, wasting valuable space. You can’t write over what’s already been written.)

At the standard CD-audio data-transfer rate, one minute of CD audio takes one minute to write; this works out to approximately 150K per second, meaning that it would take 74 minutes to fill a CD-ROM. The drives we tested are able to burn at speeds up to four times (or 4x) the standard rate, which means that a full CD can be burned in 18.5 minutes at the drives’ top speed. Once a CD has been created, it can be played back at any speed.

**The Coaster Curse** But if something goes wrong while burning—usually caused by too cheap CD-R media or an interruption on the Mac that’s controlling the burner—you’ll wind up with a round gold or silver coaster instead of a usable disc. That’s the one great shortcoming of CD-R. Unlike Iomega Zip disks or floppy disks, CD-R discs can be filled up only once, although some CD-R formats allow you to fill up a disc gradually over several sessions. But once you’ve written anything to a CD-R disc, it’s there forever.

Typical CD-recording software helps reduce the risk of burning an unusable

---

**Aspiring Writers: 21 CD-R and CD-RW Drives**

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
<th>Mouse Rating</th>
<th>List Price</th>
<th>Phone</th>
<th>Mechanism</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS Technologies</td>
<td>CDR 4x8</td>
<td>-</td>
<td>$500</td>
<td>816/483-1600</td>
<td>Panasonic CW-7502</td>
<td>CD-R</td>
</tr>
<tr>
<td>EZQuest</td>
<td>Anaba Jazz 2GB/2X4x6</td>
<td>-</td>
<td>$1,199</td>
<td>714/779-9040</td>
<td>Yamaha CDW-4260</td>
<td>CD-RW</td>
</tr>
<tr>
<td>La Cie</td>
<td>CDR 4x8</td>
<td>-</td>
<td>$479</td>
<td>503/844-4500</td>
<td>Panasonic CW-7502</td>
<td>CD-R</td>
</tr>
<tr>
<td>Mediastore</td>
<td>AFD 4x2X6 Rewritable</td>
<td>-</td>
<td>$549</td>
<td>714/974-5551</td>
<td>Yamaha CDW-4260</td>
<td>CD-RW</td>
</tr>
<tr>
<td>MicroNet</td>
<td>Master CD Plus 4x12</td>
<td>-</td>
<td>$630</td>
<td>714/459-6000</td>
<td>Teac CD-R555</td>
<td>CD-R</td>
</tr>
<tr>
<td>Optical Technology</td>
<td>CDWrite</td>
<td>-</td>
<td>$799</td>
<td>714/746-0515</td>
<td>Yamaha CDW-4260</td>
<td>CD-RW</td>
</tr>
<tr>
<td>Pinnacle Micro</td>
<td>RCD 4x12 Mac</td>
<td>-</td>
<td>$599</td>
<td>949/789-3000</td>
<td>Teac CD-R555</td>
<td>CD-R</td>
</tr>
<tr>
<td>ProDirect</td>
<td>PowerStore 412 CDR</td>
<td>-</td>
<td>$449</td>
<td>800/524-9952</td>
<td>Teac CD-R555</td>
<td>CD-R</td>
</tr>
<tr>
<td>Smart &amp; Friendly</td>
<td>CD-RW-426</td>
<td>-</td>
<td>$699</td>
<td>818/772-8001</td>
<td>Yamaha CDW-4260</td>
<td>CD-RW</td>
</tr>
<tr>
<td>Smart Storage Solutions</td>
<td>4x2X66WMX</td>
<td>-</td>
<td>$549</td>
<td>816/772-8001</td>
<td>Teac CD-R555</td>
<td>CD-R</td>
</tr>
<tr>
<td></td>
<td>4x8 BMX</td>
<td>-</td>
<td>$399</td>
<td>800/473-0923</td>
<td>Panasonic CW-7502</td>
<td>CD-R</td>
</tr>
<tr>
<td></td>
<td>4x12P MX</td>
<td>-</td>
<td>$579</td>
<td>800/473-0923</td>
<td>Plextor CD-R PX-R412C</td>
<td>CD-R</td>
</tr>
<tr>
<td></td>
<td>4x12T MX</td>
<td>-</td>
<td>$459</td>
<td>800/473-0923</td>
<td>Teac CD-R555</td>
<td>CD-R</td>
</tr>
</tbody>
</table>

*NA = not applicable.*
CD by letting you create an image file of the CD on your local hard disk beforehand. This allows you to check that everything is just so before actually burning the data onto the real disc.

Another factor that can reduce the chance of burning a bad disc is the amount of cache RAM built into the CD writer. The more cache a drive has, the less likely it is that a hard disk or computer slowdown will cause a fatal interruption in the stream of data the CD-R drive is writing to the CD-R disc.

Rewriting History

A new class of drives has begun to make the pain of failed CD-writing sessions fade away. Roughly a year old, CD-RW technology is similar to CD-R, with one crucial difference: CD-RW discs can be written to over and over—up to 1,000 or so times, according to the media manufacturers. Even better, CD-RW drives aren’t limited to writing CD-RW discs—they can also burn old-fashioned CD-R discs. In fact, all the CD-RW drives we tested were able to burn CD-R discs faster than CD-R drives.

CD-RW drives, like their CD-R cousins, are slow when compared with other removable-media devices, such as Zip and Jaz drives. But CD-RW technology is an eminently useful backup tool when paired with Dantz Development’s (www.dantz.com) Retrospect or Retrospect Express software (see Reviews, in this issue). Since CD-RW discs can be overwritten with new data, they’re a more cost-effective means of backup than the write-once CD-R discs.

As with CD-R, you usually can’t write to CD-RW discs by mounting one in the Finder and dragging files to it, unless you’ve got software such as DirectCD.

### Write Speed

<table>
<thead>
<tr>
<th>Write Speed</th>
<th>Rewrite Speed</th>
<th>Read Speed</th>
<th>Cache</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>4x</td>
<td>NA</td>
<td>8x</td>
<td>1MB</td>
<td>Very slow with Retrospect 4.0; APS offers Charli/Mac Discribe as an alternative to Toast.</td>
</tr>
<tr>
<td>4x</td>
<td>2x</td>
<td>6x</td>
<td>2MB</td>
<td>Good overall performance; firmware easy to upgrade.</td>
</tr>
<tr>
<td>4x</td>
<td>2x</td>
<td>6x</td>
<td>2MB</td>
<td>Included 2GB Jaz drive is nice but expensive.</td>
</tr>
<tr>
<td>4x</td>
<td>NA</td>
<td>8x</td>
<td>1MB</td>
<td>Panasonic mechanism slow with Retrospect 4.0.</td>
</tr>
<tr>
<td>4x</td>
<td>NA</td>
<td>12x</td>
<td>1MB</td>
<td>Good performer; not compatible with Retrospect 4.0.</td>
</tr>
<tr>
<td>4x</td>
<td>6x</td>
<td>2MB</td>
<td></td>
<td>Good overall performance; solid drive.</td>
</tr>
<tr>
<td>4x</td>
<td>NA</td>
<td>8x</td>
<td>668K</td>
<td>Very slow with Retrospect 4.0.</td>
</tr>
<tr>
<td>4x</td>
<td>NA</td>
<td>12x</td>
<td>1MB</td>
<td>Not compatible with Retrospect 4.0; otherwise, a good performer.</td>
</tr>
<tr>
<td>4x</td>
<td>NA</td>
<td>12x</td>
<td>1MB</td>
<td>Most expensive drive with Teac mechanism.</td>
</tr>
<tr>
<td>4x</td>
<td>6x</td>
<td>2MB</td>
<td></td>
<td>Good performer, but has huge case; expensive; includes CD-R Access Pro for Finder drag-and-drop copies.</td>
</tr>
<tr>
<td>4x</td>
<td>NA</td>
<td>8x</td>
<td>2MB</td>
<td>Average performance; requires a lot of desktop space. More expensive than some CD-RW drives; includes CD-R Access Pro for drag-and-drop copies.</td>
</tr>
<tr>
<td>4x</td>
<td>NA</td>
<td>12x</td>
<td>1MB</td>
<td>Not compatible with Retrospect 4.0.</td>
</tr>
<tr>
<td>4x</td>
<td>12x</td>
<td>2MB</td>
<td></td>
<td>Good overall performance.</td>
</tr>
<tr>
<td>4x</td>
<td>6x</td>
<td>2MB</td>
<td></td>
<td>Very slow with Retrospect 4.0.</td>
</tr>
<tr>
<td>4x</td>
<td>12x</td>
<td>2MB</td>
<td></td>
<td>Good performance, but still slow with Retrospect 4.0; only drive without a built-in drawer.</td>
</tr>
<tr>
<td>4x</td>
<td>NA</td>
<td>12x</td>
<td>1MB</td>
<td>Not compatible with Retrospect 4.0.</td>
</tr>
</tbody>
</table>

The Bad News about CD-RW

The many benefits of CD-RW over CD-R are evident. There are, however, several drawbacks that will make CD-R discs a valuable media format for some time to come.

**Pricey Media** The first drawback is cost, plain and simple. Currently, the average CD-RW disc costs ten times what a CD-R disc costs. If you’re planning on rewriting that disc repeatedly, over time the investment will be worth it. But if you’re writing to a large number of discs, the costs of CD-RW will add up.

**Incompatibilities** The biggest problem with CD-RW discs is that they won’t work with most older CD players. (The features required to read all CDs, including CD-RW, are lumped together in a new standard known as Multi-Read. If you buy a CD-ROM drive or audio CD drive that’s Multi-Read capable, that drive will be able to handle CD-RW discs.)

CD-ROM drives that are older than a year are unlikely to be able to read a CD-RW disc, since the final version of the Multi-Read specification isn’t even a year old. So while being able to reuse CD-RW discs over and over again is quite convenient, you can’t pass those discs to your friends unless they’ve got a Multi-Read capable drive. Using those discs on new systems shouldn’t be a problem—the CD-ROM drive in a Power Mac G3 desktop system we used could read a CD-RW disc without problems, but the older drive in a Performa couldn’t.

**Real-World Tests** The real test for compatibility, however, is consumer audio and video equipment. Since CD-RW technology is an obvious candidate for making audio CDs—play a disc until you’re sick of it, and then write over it with some new tunes—we went to a local consumer-electronics store to see how many audio CD players would read our CD-RW audio disc. Adaptec’s Toast software was helpful enough to warn us, when we set it up to burn an audio CD-RW disc, that most consumer players cannot read CD-RW audio. It wasn’t kidding.

We tried our disc in several car CD players from various companies, ranging in price roughly from $500 to $1,000. Not a single one of these players recognized the CD-RW as a valid audio CD; some flashed error messages on their displays, while others unceremoniously spat the disc back out.
BURN, BABY, BURN

Since DVD players can play audio CDs and are so new, we thought that they stood a good chance of being Multi-Read capable. We tested four players: all three Sony players we tried, priced from $599 to $999, were unable to read the disc. We found only one player that both recognized our disc and played its music—the newest player in the store, the $599 Panasonic DVD-A10.

Clearly, Multi-Read hasn’t been adopted very widely yet, in either the computer or consumer-electronics worlds. Until you and your friends have all converted to Multi-Read–savvy equipment, the appeal of CD-RW discs will be tempered by the currently limited compatibility of the medium.

Burning Questions

Since a CD-R drive does everything a CD drive does and more, buying a CD-RW drive would seem to be a better investment than buying one that writes noticeably different performance (see “Feel the Burn: CD-R and CD-RW Drives Compared”).

Backup Failures The seven Teac’s—LaCie’s (www.lacie.com)

---

Feel the Burn: CD-R and CD-RW Drives Compared

Best overall performance. Shorter bars and lower numbers are better for Write tests. Higher numbers are better for MacBench CD-ROM test. Editors’ Choice winners in red. MacBench 4.0 CD-ROM scores are relative to that of the built-in CD-ROM drive in a Power Mac 6100/60, which is assigned a score of 100.

<table>
<thead>
<tr>
<th>CD-R Drive</th>
<th>Mechanism</th>
<th>Write and Verify 320MB Session</th>
<th>Retrospect Full Backup</th>
<th>Retrospect Incremental Backup</th>
<th>Write Audio Tracks (567 sec. total)</th>
<th>MacBench CD-ROM Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS Technologies CDR 4x8</td>
<td>Panasonic</td>
<td>921</td>
<td>5,338</td>
<td>538</td>
<td>223</td>
<td>302</td>
</tr>
<tr>
<td>APS Technologies CDRW Pro</td>
<td>Yamaha</td>
<td>997</td>
<td>894</td>
<td>83</td>
<td>212</td>
<td>213</td>
</tr>
<tr>
<td>EZQuest Anubias J2 2GBx4x6</td>
<td>Yamaha</td>
<td>993</td>
<td>897</td>
<td>85</td>
<td>207</td>
<td>211</td>
</tr>
<tr>
<td>EZQuest Boa Y-CRW 4x2x6</td>
<td>Yamaha</td>
<td>1,026</td>
<td>892</td>
<td>89</td>
<td>203</td>
<td>215</td>
</tr>
<tr>
<td>La Cie CDR 4x8x</td>
<td>Panasonic</td>
<td>921</td>
<td>5,354</td>
<td>547</td>
<td>196</td>
<td>300</td>
</tr>
<tr>
<td>La Cie CDR 4x12</td>
<td>Teac</td>
<td>806</td>
<td>NA*</td>
<td>NA*</td>
<td>196</td>
<td>405</td>
</tr>
<tr>
<td>Mediaport A4 4x2x6 Rewritable</td>
<td>Yamaha</td>
<td>993</td>
<td>892</td>
<td>92</td>
<td>213</td>
<td>416</td>
</tr>
<tr>
<td>Mediaport A4x4</td>
<td>Yamaha</td>
<td>923</td>
<td>6,605</td>
<td>622</td>
<td>228</td>
<td>303</td>
</tr>
<tr>
<td>Mediaport A4x12</td>
<td>Yamaha</td>
<td>805</td>
<td>NA*</td>
<td>NA*</td>
<td>196</td>
<td>405</td>
</tr>
<tr>
<td>MicroNet Master CD Plus 4x12</td>
<td>Yamaha</td>
<td>885</td>
<td>NA*</td>
<td>NA*</td>
<td>196</td>
<td>416</td>
</tr>
<tr>
<td>Optima Technology CDWriter</td>
<td>Sony</td>
<td>892</td>
<td>NA*</td>
<td>NA*</td>
<td>196</td>
<td>405</td>
</tr>
<tr>
<td>Optima Technology DiskCopy 1300CDCR</td>
<td>Teac</td>
<td>807</td>
<td>1,461</td>
<td>148</td>
<td>216</td>
<td>243</td>
</tr>
<tr>
<td>Pinnacle Micro RCD 4x12 Mac</td>
<td>Teac</td>
<td>807</td>
<td>NA*</td>
<td>NA*</td>
<td>196</td>
<td>401</td>
</tr>
<tr>
<td>ProDirect PowerStore 412 CDR</td>
<td>Yamaha</td>
<td>999</td>
<td>891</td>
<td>90</td>
<td>207</td>
<td>205</td>
</tr>
<tr>
<td>ProDirect PowerStore 4200 CDWR</td>
<td>Yamaha</td>
<td>1,005</td>
<td>893</td>
<td>89</td>
<td>202</td>
<td>214</td>
</tr>
<tr>
<td>Smart &amp; Friendly CD-RW 426</td>
<td>Yamaha</td>
<td>804</td>
<td>NA*</td>
<td>NA*</td>
<td>197</td>
<td>408</td>
</tr>
<tr>
<td>Smart &amp; Friendly CD-SpeedWriter</td>
<td>Yamaha</td>
<td>992</td>
<td>893</td>
<td>100</td>
<td>208</td>
<td>212</td>
</tr>
<tr>
<td>Smart Storage Solutions 4x2x6YMAX</td>
<td>Yamaha</td>
<td>925</td>
<td>6,338</td>
<td>647</td>
<td>225</td>
<td>396</td>
</tr>
<tr>
<td>Smart Storage Solutions 4x8MBXMAX</td>
<td>Panasonic</td>
<td>876</td>
<td>3,376</td>
<td>317</td>
<td>190</td>
<td>376</td>
</tr>
<tr>
<td>Smart Storage Solutions 4x12MBX</td>
<td>Plextor</td>
<td>807</td>
<td>NA*</td>
<td>NA*</td>
<td>196</td>
<td>404</td>
</tr>
<tr>
<td>Smart Storage Solutions 4x12TMX</td>
<td>Teac</td>
<td>807</td>
<td>NA*</td>
<td>NA*</td>
<td>196</td>
<td>404</td>
</tr>
</tbody>
</table>

* Not applicable; mechanism is incompatible with Retrospect 4.0.

Behind Our Tests

Macworld Lab tested each drive by creating two CD archives (the Retrospect backups are considered one archive) and an audio CD and by running MacBench’s CD-ROM test. In our first test, we timed how long it would take to write 320MB of data in one session to CD. For our Retrospect tests, we ran two backups, recording a total of 345MB of data to the same storage set. We also created an audio CD by recording two audio tracks totaling 567 seconds. We then ran MacBench’s CD-ROM test on each drive. We used CD-R media for all tests and also performed one write session with CD-RW media in CD-RW drives. All times include time to verify the newly written data. Testing was performed on a Power Macintosh 7300/200 with an external 4GB Seagate hard drive.—Macworld Lab testing supervized by Gil Loyola

---
Anaba Jaz 2GB/Y2×4×6, EZQuest's S599 Boa Y-CRW 4×2×6, Mediastore's S549 AVD 4×2×6 ReWritable, Optima Technology's S799 CDWriter, ProDirect's S559 PowerStore 4260 CD-RW, Smart & Friendly's S699 CD-RW 426, and Smart Storage Solutions' S589 $499 CDR 4×12X, Mediastore's (www.mediastore.com) $519 AVD 4×12X, MicroNet's (www.micronet.com) $630 Master CD Plus 4×12X, Pinnacle Micro's (www.pinnaclemicro.com) $599 RCD 4×12X Mac, ProDirect's (www.pdisales.com) $449 PowerStore 412 CDR, Smart & Friendly's (www.smartandfriendly.com) $549 CD SpeedWriter, and Smart Storage Solutions' (www.smartstoragesolutions.com) $459 4×12TMX—are clearly the fastest of the bunch at burning and verifying (by dint of the Teac mechanism's 12× speed), but they have a significant drawback: they’re currently incompatible with Retrospect. For those who care only about burning CD-R discs quickly, the Teac-based drives perform well.

Since Retrospect is a widely used and ideal piece of software for backing up and archiving data, a drive that does not support it has significantly less value to the Macintosh owner. The Teac-based drives are technically flash-upgradable, but unlike Panasonic, Teac has not made a Macintosh flash utility available; unless you have a PC with a SCSI card, you cannot flash-upgrade your Teac mechanism.

The Panasonic mechanism—at the heart of APS Technologies' (www.apstech.com) $500 CDR 4×8X, La Cie's $479 CDR 4×8X, Mediastore's $449 AVD 4×8X, and Smart Storage Solutions' $399 4×8MMX—has limited support for Retrospect, but at least it’s just functional enough to work. We were able to run our full suite of tests with these drives, but the drives performed so poorly with Retrospect as to make them unsuitable for backup purposes. And when it came to non-Retrospect CD-R burning and verifying with Toast, the Teac-based recorders consistently outperformed the Panasonic-based ones, which can read only at 8X.

Smart Storage Solutions' S579 4×12PMX and Optima Technology's (www.optimatech.com) $669 DiskOvery 1300CDR use Plextor and Sony mechanisms, respectively, but both are slower than the Teac mechanisms.

Rewrite Might The CD-RW recorders we tested—APS's S600 CDRW Pro, EZQuest's (www.ezq.com) $1,199 4×2×6MMX—performed roughly equally. We were particularly pleased with how easy it was to upgrade the Yamaha mechanism’s firmware with the Mac-based flash utility available on the Yamaha Systems Technology Web site (www.yamahayst.com), since not all the drives we tested shipped from the vendors with the latest firmware.

The CD-RW drives we tested can burn CD-R discs at speeds up to 4X, the same speed as the CD-R drives we tested. However, the CD-RW drives we tested can read only at 6X, while the CD-R drives can read at speeds up to 12X. The result is that while these CD-RW drives can write to a disc as fast as a CD-R drive can, it takes the CD-RW drives longer to verify what they’ve written. On average, the Teac-based drives were able to burn and verify our 320MB test archive 19 percent faster than the Yamaha-based drives.

Macworld's Buying Advice

Our all-around favorite drives and Editors’ Choice picks are APS's CDRW Pro and Mediastore's AVD 4×2×6 ReWritable. The CDRW Pro has built-in active SCSI termination, and its fan, while audible, is quieter than a typical computer fan. This drive’s most serious shortcoming is its external power supply; the brick and attendant cable aren’t a particularly elegant solution.

The AVD 4×2×6 ReWritable’s case is solid and stackable, but it lacks built-in termination and has a very poorly placed power button that all but invites you to power cycle the drive when all you really mean to do is eject the disc. However, the AVD 4×2×6 ReWritable is $50 less than the CDRW Pro. In deciding which drive is for you, you need to weigh the value of the CDRW Pro design against the lower cost, lack of termination, and danger of inadvertent power-downs of the AVD 4×2×6 ReWritable.

While both the APS and Mediastore drives’ Yamaha mechanism isn’t as fast at burning CD-Rs as the Teac mechanism is, the Yamaha is adequately quick and fully compatible with Retrospect. Most important, it supports CD-RW, which is already useful for backups and should become significantly more useful for many other applications in the future.

CD-RW is certainly a very young technology with its share of hang-ups. But even setting aside CD-RW features, the CD-RW drives we tested are comparable in terms of writing (but not reading) speed with similarly priced CD-R-only drives. Factor in the potential of CD-RW technology, and it’s clear: if you’re ready to make the move from compact-disc consumer to compact-disc creator, buying a CD-RW drive is indisputably the path to take.

STEPHAN SOMOGYI is a veteran breaker of technology products. He finds writing about the results of such exploits strangely cathartic.
This September
Join Hundreds of
Web Teams

What's New This Year
- World-class full-day Tutorials covering everything from Ecommerce (2 days in-depth) to Perl and Javascript.
- Mindbending Open Sessions and Showcases: Jakob Nielsen on Web 2003, Flash and Quicktime in all their splendor, and much more!
- 1998 Web Tools Awards hosted by Web Techniques and Web Review.

Make History. Register now for Web'98

Who's Speaking
Brian Behlendorf – Backend
Emily Davidow – Strategy/Visual Design
Dale Dougherty – Strategy
Bruce Eckel – Programming
Chris Edwards – Visual Design
Steve Jurvetson – Strategy
Brewster Kahle – Information Design
Kevin Lynch – Visual Design
Mark Meadows – Visual Design
Peter Merholz – Information Design
John Maeda – Visual Design
Drue Miller – Information Design
Jakob Nielsen – Strategy
Web Design & Development '98

See You At The Summit

From the fundamentals of site usability, to new media business models, to cutting-edge programming techniques, Web Design & Development '98 sets the standard for giving web professionals what they need to succeed.

Web '98 provides practical training from the leading experts in Strategy, Information Design, Visual Design, Programming, Usability, and Backend. Join us for the most intense gathering of web brilliance the East Coast has ever seen.

Back By Popular Demand

- **Cool Site in a Day** - The frenzy returns. East meets West in competition to redesign a website for a selected charity, spec unseen. A distinguished panel of judges picks the winner at a reception that evening. It's an amazing display of virtuosity.
- **Visual Authoring Tools Shootout** - Emily Davidow returns to host a duel between the top four experts on the top four web authoring environments: Macromedia's Dreamweaver, GoLive's CyberStudio, Elemental's Drumbeat, and last year's winner, NetObjects' Fusion.
- **Career Development** - If Web '98 inspires you to consider new "day job paradigms," you can head over to Career Development '98 where you can explore new career opportunities within the wired world.
- **Team Discount!** Buy three full price conference packages and the fourth attends FREE!

AND MANY MORE!

www.mfweb.com

Feeling nostalgic? Contact us by phone at 800-441-8826 or by e-mail at web98@mfi.com.
Thinnovation. You already know that Mitsubishi practically wrote the book on award-winning CRT monitor design. Now we've combined dazzling image quality, higher contrast and extraordinary brightness in a fraction of the size. Featuring a distortion-free TFT active matrix screen, increased color clarity and crystal-clear, flicker-free images, Mitsubishi's 14" and 15" LCD models (LCD40 and LCD50) are ideally suited for any application where space is at a premium. In fact, the ultra-thin LCD monitors use nearly 90% less desktop space than a standard CRT display. Mitsubishi's LCD monitors offer a true display solution for anyone looking for high-performance in a compact, lightweight design. Contact Mitsubishi Electronics today and we'll send you the condensed version of our latest monitor success story.

USA: 1-800-843-2515 • Canada: 1-800-387-9630 • www.mitsubishi-display.com/mwd/QW/KFAX: 1-800-937-2094 (Document #1015)
Whether you're on a business trip or a vacation, chances are you'll want to remain connected to the Internet wherever you travel. But unless you prepare in advance, using your PowerBook to get online on the road can be both expensive and frustrating. Here are some tips on how to avoid the online potholes in the road.

**Save Dollars When You Dial**

**Get a Local Number**  With most ISPs charging a flat monthly rate for online access, your biggest expense in staying connected is the cost of a long-distance phone call. That's why the first thing you should do before leaving home is check with your Internet service provider (ISP) to see if it has a local number at your destination. For example, I use GTE, which maintains a list of local numbers on its Web site (www.gte.net/dialin/). America Online subscriber? Just select Member Services and click on Connecting to AOL.

**Get a Toll-Free Number**  If there's no local number, your ISP may have another money saving option: a toll-free number you can call from anywhere in the country. Although ISPs typically charge you something like $6 per hour to use this number, it's still likely to be a bargain compared with dialing your home access number from your travel destination.

**Don't Charge It to Your Room**  If you're unable to get a local or toll-free number for your modem access and you're using a long-distance number, avoid charging the cost of the call to your room. It's almost always far cheaper to charge the call to your home phone by using a calling-card number. You can automate the process so that your PowerBook does all the dialing. To do so, add your calling-card number to your phone-number string, such as the string in the Remote Access control panel (see “Dialing for Savings”).

**Save Time with Setups**

**Get an Outside Line**  Before you try to get online from your hotel, you'll probably need to do other modifications to the phone-number string in the appropriate control panel. For starters, there's probably a special digit you need to press to get an outside line. If it's 9, for example, simply add 9 and a comma in front of the phone-number string in the appropriate control panel (such as the PPP or Remote Access control panel). The comma forces

www.macworld.com  September 1998 99
Go Mobile, International-Style

IF YOU'RE TRAVELING ABROAD, YOU'LL discover new ways to get overcharged for getting connected. Most important: Do not charge the call to your hotel room—unless you wish to use up your retirement savings. IF YOU'RE TRAVELING ABROAD, YOU'LL find a local number to call. If you must dial long distance, you'll want to use a sequence similar to the one shown here: 9 for an outside line, followed by your ISP number and your calling-card number (to charge the call). The commas provide needed delays between each step.

Dialing for Savings To get online from a hotel, your best bet is to find a local number to call. If you must dial long distance, you'll want to use a sequence similar to the one shown here: 9 for an outside line, followed by your ISP number and your calling-card number (to charge the call). The commas provide needed delays between each step.

Avoid Hardware Hassles

Digital-Phone-Line Danger If you’re staying at a hotel that uses a digital phone system, don’t use your modem with it—it can fry your modem! Fortunately, there are two good solutions. Your hotel may provide a separate analog-line phone jack (often called a data port) specifically for modem use. Otherwise, you can purchase a digital-to-analog converter, such as Inside Line, from SystemSoft ($119.95; 303/443-2237). Also, some older hotels may not have the modular jacks needed for modem cables. If so, my best advice is to stay somewhere else. There are other ways to work around this problem, but the hotel might not appreciate your attempts to modify its wiring.

Bring Enough Cord Since a wall jack may not be near where you can set up your PowerBook, bring along an extra-long modular phone cord (at least 12 feet). I also bring an adapter that lets me connect two phone cords together. I use this to connect the phone cord that normally goes to the hotel's telephone with the cord that goes to my modem. This way, I never even have to locate the wall jack, which hotel designers are fond of placing behind a headboard in a nearly inaccessible location.

Bring an Adapter Pack an adapter for converting a grounded, three-pronged plug to a two-pronged one. Without this, you may be unable to plug in your PowerBook's AC adapter to older-style outlets.

Future Travel Someday, getting your e-mail on the road will be as convenient as turning on a TV. Until that day arrives, the advice given here should get you online as quickly, easily, and cheaply as possible.
Believable Color So Fast It Even Keeps Up With Your Most Unbelievable Clients.

Xerox Digital Color Printers always make you look great. Because no matter how many last-minute revisions, unreasonable deadlines or pressures you put on them, they still deliver Pantone®-accurate, high-speed output right on demand.

Start with the impressive 6ppm color of the affordable DocuColor 5750 (with up to 12" x 18" capability). Or try the DocuColor 5799, a proven workhorse at 9ppm, with near photographic image quality. Or move all the way up to the award-winning color technology of the DocuColor 40, which offers astonishingly true color at 40ppm. Each one delivers high performance backed by the Xerox Total Satisfaction Guarantee. And 24-hour/7-day service is available.

So call 1-800-ASK-XEROX ext. 949 today to speak with a Xerox Color Specialist. Because Xerox always helps you get it done. And get it right the first time. Even if your clients don’t.

THE DOCUMENT COMPANY
XEROX

See us at Seybold, Sept. 1-3, Booth 701

Choose 100 at www.macworld.com/getinfo
You've Eliminated the English. Buried the Babylonians. Crushed the Celts. Who's Next?

CIVILIZATION II
GOLD EDITION
WITH MULTIPLAYER

CIVILIZE YOUR FRIENDS
The imaginary hordes torching your village just turned into real people. Challenge a mix of human and AI opponents through Internet, modem, LAN, serial or hotseat gameplay. Because if you thought Attila the Hun was nasty, wait 'til you meet Frank the Dry Cleaner.

EXPAND YOUR CIVILIZATION
Includes the best-selling global strategy game Civilization II plus over 35 new scenarios in the add-on game packs Conflicts in Civilization™ and Fantastic Worlds™. Challenge yourself with the American Civil War, Jihad, After the Apocalypse, fantasy scenarios and much more!

800-229-2714
Call for a free catalog or visit our website at www.wizworks.com/macsoft
Tips, Tricks, and Shortcuts

Under Mac OS 8 and 8.1, you can send an instant message to anyone connected to your Mac for file sharing. Colin Foster of Toronto explains how: Open the File Sharing control panel and click the Activity Monitor tab. Hold down the option key and double-click the name of any user (even <Guest>) displayed in the Connected Users list. (If you want to send the same message to more than one user, shift-click or shift-click to select their names.) In the dialog box that appears, type your message and click OK. The message will pop up on the other user's machine as a small modal dialog box—a fun way to send a friendly "hello."

Printing as PDF

Q One of Mac OS 8.1's many attractions for me was that LaserWriter 8.5.1 could save a print job as an Adobe Acrobat PDF file. However, I found that option grayed out in the Save As section of the Print dialog box when using my LaserWriter 4/600 PS. Any thoughts?

A You need to install Adobe Acrobat Distiller to enable the Acrobat PDF setting for LaserWriter 8.5.1's Save As File option. Distiller is not included with the free Acrobat Reader—it's part of the full $295 version of Acrobat, which you can by through retailers (listings provided at www.adobe.com); it's also bundled with recent versions of Adobe PageMaker.

Switching TCP/IP Configurations

Q My small office has six Macs on an Ethernet network. I want to use TCP/IP to accelerate backup over the network using Dantz Development's Retrospect. This requires setting all the computers' TCP/IP control panels to connect via Ethernet. But one Mac has its TCP/IP control panel set to connect via FreePPP so it can access the Internet by modem, and thus it can't communicate with the backup server. What can I do?

A Create two configurations in the FreePPP-enabled computer's TCP/IP control panel: one named "PPP" with settings for the Internet, and one named "Ethernet" with settings for your Ethernet network. Then, for each step-by-step instructions, click the question-mark icon in the TCP/IP control panel to access Mac OS Help (Mac OS Guide in Mac OS 7.6.1 and earlier), and double-click the question "Change TCP/IP settings all at once?" You could switch between these configurations using the TCP/IP control panel's Configuration command, but that's dreadfully tedious. Instead, use a Control Strip module or automate the switching with AppleScript. One such Control Strip module is the $1 shareware TCP CC by Tim Kelly. Another is the freeware tcpip_config.cstrip by Dylan Ashe. You can get either of these from any Info-Mac mirror site (www.pht.com/info-mac/).

To control TCP/IP with AppleScript, you must add a scripting-addition file to the Scripting Additions folder in your System Folder (the Scripting Additions folder in your Extensions folder with Mac OS 7.6.1 and earlier). You can use Nigel Perry's "postcardware" TCP Config, or the $5 shareware CC Scripts by Tim Kelly. All this software is available from the Info-Mac Archive.

You can automate switching the TCP/IP configuration with two simple AppleScript applications. One switches TCP/IP to the "PPP" configuration when the computer starts up. The other script application switches to the "Ethernet" configuration after you initiate shutdown but before it starts shutting down, just prior to when the computer anticipates its nightly backup.

With the TCP Config scripting addition installed, use the Script Editor program from your Apple Extras folder to create a new script, and in it type the following:

Set TCP config to "Ethernet"
Create another new script and type the following:
Set TCP config to "PPP"
Quick Tips

**The retro remote control tip:**

Then set the remote control; to lc Softworks’ IP Net Router ($89; www.sustworks.com) or Vicom Internet Gateway ($249 and up, based on number of users; 650/691-9520, www.vicomtech.com) to maintain TCP/IP connections via Ethernet and PPP simultaneously.

**Copy Many Icon Names tip:**

You may know that to copy and paste a list of icon names, you select the icons in the Finder, use the Copy command, switch to a text editor or

the Scrapbook, and use the Paste command. But System 7.X limits the list to about two dozen names (256 characters total). With Mac OS 8 or 8.1, you can copy and paste up to 2,000 names at a time (about 32,000 characters total).

**Keep Your Trash tip:**

At Ease version 3.0.3, Apple’s software for restricting and simplifying access to one Mac by different people, has an annoying feature: it insists on emptying the Trash when you quit working in unrestricted Finder mode, in order to let someone else use the computer in a restricted mode. But you can switch users without emptying the Trash by quitting all open applications and then quitting the Finder using an AppleScript script. You can find at least one script that quits the Finder by searching AOL or the Info-Mac Archive (www.phx.com/info-mac/) for the phrase script Finder quit.

**Data Merge** The formula shown for cell E6 merges data from the spreadsheet on the right to the one on the left.

Data Merge =INDEX(Data Range, MATCH (Lookup, Match Range, 0), 1)

You can use the same method to merge responses to survey questions or to make a table of values observed at different times during a science experiment, and spreadsheet-savvy kids could tabulate observed data for school science projects.

To customize this formula, simply replace the italicized terms with cell references as shown in “Data Merge.” Data Range is the range of cells containing the data to be merged (MERGEFILE!SC6:SC17 in the example). Lookup is the cell to match in the master spreadsheet (B6 in the example). Match Range is the range of cells containing possible matches to Lookup (MERGEFILE!$B6:$B17 in the example). The 0 in the formula specifies that the Lookup cell must match one of the Match Range cells exactly. The 1 in the formula specifies that only the first column be copied from the Data Range.

Enter the formula in the first cell to have it display merged data (E6 in the example). Then use the Fill Down command to copy the formula to other cells that should display merged data (E7:E18 in the example). For this technique to work, Data Range and Match Range must contain absolute cell references (with dollar signs), and Lookup must be a relative cell reference (without dollar signs).

This example shows the data to be merged and its destination in separate spreadsheets, but both can be contained in the same spreadsheet when using Excel 5.0 or later. If they are, omit the spreadsheet name and exclamation point from the beginning of the cell-range references.

When you save these scripts, set the Save dialog box’s Kind option to Application and leave its Stay Open option turned off. Put the script application to “the ‘Ethernet” configuration in the Shutdown Items folder, and put the script application that switches to the ‘PPP” configuration in the Startup Items folder. Then set the Retrospect Remote control panel to wait for backup at shutdown.

As an alternative to this configuration switching, you could use Sustainable Softworks’ IPNetRouter ($89; www.sustworks.com) or Vicom Internet Gateway ($249 and up, based on number of users; 650/691-9520, www.vicomtech.com) to maintain TCP/IP connections via Ethernet and PPP simultaneously.

Copy Many Icon Names

You may know that to copy and paste a list of icon names, you select the icons in the Finder, use the Copy command, switch to a text editor or
DEER HUNTER

INTERACTIVE HUNTING EXPERIENCE

#1 PC Game
Coming to the
Mac this July

The Thrill of the Hunt

Live video and animated sequences for true-to-life gameplay
Overhead map shows exact location
Choose your weapon: rifle, shotgun or bow
Use the tools of the trade to track a trophy-sized buck

800-229-2714
Call for a free catalog or visit our website at www.wizworks.com/macsoft

Choose 31 at www.macworld.com/getinfo
For millions of computer users, Macintosh is synonymous with increased productivity and innovative technology advances. Come to San Francisco—home to a “think different” community—for the latest technologies and trends that will change the way you work, play and learn now and in the future.

At MACWORLD Expo/San Francisco, you’ll demo, touch, see and feel all the hot new products—from more than 400 leading vendors. Learn time-saving productivity secrets through in-depth workshops, advanced and user-level conference programs. Hear from the brightest stars who are shaping the future of the Mac universe at the much-anticipated keynote address.

MACWORLD Expo/San Francisco has the latest solutions for:

- the Internet
- digital content creation, management and delivery
- multimedia
- software development
- small business
- remote worker programs
- connectivity
- graphic design
- publishing
- education, research and development

Take advantage of money-saving specials when you buy products right on the show floor.

NEW for '99

INTRODUCING QUICKWORLD\textsuperscript{SM}:
The QuickTime\textsuperscript{TM} Developers Expo and Conference. Running concurrent with MACWORLD Expo, San Francisco's Moscone Convention Center will host the launch of QuickWorld\textsuperscript{SM}: the first conference and exhibit focused exclusively on emerging QuickTime\textsuperscript{TM} technology.

Discover what the future holds at MACWORLD Expo/San Francisco. Register to attend today!

VISIT: www.macworldexpo.com
CALL: 800-645-EXPO

\textbf{YES! PLEASE SEND ME MORE INFORMATION ABOUT MACWORLD EXPO/SAN FRANCISCO! I'M INTERESTED IN:}
\begin{itemize}
  \item [\square] Attending
  \item [\square] Exhibiting
\end{itemize}
MCW

Name ____________________________
Title ____________________________
Company _________________________
Address __________________________
City/State/Zip ____________________
Phone: ____________________________ Fax __________________________
email ____________________________

Mail to: MACWORLD Expo, 1400 Providence Highway, P.O. Box 9127, Norwood, MA 02062. Or Fax to: 781-440-0357

THIS IS NOT A REGISTRATION FORM.
PowerPoint Goes Interactive
Authoring Multimedia Projects in PowerPoint 98

by Jim Held

Your assignment: create an interactive self-guided tour that will run at the local tourism office. The project has some QuickTime and QuickTime VR movies, an audio soundtrack, and the usual text and images. You’ll need to create some buttons that enable users to branch to different screens. And the chamber of commerce would appreciate a button that links to its Web site.

Your tool: Microsoft PowerPoint 98. PowerPoint? The preferred weapon of conference-room hypnotists everywhere? Actually, yes. PowerPoint 98, which is the most creative occupant of Microsoft’s Office 98 suite (see Reviews, June 1998), has some impressive interactivity features and can handle every one of the requirements I just outlined. PowerPoint is also easier to learn than a multimedia-authoring program.

Still, PowerPoint was designed primarily for sequential, conference-room-style slide presentations, and getting it to behave like an interactive authoring program isn’t always straightforward.

Set the Stage
When you choose New from the File menu, PowerPoint 98 wants to hold your hand by offering a variety of wizards and canned designs. For an interactive project, choose the Blank Presentation option; it’s in the New Presentation dialog box’s General tab.

Even then, however, PowerPoint 98 insists on helping (stop already!), offering a series of AutoLayout screens for your first slide. Click on the AutoLayout named Blank (it looks like an empty square), and then click on OK.

An interactive project benefits from a consistent look from one slide to the next—perhaps a text heading, a horizontal line, and a Quit button on each slide. PowerPoint’s Slide Master is the place to put these. To access it, choose Slide Master from the View menu’s Master submenu.

You can make interactive projects look nicer by displaying their elements on background textures. PowerPoint includes an assortment of attractive textures. To apply a texture to every slide, switch to Slide Master view and then choose Background from the Format menu. In the Background dialog box, choose Fill Effects from the pop-up menu at the bottom of the dialog box. In the Fill Effects dialog box, click on the Texture tab and then double-click on the desired texture. Finally, click on Apply.

Build a Foundation
PowerPoint 98’s enhanced branching features are particularly good for interactivity. They enable you to create buttons in your project that let viewers jump to URLs and that take viewers from one slide to another even if the destination isn’t the next slide in sequence (see “Branch Out”). But to create branching buttons, the slides you want to branch to must already exist. So your first step in creating an interactive project is to create those slides. You don’t have to complete every slide up front—you can create blank slides as placeholders.

Manipulating Media
Just like any grown-up authoring program, PowerPoint 98 can import files in
Adding Movies and Sounds

YOU CAN IMPORT QUICKTIME MOVIES AND AUDIO FILES AND add them to slides via the Insert menu's Movies And Sounds submenu. Here are some helpful tips for easier implementation.

Make Movies or Sounds Play Automatically
Normally, PowerPoint 98 doesn't play a movie or sound file automatically, instead requiring you to click on it to start playback. But there may be times when you want automatic playback—for instance, you might want music to play as soon as a particular slide is displayed.

To specify that a movie or sound play automatically, select the movie or sound and then choose the Slide Show menu's Custom Animation command. Animation and motion options live in the Timing tab (A). To have the movie or sound play automatically, click on the Animate button (B) and then click on the Automatically button (C).

There is one drawback to this technique: the movie or sound will play back automatically only once, the first time its slide appears. If a user navigates back to that slide, the movie or sound won't play automatically. Alas, Microsoft says there's no way around this limitation.

Hide a Sound
PowerPoint uses a small icon (D) to indicate an imported sound. If you don't want the icon fouling your screen design, drag it off the edge of the slide layout, as shown here.

Use Space-Saving Soundtracks
PowerPoint can play tracks from an audio CD—a great way to add music to a project without increasing file size. To insert a track, choose Play CD Audio Track from the Insert menu's Movies And Sounds submenu. In the Play Options dialog box, specify which track you want to play and, if desired, the start and end times. Check Loop Until Stopped (E) to loop the soundtrack for the duration of time you specify below (F).

a variety of formats, including most popular graphics formats as well as sound files and QuickTime movies.

Bring on the Graphics To add a graphic to a slide, switch to slide view, pull down the Insert menu, and choose From File from the Picture submenu. You can use the Format menu's Format Picture command to create a border around the image and even to adjust its brightness and contrast.

Bring on the Movies and Sounds
To add a movie or sound to a slide, use the Insert menu's Movies And Sounds submenu. Here you find an appealing way to add background music to a project: have PowerPoint play one or more tracks of an audio CD installed in the machine that's playing the presentation. This enables you to have a CD-quality soundtrack without surrendering megabytes of hard-disk space to audio files (see "Adding Movies and Sounds").

Note that if you plan to move a presentation containing QuickTime movies over to a Windows machine, you'll have to reinsert the movies by using the Windows version of PowerPoint. Microsoft says this limitation is due to the way PowerPoint 98 handles QuickTime movies on the Mac.

Create Original Graphics
PowerPoint 98 also provides tools for creating text, lines, and common shapes. With the Drawing tool bar, you can create text boxes whose margins and indents you can control with a Word-like ruler. And with the Office 98 WordArt module, which you can access by clicking on the WordArt icon in the Drawing tool bar or choosing WordArt from the Insert menu's Picture submenu, you can create finely spaced headings with exotic effects—a talent even major-league authoring programs can't match.

But unlike most authoring programs, PowerPoint 98 doesn't create antialiased (smooth-edged) text, so large text can appear chunky. One work around for this is to use Gregory Landweber's SmoothType (www.kaleidoscope.net/greg/), a $5
Branch Out

Branch any on-screen element to another slide—or link it to a Web page—via a simple, clickable button.

1 Make a Button
PowerPoint provides several button-making options. The Action Buttons submenu in the Slide Show menu provides commands for drawing several types of common buttons, but the buttons have a cheesy, pseudo-3-D look to them. I prefer the Drawing tool bar’s AutoShapes pop-up menu. The round-rectangle tool draws buttons that resemble standard Mac OS buttons.

To add text after you’ve drawn the button, control-click on the button and choose the Add Text command from the shortcut menu that pops up. You can format the resulting text, using the Format menu’s Font command.

You can also turn a text box into a clickable button: after typing the text, select the text box and then use the Drawing tool bar or the Format menu’s Text Box command to create an outline around the text box and to specify a fill color.

Workspace hint: Dotted lines at the top of an Office 98 pop-up menu indicate that you can turn it into a floating palette by clicking on the dotted lines and dragging the pop-up away from the tool bar.

TIP If you’re still building your project and haven’t yet created all the slides, you can use PowerPoint’s outline view to add placeholders for slides you want to branch to. It’s a quick way to create slides without going through all the slide-creation dialog boxes. In outline mode, every time you press return, you add a new slide.

2 Add Branching
Once you’ve created the button, you’re ready to specify what happens when a user clicks on it. Do this with the Slide Show menu’s Action Settings command.

To create a branch to a specific slide, click on Hyperlink To (A) and choose Slide from the pop-up menu. Click on OK, and in the resulting dialog box, choose the name of the slide you want to branch to (B).

To create a link to a Web site, choose URL (C) from the pop-up menu and type the site’s address. When a user clicks on your button, PowerPoint 98 will launch Internet Explorer and open the URL.

Check Highlight Click (D) if you want your button highlight—ed after a user clicks on it.

Previous versions of PowerPoint included a viewer application you could distribute freely with your presentation to enable users who didn’t have PowerPoint to view your efforts. Microsoft says that it plans to ship a free viewer for PowerPoint 98. But until it ships, you’ll need to license and install PowerPoint 98 on the computer that will be running the final project.

As an interactive authoring tool, PowerPoint 98 has some weak spots—such as its inability to display the standard QuickTime-movie controller bar—and it does require some awkward workarounds. All in all, however, its interactive capabilities are impressive. PowerPoint 98 is no Macromedia Director, but it’s definitely the most entertaining member of the Microsoft Office workforce.

JIM HEID (www.heidsite.com) lives and breathes Web and multimedia development tools.
"The Vision3D Pro II's Ticket 2 Ride chip provides outstanding 2D performance, the best of any Macintosh video card I've ever tested."

Michael Breeden, xlr8yourmac.com

"For the first time I saw scores exceed 1000 for the graphics test and 1100 for the low-res pub test."

MacWeek

The Vision 3D Pro II

"Mactell's Vision3D Pro II is the fastest 2-D card we've tested. If your work involves a lot of scrolling and panning, the card should quickly justify its cost." -MacWeek

MacBench High Res Publish Scores

<table>
<thead>
<tr>
<th>Built in Video</th>
<th>212</th>
<th>August '98 MacWorld</th>
</tr>
</thead>
<tbody>
<tr>
<td>lx3D Ultimate Rez</td>
<td>597</td>
<td></td>
</tr>
<tr>
<td>ATI Nexus GA 8MB</td>
<td>547</td>
<td></td>
</tr>
<tr>
<td>Xclaim 3D</td>
<td>772</td>
<td></td>
</tr>
<tr>
<td>Vision3D Pro II 8MB</td>
<td>790</td>
<td></td>
</tr>
</tbody>
</table>

"For those who can't wait for OpenGL, Mactell's Vision3D Pro II offers the best combination of 2D and 3D graphics acceleration, along with nice extras such as an excellent hardware-enabled zoom function." -MacWorld

Mactell Corporation • 7000 Cameron Rd., Austin, Texas 78752
888-622-6355 • 512-323-6000 • Fax 512-323-6394

Mactell and Mactell Logo are registered trademarks of Mactell Corporation. All other trademarks and product names used herein are the property and/or registered property of their respective owners. Mactell is not responsible for typographical and photography errors. Prices, specifications and availability subject to change without notice. Extended warranty and extended on-site plans available. Call for details.

Choose 75 at www.macworld.com/getinfo

www.mactell.com

1 888 mactell
Mastering PageMaker's Control Palette

Get to Know This Misunderstood Tool, and You'll Work More Efficiently

by Olav Martin Kvern

QuarkXPress users have long coveted Adobe PageMaker's Control palette. From this single tool bar you can move, skew, flip, rotate, and resize any element on the page; crop imported graphics; and set type. But although users agree that the Control palette is better than its closest counterpart in XPress, the Measurements palette, they're often put off by the sheer amount of stuff it contains (see the sidebars below). If you can overcome your feelings of dread, however, you'll find that the Control palette offers the best way—and in some cases the only way—to perform certain layout tasks.

Not Dangerous, Just Misunderstood
The beauty of the Control palette is that it's several palettes in one: it changes depending on the object you select. When you click on an imported graphic, for example, controls appear for changing its position, width, height, rotation, and cropping. If you click on the Text tool or selected text, the palette offers character- and paragraph-formatting options. When you select a line, rectangle, or ellipse, you see yet another set of controls.

You can tell what kind of element you've selected by looking at the leftmost control, the Apply button. It displays an icon representing the selected shape (rectangle, ellipse, or polygon), graphic (TIFF, EPS, or PICT), group of objects, or text. You rarely have to click on the Apply button, though—changes usually take effect immediately.

One of the palette's most useful—and most misunderstood—controls is the proxy, to the right of the Apply button. It's simply a stand-in for the element you've selected; changes you make to the proxy are reflected in the selected object.

Clicking on a highlighted point in the proxy also lets you switch between move mode and stretch mode. When you enter move mode, the reference point you've selected becomes an anchor—everything happens around the selected point.

Get Control of Your Graphics

The Control palette displays different fields and buttons depending on the object you've selected. For example, when you select a graphic, such as this TIFF image, you see one set of options; when you click on a text box (see below), you get a completely different set of controls.

Tame Your Type with Text Controls

When you click on the Text tool in a text block, or simply select text, PageMaker displays the Control palette's Character view (top) or Paragraph view (bottom). To switch between the two views, press Alt-shift-` (grave accent). In the Character view, use the arrow keys to navigate the type-style buttons; press the spacebar to click on a button.
The Perplexing Proxy

WHAT MAKES PAGEMAKER'S CONTROL PALETTE SPECIAL IS THE PROXY: IT LETS YOU specify what part of an object you're moving, rotating around, or scaling from. Even PageMaker's cousin, Illustrator—the only other application with a proxy—doesn't pack this much power into such a small space. Here's how it works.

1. Select an object (in this case, a TIFF image). Notice that the reference points on the proxy correspond to the selection handles bordering the selected object.

2. Click on a reference point on the proxy. That point is highlighted and becomes the part of the image the Control palette will act upon. Here, I've selected the upper right point on the proxy. If I were to rotate the object, it would pivot on its upper right corner.

3. When you click on a reference point, you enter move mode. Changes you make in the X (horizontal) and Y (vertical) fields move the selected point to the corresponding location; changes made in the W (width) and H (height) fields scale the selection around that point.

4. Click on the highlighted point in the proxy again to switch to stretch mode (arrows appear around the point). Changes you make in the X and Y fields will stretch the selected point to that position.

Take the Palette for a Spin

Once you've familiarized yourself with the fields and buttons, it's time to put the Control palette through its paces. The following are a few of my favorite Control palette techniques. Give 'em a try—they'll give you a feel for the power and flexibility the Control palette offers.

Change the unit of measurement.

To change the unit of measurement (picas, inches, millimeters, or ciceros) for all fields in the Control palette, you simply change the publication's measurement system in the Preferences dialog box (File > Preferences). But you can also change the unit of measurement for a single field: if you repeatedly press Shift-M when that field is active, PageMaker cycles through the available measurement systems. To select one, press enter or tab. That measurement system will remain in effect until you close the Control palette or quit PageMaker.

You can also enter values in the Control palette's X, Y, W (width), and H (height) fields, using any measurement system you want, without having to make a trip to the Preferences dialog box.

When you want | Type
---|---
6 picas, 3 points | 6p3
113 points | 0p113
2.4 inches | 2.4i
31 millimeters | 31m
2 ciceros, 1 didot | 2c1
Do palette arithmetic. Typing an absolute page location—such as 3.75in—in the Control palette’s fields is a great way to move an object to a specific place. But what if you want to move an object some distance relative to its current location? Use arithmetic. To move an object 3 picas to the right of its current location, type +3p after the value in the X field.

You can add, subtract, multiply, and divide in any field. To make an object half its current width, type /2 after the value in the W field. You can even enter multiple arithmetic operations in a field, such as +16.8*5.

You can’t however, mix units of measurement and do arithmetic at the same time. That is, you can’t enter +3.2i in a field containing 2p6—you have to change the field to inches beforehand.

Change the nudge amount. To change the effect of a nudge button, go to the Control-pallete section of the Preferences dialog box and enter the new number in one of the nudge fields. If you want the objects you’re manipulating to snap to guides or rulers as you click on the nudge buttons, turn on the Use “Snap to” Constraints option; if you want to position objects freely, make sure this option is disabled.

To multiply the effect of the nudge by a factor of 10, simply hold down the % key as you click on one of the nudge buttons. For example, if you’ve entered 1 point in Preferences’ Vertical Nudge field, %clicking on one of those buttons moves the object 10 points.

Nudge leading amounts. You can easily nudge type sizes up or down, using keyboard shortcuts (%shift-> and %shift<-), but there’s no corresponding command for increasing or decreasing leading values. That’s too bad; a keyboard shortcut for leading would make it easier to add (or remove) just enough leading to make a text block fill a column or a page.

Fortunately, the Control palette lets you adjust the leading of selected text by using the nudge buttons next to the Leading field. Each click increases or decreases the leading by 1/26 point; %click on the nudge buttons to increase or decrease the leading by 1 point.

Create a style shortcut. To create a new paragraph style based on the format of the currently selected text, enter a name for the new style in the Style field of the Control palette’s Paragraph view. If the name isn’t already taken, PageMaker asks if you want to create a new style based on the example you’ve selected; click on OK. PageMaker creates the new style and applies it to the selected paragraph.

Edit a style shortcut. When the Control palette’s Paragraph view is visible, hold down the % key and click on the style name to display the Style Options dialog box.

Redefine a style shortcut. To redefine a style based on the formatting of a sample paragraph, select the paragraph and %shift-click on the style name in the Control palette’s Paragraph view. PageMaker displays an alert asking if you want to override the style’s definition with the attributes of the paragraph you’ve selected; you do, so click on OK.

Set a tab at the current cursor position. At some point, you’ll probably want to set a tab at the current cursor position in a line of text. To do this, move the cursor to where you want to set the tab and then display the Paragraph view of the Control palette. Read the value in the Current Cursor Position field (it’s the only field that’s not editable). Press %I to display the Indents/Tabs dialog box, enter the current location of the cursor (the value from the field) in the Position field, and choose Add Tab from the pop-up menu.

Type ahead. When you’re typing font names in the Font field or style names in the Style field, PageMaker matches the characters you type with the list of fonts or styles you have available. When it finds a match, it enters the name of the font or style in the field. This means you don’t have to type Zapf Chancery to apply that font—PageMaker will probably find it after you type Z.

Mouse-Free Navigation

YOU CAN OPEN THE CONTROL PALETTE, NAVIGATE THE FIELDS AND BUTTONS, APPLY CHANGES, AND CLOSE THE PALETTE—all without ever taking your hands off the keyboard. Here are some quick ways to get around.

<table>
<thead>
<tr>
<th>Press</th>
<th>When you want to</th>
</tr>
</thead>
<tbody>
<tr>
<td>%'- (apostrophe)</td>
<td>Display or hide the Control palette.</td>
</tr>
<tr>
<td>%'- (grave accent)</td>
<td>Move the cursor to the most recently used Control-palette option. Once you’ve activated a Control-palette button or field, PageMaker directs your keystrokes to the Control palette.</td>
</tr>
<tr>
<td>tab</td>
<td>Move ahead one field or button.</td>
</tr>
<tr>
<td>shift-tab</td>
<td>Move back one field or button.</td>
</tr>
<tr>
<td>left or right arrow</td>
<td>Switch from one button to another in a group of buttons.</td>
</tr>
<tr>
<td>spacebar</td>
<td>Press an active button.</td>
</tr>
<tr>
<td>enter</td>
<td>Apply palette changes and work directly in the page layout.</td>
</tr>
<tr>
<td>shift-enter</td>
<td>Apply palette changes and continue working with the Control palette.</td>
</tr>
<tr>
<td>%'- (grave accent)</td>
<td>Switch between Paragraph and Character views.</td>
</tr>
<tr>
<td>keypad keys</td>
<td>Select points on the proxy (when active). For example, 5 corresponds to the center handle, 7 to the upper left handle, and 3 to the bottom right handle. Pressing the key corresponding to the currently selected point toggles between move mode and stretch mode.</td>
</tr>
</tbody>
</table>

No Fear

Once you get to know the Control palette, you’ll find yourself wondering how you ever got along without it. Make friends with the numbers, and you can start taking advantage of one of PageMaker’s most powerful timesaving features. m

OLAV MARTIN KVERN is a software developer, illustrator, graphic designer, and writer. He is the author of Real World FreeHand 7 (Peachpit Press, 1997).
We Take Product Testing Seriously.
QuarkXPress 4's introduction of Bézier drawing tools is cause for joyous celebration. You no longer have to leave QuarkXPress and launch an illustration program just to draw a simple shape or put text on a curve. While XPress doesn't give you nearly as much power for drawing as programs such as Adobe Illustrator and Macromedia FreeHand, it does let you make basic Bézier shapes with similar pen tools, anchor points, and handles. However, there are some features unique to QuarkXPress. To accomplish any of the tasks in the lessons below, follow my pointers.

Four Lessons in QuarkXPress Paths

1. Manipulate Your Boxes and Paths

   EDIT A PATH OR BOX AFTER YOU DRAW IT Edit as you would in a drawing program, but make sure the Shape option (Item: Edit: Shape) is turned on. When it's off, you can change only the item's width and height.

   TURN A PATH INTO A PICTURE OR TEXT BOX Hold down the option key while selecting the Bézier box from the Shape submenu (Item: Shape).

   TURN A BOX INTO A PATH Select the Bézier path from the Shape submenu (Item: Shape).

   (Note that I'm making a distinction between paths, which are always open at each end, and boxes, which are always closed.)

2. Take Control of Paths

   JOIN TWO PATHS Place the paths so that the two ends you want to join are within six points of each other. Then select Join Endpoints (Item: Merge: Join Endpoints).

   MOVE A SINGLE POINT ON A PATH First select the path, then select the point. You can move the point by dragging it or by pressing the arrow keys. To move the selection in 0.1-point increments, hold down the option key while pressing the arrow keys.

   MOVE A POINT WITH GREATER PRECISION Set the value of the point and its control handles in the right side of the Measurement palette (shown below).

3. Drawing Tips and Shortcuts

   SAVE FRUSTRATION WITH PEN TOOLS QuarkXPress 4 offers two kinds of drawing tools: the Bézier pen tools and the freehand tool (not to be confused with the program of the same name). If you have the hands of a surgeon, you might be able to draw with the freehand tool; otherwise, I advise sticking to the Bézier pen tools.

   CREATE A CORNER POINT Click anywhere, using one of the Bézier pen tools.

   CREATE A CURVE POINT Click and drag, using one of the Bézier pen tools.

   TURN A CURVE POINT INTO A CORNER POINT Before you finish a path or box, hold down the control and option keys while dragging the curve point's control handle. Or option-click on either the point itself (to make the control handles retract to zero, which turns the point into a corner point) or one of the control handles (to retract just that one handle).

   END A PATH OR A BOX Double-click on the page, or switch to a different pen tool.

4. Create Compound Items

   CREATE A SINGLE BOX THAT INCLUDES MORE THAN ONE BOX In this example, I created a bagel shape (A), selected two concentric circles, and (B) chose the Difference option (Item: Merge: Difference).

   MOVE THE ENTIRE INSIDE CIRCLE INDEPENDENT OF THE OUTSIDE CIRCLE Select all the points on the inside circle's subpath by shift-clicking on each point, double-clicking on one point, or selecting one point and then pressing 3%-shift-A (C).
**The Macworld Lab.**

In fact, we think product testing is so important to helping Macworld readers make the right buying decisions, only Macworld has...

<table>
<thead>
<tr>
<th>A New Lab</th>
<th>State-of-the-art showcase of Macworld's testing prowess. Built from the ground up for more product tests and head-to-head shootouts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-Platform Benchmarks</td>
<td>To help readers deal with integrating Macs with Windows NT, and the issues of interoperability.</td>
</tr>
<tr>
<td>Continued Development of MacBench</td>
<td>The industry's only publicly available benchmark tool for CPU, graphics cards and storage devices.</td>
</tr>
<tr>
<td>Further Enhancements to SpeedMark</td>
<td>The standard for real world application-based Mac performance tests.</td>
</tr>
</tbody>
</table>
The Power of Photoshop’s Pen Tool
Capture Shapes Accurately and Efficiently
by Chris Lehan

Adobe Photoshop’s pen tool doesn’t have to be daunting. It follows the same concept as those connect-the-dots puzzles you did as a kid, except that it adds Bézier curves to its arsenal of dot connectors. They make things a bit more complex, but they let you create a path that accurately outlines even the most convoluted shapes. You can then easily save that path, edit it, and later turn it into a selection or a clipping path.

Three Types of Pens
Photoshop 5.0 has three different pen tools. The freeform pen tool is modeled after, and works just like, the freeform pen tool in Adobe Illustrator. It’s a good tool for creating rough outlines in an image, but these outlines will almost always need some tweaking. To make tweaking easier, Adobe created the magnetic pen tool, which intelligently finds edges of contrast in an image and snaps the path to those edges. The magnetic pen can save you a lot of time when you’re creating complex clipping paths, but to create truly accurate pen paths, you need the third type of pen—called simply the pen tool. (This type of pen is also the one you have in Photoshop 4.) It lets you place anchor points strategically and constrain them when possible.

From Pen to Path
To outline an object with the pen tool, you set points around the edge of the object. Simply click to create straight line segments, and click and drag to create arcs that follow the shape of the curve (see “Basic Lines, Curves, and Connectors”). From this series of anchor points and line segments, Photoshop creates a Work Path, which appears in the Paths palette. The Work Path is just temporary information until you double-click on the Work Path name to save the path with a new name.

Each path name can include any number of separate (noncontiguous) paths. When a path name is active and you start drawing another set of points, Photoshop adds that information to the active path. To create a separate path, choose New Path from the Paths palette.

Basic Lines, Curves, and Connectors

WHEN YOU OUTLINE SYMMETRICAL CURVES AND STRAIGHT lines, it pays to constrain the segments to get horizontal, vertical, or 45-degree lines and uniform curves.

![Finished outline](image1)

![Original image](image2)

**STRAIGHT LINE SEGMENTS** To start a segment, click and release the mouse. To end it, hold down the shift key and click again.

**CURVE SEGMENTS** (A) Click and release the mouse. (B) Click and drag, holding the shift key. (C) Click and release the mouse.

![Before (curve)](image3)

![After (cusp)](image4)

**CUSP POINTS** On a curve point (A), using the direct select (arrow) tool, hold down the control key and click one of the directional handles (B). Drag the handle in the direction you want it to go (B). This makes the directional handles independent of each other, allowing you to drag them in different directions.
Outlining: A Few Pointers

KEEP THE POINTS TO A MINIMUM, WHETHER YOU’RE OUTLINING GEOMETRIC OR IRREGULAR SHAPES.

1 How many points does it take to outline the letter S? An experienced Photoshop user at my office got it down to 18 (left). Believe it or not, it can be done with 12 (right).

A Place anchor points strategically. For geometric shapes, especially, you need to place anchor points only on a corner or on the flat part of a curve. (Since images are made up of pixels, every curve has a flat edge, which you can see if you zoom in on the image. Place the anchor point in the middle of the flat part of the curve.)

B Constrain segments and directional handles. Whenever possible, use the shift key to constrain straight-line segments and directional handles of curves to ensure perfectly straight lines and symmetrical arcs.

TIP If you’re dealing with a perfectly circular segment, you can even reduce the number of points to two.

2 When outlining this flower, I looked for areas that resembled the curves of the S and constrained those points. There was no need to constrain the irregular shapes, but I made sure to drag the directional handles toward the next point I was going to place along the curve. Note that although my path doesn’t follow the edges exactly, I made sure the curves looked smooth. When outlining an irregular shape, such as that of a flower, you have more leeway because the viewer has no set expectation for the shape.

The Power of Paths

Once you’ve outlined the shape as closely as you want (see “Outlining: A Few Pointers”), you’re ready to put the power of paths to use.

Paths into Selections There are many ways to make selections in Photoshop, but there are times when using the pen tool works best. This is because your eyes can perceive subtle differences in shapes, while Photoshop relies on information such as color and brightness. For example, have you ever tried to use the magic-wand tool to isolate an object from a background of a similar color—say, a green ball from a green lawn? If the pixels in the object and the pixels surrounding the object are too similar in color, it’s practically impossible. No matter how complex the image, if you can see its edges, you can use the pen tool to select it. The only time to avoid using the pen tool is when selecting objects that have fuzzy edges, such as those with hair, fur, or feathers. Selecting such objects is best done with channel masks.

To turn a path into a selection, choose the Make Selection command from the Paths palette or click on the dotted circle icon (the third icon from the left) at the bottom of the Paths palette.

Paths into Clipping Paths The pen tool lets you create precise clipping paths for exporting selective parts of an image into other programs. While you can turn any selection into a path and then make it into a clipping path, you have less control over how Photoshop draws that path. You can adjust the tolerance setting, but you usually get either too many points or a choppy outline. With the pen tool, you can use as few or as many points as you wish and place them exactly where you need them.

And More There’s a lot more you can do with the pen tool. For example, you can stroke a path with any of Photoshop’s painting tools, or fill it with a color or pattern. You can even copy and paste paths between Photoshop and Illustrator. However you choose to use the pen tool in Adobe Photoshop, the power of paths can take you a long way.

CHRIS LEHAN teaches Intermediate and Advanced Photoshop for Hennepin Technical College, in Minneapolis.
THIS SEPTEMBER,
CROSS OVER TO A NEW TYPE OF PUBLISHING EVENT.

SEYBOLD SF
PUBLISHING 98
For the first time ever on the West Coast, Seybold San Francisco offers an advanced Web publishing conference side by side with the world's foremost print publishing conference. Together, they bridge the latest generation of Internet and print publishing technologies to educate you on a powerful wave of new graphics, Web/Internet, prepress, printing, advertising and photography solutions. After five full days of cutting-edge publishing technology educational programs and the industry's largest product exposition, you'll be able to handle whatever challenges come your way. Don't wait another minute. Contact us now to get your free exposition pass and a program guide.

FREE PASS | WWW.SEYBOLDSMINARS.COM
888.473.9265 | 650.372.7078

believe in technology SEYBOLD
## Advertiser Index

Say you saw it in Macworld. To purchase products advertised in this issue call the phone numbers below or log onto Macworld GetInfo at www.macworld.com/getinfo for FREE product information.

<table>
<thead>
<tr>
<th>Page No.</th>
<th>Advertiser</th>
<th>Header Sec. No.</th>
<th>Phone</th>
<th>Page No.</th>
<th>Advertiser</th>
<th>Header Sec. No.</th>
<th>Phone</th>
<th>Page No.</th>
<th>Advertiser</th>
<th>Header Sec. No.</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>Adaptec</td>
<td></td>
<td></td>
<td>110</td>
<td>Fujitsu Computer Products of America</td>
<td></td>
<td>800/626-4686</td>
<td>140</td>
<td>MegaHius</td>
<td></td>
<td>800/786-1184</td>
</tr>
<tr>
<td>8</td>
<td>AEC Software</td>
<td>203</td>
<td>800/450-1982</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td>26</td>
<td>Micronet</td>
<td></td>
<td>800/929-6227</td>
</tr>
<tr>
<td>66</td>
<td>Ajo Designs</td>
<td>265</td>
<td>800/688-2046</td>
<td>96</td>
<td>GCC Technologies</td>
<td>43</td>
<td>800/922-7777</td>
<td>63</td>
<td>Microtek, Lab. Inc.</td>
<td></td>
<td>800/654-4160</td>
</tr>
<tr>
<td>64</td>
<td>ALSOFT</td>
<td>140</td>
<td>800/257-6381</td>
<td>34.35</td>
<td></td>
<td></td>
<td></td>
<td>56</td>
<td>Mitsubishi Electronics America, Inc.</td>
<td>261</td>
<td>800/843-2515</td>
</tr>
<tr>
<td>69</td>
<td>American Power Conversion</td>
<td>72</td>
<td>800/289-APCC</td>
<td>65</td>
<td>iBuy North America</td>
<td></td>
<td>800/313-4335</td>
<td>98</td>
<td>Mitsubishi Electronics America, Inc.</td>
<td>261</td>
<td>800/843-2515</td>
</tr>
<tr>
<td>6</td>
<td>ANTHRO</td>
<td>800/325-3841</td>
<td></td>
<td>7</td>
<td>Imation</td>
<td>265</td>
<td></td>
<td>9</td>
<td>Never Technology</td>
<td>55</td>
<td>316/943-0222</td>
</tr>
<tr>
<td>45-52</td>
<td>Apple Computer</td>
<td></td>
<td></td>
<td>67</td>
<td>Infowave</td>
<td>32</td>
<td>800/564-0644</td>
<td>141</td>
<td>ProDirect</td>
<td>135</td>
<td>800/524-9952</td>
</tr>
<tr>
<td>146</td>
<td>APS Technologies</td>
<td>62</td>
<td></td>
<td>62</td>
<td>Interland, Inc</td>
<td>10</td>
<td>800/599-0547</td>
<td>144,145</td>
<td>The Mac Zone</td>
<td>71</td>
<td>800/436-0605</td>
</tr>
<tr>
<td>68</td>
<td>Ars Nova Software</td>
<td>115</td>
<td>800/445-4866</td>
<td>31</td>
<td>Iomega - JAZ</td>
<td></td>
<td></td>
<td>151</td>
<td>J&amp;R Computerworld</td>
<td>282</td>
<td>800/221-8180</td>
</tr>
<tr>
<td>33</td>
<td>AT&amp;T Technologies, Inc.</td>
<td>256</td>
<td></td>
<td>151</td>
<td>J&amp;R Computerworld</td>
<td>282</td>
<td>800/221-8180</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>148</td>
<td>Bottom Line Distribution</td>
<td>221</td>
<td>800/990-5690</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>142,143</td>
<td>ClubMac</td>
<td>96 800/ CLUB MAC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>149</td>
<td>Computer Discount Warehouse</td>
<td>2</td>
<td>800/509-4239</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55,57,59</td>
<td>Danware</td>
<td>151</td>
<td>800/270-0030</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Deneba CAD</td>
<td>57</td>
<td>800/733-6322</td>
<td>15</td>
<td>Deneba Software</td>
<td>57</td>
<td>800/733-6322</td>
<td>24</td>
<td>Diehl Graphics</td>
<td>45</td>
<td>410/250-5114</td>
</tr>
<tr>
<td>104</td>
<td>VST Technologies, Inc.</td>
<td>73</td>
<td>508/253-9700</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>XANTÉ Corporation</td>
<td>112</td>
<td>800/526-8839</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>XANTÉ Corporation</td>
<td>112</td>
<td>800/526-8839</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>Xerox Corporation</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MACWORLD September 1998 121
Product Index

Macworld. A quick and easy product index from Macworld. Simply use this index to find the page or advertiser of the products which interest you. Then log onto GetInfo at www.macworld.com/getinfo to request more information. You can choose to have the information delivered to you by e-mail, postal mail or telephone.

<table>
<thead>
<tr>
<th>Software</th>
<th>Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BUSINESS</strong></td>
<td><strong>BOARDS</strong></td>
</tr>
<tr>
<td>8 AEC Software</td>
<td>58 Adaptec</td>
</tr>
<tr>
<td>33 All Technologies, Inc.</td>
<td>59 Iomega - JAZ</td>
</tr>
<tr>
<td><strong>CAD/CAM</strong></td>
<td><strong>COMPUTER SYSTEMS</strong></td>
</tr>
<tr>
<td>39 Debea CAD</td>
<td>61 Newer Technology</td>
</tr>
<tr>
<td>24 Diah Graphsoft</td>
<td><strong>DIGITIZERS/SCANNERS</strong></td>
</tr>
<tr>
<td><strong>COMMUNICATION</strong></td>
<td>63 Microtek Lab, Inc.</td>
</tr>
<tr>
<td>55,57,59 Dataviz</td>
<td>146 APS Technologies</td>
</tr>
<tr>
<td><strong>ENTERTAINMENT</strong></td>
<td><strong>DISPLAY</strong></td>
</tr>
<tr>
<td>102 MacSoft</td>
<td>65 Iyama North America</td>
</tr>
<tr>
<td>105 MacSoft</td>
<td>150 Digital Graphx</td>
</tr>
<tr>
<td>70,71 MacSoft</td>
<td>123-131 MacMall/Creative Computers</td>
</tr>
<tr>
<td><strong>GRAPHICS/DTP</strong></td>
<td><strong>EXPANSIONS/UPGRADES</strong></td>
</tr>
<tr>
<td>15 Debea Software</td>
<td>61 ViewSonic</td>
</tr>
<tr>
<td>89 Extensis</td>
<td><strong>GRAPHICS/STORAGE</strong></td>
</tr>
<tr>
<td>67 Infowave</td>
<td>89 XANTÉ Corporation</td>
</tr>
<tr>
<td><strong>MISCELLANEOUS</strong></td>
<td><strong>POWERBOOK</strong></td>
</tr>
<tr>
<td>68 Ars Nova Software</td>
<td>104 VST Technologies, Inc.</td>
</tr>
<tr>
<td><strong>MUSIC</strong></td>
<td>73 <strong>PRINTERS</strong></td>
</tr>
<tr>
<td>68 Ars Nova Software</td>
<td>54 Epson America, Inc.</td>
</tr>
<tr>
<td><strong>UTILITIES</strong></td>
<td>34,35 56 Mitsubishi Electronics America, Inc.</td>
</tr>
<tr>
<td>64 ALSOFT</td>
<td>45-52 4.5 XANTÉ Corporation</td>
</tr>
<tr>
<td>67 Infowave</td>
<td>4.5 XANTÉ Corporation</td>
</tr>
<tr>
<td>26 Micromat</td>
<td>90 XANTÉ Corporation</td>
</tr>
<tr>
<td><strong>ACCESSORIES</strong></td>
<td><strong>SECURITY</strong></td>
</tr>
<tr>
<td>148 Bottom Line Distribution</td>
<td>69 American Power Conversion</td>
</tr>
<tr>
<td>96 <strong>MAIL ORDER</strong></td>
<td><strong>SYSTEMS</strong></td>
</tr>
<tr>
<td>142,143 ClubMac</td>
<td>45-52 Apple Computer</td>
</tr>
<tr>
<td>149 Computer Discount Warehouse</td>
<td><strong>SERVICES</strong></td>
</tr>
<tr>
<td>150 Digital Graphx</td>
<td><strong>DIRECTORY</strong></td>
</tr>
<tr>
<td><strong>FURNITURE</strong></td>
<td>282 <strong>ON LINE</strong></td>
</tr>
<tr>
<td>66 Agio Designs</td>
<td>144,145 The Mac Zone</td>
</tr>
<tr>
<td>6 ANTHRO</td>
<td>62 Interland, Inc.</td>
</tr>
<tr>
<td><strong>INPUT DEVICES</strong></td>
<td>71 <strong>SERVICES</strong></td>
</tr>
<tr>
<td><strong>MACORDER</strong></td>
<td>229 Megahaus</td>
</tr>
<tr>
<td><strong>MISCELLANEOUS</strong></td>
<td>135 ProDirect</td>
</tr>
<tr>
<td>148 Bottom Line Distribution</td>
<td><strong>SERVICES</strong></td>
</tr>
<tr>
<td>142,143 ClubMac</td>
<td>229 Megahaus</td>
</tr>
<tr>
<td>149 Computer Discount Warehouse</td>
<td>135 ProDirect</td>
</tr>
<tr>
<td>150 Digital Graphx</td>
<td>282 <strong>ON LINE</strong></td>
</tr>
<tr>
<td>151 Jeff Computerworld</td>
<td>62 Interland, Inc.</td>
</tr>
<tr>
<td>66 Agio Designs</td>
<td><strong>SERVICES</strong></td>
</tr>
<tr>
<td>6 ANTHRO</td>
<td><strong>DIRECTORY</strong></td>
</tr>
</tbody>
</table>

September 1998, Volume 15, Number 9 Macworld (ISSN 0741-8647) is published monthly by Mac Publishing LLC. Editorial and business offices: 301 Howard St., 16th Fl., San Francisco, CA 94105. 415/243-6565. Subscription orders and inquiries should be directed to 303/665-3930. Subscription rates are $27 for 12 issues, $54 for 24 issues, and $81 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add $18 per year for postage to Canada and Mexico subscribers. Add $26 per year for postage to all other countries. Periodicals postage paid at San Francisco, California, and at additional mailing offices. Postmaster: Send address changes to Macworld, P.O. Box 54529, Boulder, CO 80328. Printed in the U.S.A.
NEW iMac! Reserve Yours Today!
All-in-One Internet System for Your Home!

Processor and Memory
- 233MHz PowerPC G3 processor
- 512K Backside Level 2 Cache
- 117MHz dedicated 64-bit backside bus
- 66MHz system bus
- 32MB SDRAM (2 DIMM slots support up to 128MB)

Storage
- 4GB IDE hard drive
- 24X CD-ROM drive

Expansion & Networking options
- Two Universal Serial Bus (USB) ports
- One Infrared (IrDA) port
- Built-in 33.6Kbps Modem
- 10/100 BASE-T Ethernet

Graphics, Video & Sound
- 2MB SGRAM (exp. to 4MB)
- Built-in 15" color display with 13.8" viewable image size and .28mm dot pitch
- Stereo speakers for Simulated Surround Sound (SRS)
- 16-bit stereo quality audio input

Also includes
- USB keyboard and mouse
- Mac OS 8.1

Reserve Yours Today! NEW Apple® iMac™ only $1,299 #31979

The iMac is toastable! A convenient handle lets the 40lb. unit be easily moved.

The integrated microphone is similar to those found on Apple's AV monitors.

A full-speed IrDA-compliant infrared port lets you beam data to other IrDA devices like the PowerBook G3 series or a printer!

The 15" shadow-mask monitor features quick refresh rates—117MHz at standard resolution—to reduce flicker.

Order Any Time. 1-800-217-9492
Open 24 Hours. Order Today by 10 pm EST—Get it Tomorrow by 10:30 am.

Technical specifications, price and availability are all subject to change by the manufacturer.
FREE SHIPPING!

**Now in Stock!**

Storage will never be an issue with up to 8GB hard drive space!

**NEW!**

The New G3 PowerBooks... Out-Perform Desktop Systems!

**Stellar Features at an Affordable Price!**

**Processor and Memory**
- 233, 250, or 292MHz PowerPC G3 processor—fastest performance ever in a notebook!
- 1MB Backside Level 2 Cache on the 250 and 292MHz processor modules
- 125MHz (250MHz, Model) or 146MHz (292MHz Model) dedicated backside bus
- 66MHz (233MHz Models) or 83MHz (250 & 292MHz Models) system bus speed
- Integrated floating point unit and 64K on-Chip Level 1 cache (32K for data and 32K for instruction)
- 32 or 64MB RAM; 2 SO-DIMM slots support up to 192MB RAM; 4MB ROM

**Storage**
- 2, 4 or 8GB IDE hard drive
- 20X CD-ROM drive for use in expansion bay

**Removable 1.44MB floppy disk drive for use in expansion bay (sold separately in #32519)**

**Expansion & Networking Ports**
- Two hot-swappable expansion bays
- ADB port, SCSI port, Serial port
- Built-in 10Base-T Ethernet
- RJ-11 modem port, 4Mbps Infrared (IrDA) port
- PC Card Slots for two Type II or one Type III PC Card

**Graphics, Video & Sound**
- Features high-quality display, up to 14.1 inches diagonal
- 12.1 inch diagonal display features SVGA STN passive matrix display with support for thousands of colors at 800 x 600 pixel resolution
- 13.3 and 14.1 inch diagonal displays feature built-in TFT XGA active matrix displays, supporting millions of colors at 1,024 x 768 pixel resolution
- 2 or 4MB SGRAM video memory
- 2D/3D graphics, through integrated video controller
- S-video output for connecting to a TV (13.3" & 14.1" displays only)
- 16-bit CD quality stereo input/output
- Two built-in stereo speakers

**Portability**
- Includes one lithium-ion battery for up to 3.5 hours of normal use; supports two batteries for as much as 7 hours of use

**Software**
- Mac OS 8.1, which includes Internet access software, FaxSei, Now Contact & Up-to-Date and WebWhacker

Order Any Time. Open 24 Hours. **1-800-217-9492**

Order Today by 10 pm EST—Get it Tomorrow by 10:30 am.
**Why a G3?**

 Designed to be as attractive as it is functional!
 Sleek ergonomics for more efficiency
 Flip up keyboard gives easy access to RAM expansion slot & removable hard disk drive
 New, more flexible configuration options!

---

**Choose The G3 That's Right For You!**

<table>
<thead>
<tr>
<th>Order</th>
<th>Speed</th>
<th>RAM</th>
<th>HD</th>
<th>CD-ROM</th>
<th>Floppy</th>
<th>Modem</th>
<th>Display</th>
<th>Weight</th>
<th>Only</th>
<th>Or Lease</th>
</tr>
</thead>
<tbody>
<tr>
<td>#32519</td>
<td>233MHz</td>
<td>32MB</td>
<td>2GB</td>
<td>20X</td>
<td>—</td>
<td>—</td>
<td>12.1&quot; Passive Matrix</td>
<td>7.2 lbs.</td>
<td>$2,299</td>
<td>$92/mo</td>
</tr>
<tr>
<td>#32520</td>
<td>233MHz</td>
<td>32MB</td>
<td>2GB</td>
<td>20X</td>
<td>Included</td>
<td>56K</td>
<td>12.1&quot; Passive Matrix</td>
<td>7.2 lbs.</td>
<td>$2,579</td>
<td>$104/mo</td>
</tr>
<tr>
<td>#32521</td>
<td>233MHz</td>
<td>32MB</td>
<td>2GB</td>
<td>20X</td>
<td>Included</td>
<td>—</td>
<td>13.3&quot; Active Matrix</td>
<td>7.6 lbs.</td>
<td>$2,999</td>
<td>$120/mo</td>
</tr>
<tr>
<td>#32522</td>
<td>233MHz</td>
<td>32MB</td>
<td>2GB</td>
<td>20X</td>
<td>Included</td>
<td>—</td>
<td>14.1&quot; Active Matrix</td>
<td>7.6 lbs.</td>
<td>$3,499</td>
<td>$140/mo</td>
</tr>
<tr>
<td>#32523</td>
<td>250MHz</td>
<td>32MB</td>
<td>4GB</td>
<td>20X</td>
<td>Included</td>
<td>56K</td>
<td>13.3&quot; Active Matrix</td>
<td>7.6 lbs.</td>
<td>$3,899</td>
<td>$156/mo</td>
</tr>
<tr>
<td>#32524</td>
<td>292MHz</td>
<td>64MB</td>
<td>8GB</td>
<td>20X</td>
<td>Included</td>
<td>56K</td>
<td>14.1&quot; Active Matrix</td>
<td>7.8 lbs.</td>
<td>$5,599</td>
<td>$224/mo</td>
</tr>
</tbody>
</table>

---

**Add these Items to Your Order!**

### PowerBook G3 Accessories

- **#31413** Apple AC Adapter: $74.99
- **#31414** Apple Hoppo disk drive: $99.99
- **#33200** VST Charger for PowerBook G3: $149.99
- **#31412** Apple Lithium-ion battery: $199.99
- **#31443** Apple DVD-ROM: $289.99
- **#31442** Apple DVD-ROM: $399.99

### Internal Zip® for Your PowerBook!

- **#32071** Zip Drive for PowerBook G3: $199.99

### PowerPort 56K PC Card Modem

- **#3147** VST Components: $188.99

### PowerPort 56K PC Card Modem

- **#3148** 16MB PowerBook G3 Series: $65.99
- **#3149** 32MB PowerBook G3 Series: $95.99
- **#3140** 64MB PowerBook G3 Series: $175.99
- **#3142** 128MB PowerBook G3 Series: $359.99

### VIKING COMPONENTS

- **#3147** 16MB PowerBook G3 Series: $65.99
- **#3148** 32MB PowerBook G3 Series: $95.99
- **#3149** 64MB PowerBook G3 Series: $175.99
- **#3142** 128MB PowerBook G3 Series: $359.99

### 64MB PowerBook G3 Series

- **#32071** Zip Drive for PowerBook G3: $199.99

---

**See our Website for more deals!**

[www.macmall.com](http://www.macmall.com)

*Mention your Priority Source Code: #ZMWD891*
FREE SHIPPING!

Some models even include a built-in 100MB Iomega Zip Drive!

New!

Next Generation Power Mac G3... for Performance & Expandability!

Innovative Features at an Affordable Price!

Processor and Memory
- 233, 266, or 300MHz PowerPC G3 processor
- 512K or 1MB Backside Level 2 Cache
- 117, 133 or 150MHz dedicated 64-bit backside bus
- 66MHz system bus
- Integrated floating point unit and 64K on-chip Level 1 Cache (32K data/32K instruction)
- 32, 64 or 128MB SDRAM (3 DIMM Slots support up to 192MB Desktop models or 384MB Mini-tower models)
- 64-bit memory bus
- 4 or 6GB IDE or SCSI hard drive
- 24X CD-ROM drive
- 1.44MB Floppy Disk Drive
- Integrated floating point unit and 64K on-chip Level 1 Cache (32K data/32K instruction)
- 32, 64 or 128MB SDRAM (3 DIMM Slots support up to 192MB Desktop models or 384MB Mini-tower models)

Storage
- 4 or 6GB IDE or SCSI hard drive
- 24X CD-ROM drive
- 1.44MB Floppy Disk Drive
- Integrated floating point unit and 64K on-chip Level 1 Cache (32K data/32K instruction)

Expansion options
- Three PCI expansion slots
- One 5.25" SCSI expansion bay

Networking Ports
- Two high-speed DMA serial ports
- Internal/External SCSI bus

Software
- Mac OS 8.0

Order Any Time. 1-800-217-9492
Open 24 Hours. Order Today by 10 pm EST—Get it Tomorrow by 10:30 am.
Innovative System Architecture!
New, more efficient logic board design
Increased system bus speed to maximize processor performance
New, more flexible configuration options!

Choose The G3 That’s Right For You!

<table>
<thead>
<tr>
<th>Order #</th>
<th>Model</th>
<th>Speed</th>
<th>RAM</th>
<th>HD</th>
<th>CD-ROM</th>
<th>Modem</th>
<th>Zip*</th>
<th>Ethernet</th>
<th>Only</th>
<th>Or Lease</th>
</tr>
</thead>
<tbody>
<tr>
<td>#32510</td>
<td>Desktop</td>
<td>233MHz</td>
<td>32MB</td>
<td>4GB IDE</td>
<td>24X</td>
<td>—</td>
<td>10Base-T</td>
<td>$1,699</td>
<td>$68/mo</td>
<td></td>
</tr>
<tr>
<td>#32511</td>
<td>Desktop</td>
<td>266MHz</td>
<td>32MB</td>
<td>4GB IDE</td>
<td>24X</td>
<td>—</td>
<td>10Base-T</td>
<td>$1,999</td>
<td>$80/mo</td>
<td></td>
</tr>
<tr>
<td>#32513</td>
<td>Mini-Tower</td>
<td>266MHz</td>
<td>32MB</td>
<td>6GB IDE</td>
<td>24X</td>
<td>—</td>
<td>10Base-T</td>
<td>$2,499</td>
<td>$100/mo</td>
<td></td>
</tr>
<tr>
<td>#32515</td>
<td>Mini-Tower</td>
<td>300MHz</td>
<td>64MB</td>
<td>4GB SCSI</td>
<td>24X</td>
<td>—</td>
<td>10Base-T</td>
<td>$3,359</td>
<td>$135/mo</td>
<td></td>
</tr>
</tbody>
</table>

Power Mac G3 Mini-Tower w/56K Modem and Communication Bundle—$300 Price Drop!
Software included: Microsoft Internet Explorer, Adobe PageMill, Microsoft Bookshelf 98, Now Up-to-Date and Contact, Netscape Navigator, SurfWatch, FAXsoft BE, America Online, Master of Orion II, Jack Nicklaus 4

Power Mac G3 Mini-Tower w/4GB Ultra Wide SCSI HD and Ethernet Card—$500 Price Drop!
Includes: 7200RPM Ultra Wide SCSI hard drive, 10/100Base-T Ethernet Card, 128-bit 20/30 graphics card w/512MB EDO VRAM

#32512 Mini-Tower 233MHz 32MB 4GB IDE 24X 56K 10Base-T was $1,999 Now $1,849 $74/mo

Power Mac G3 Mini-Tower w/32MB RAM or Virtual PC

Hurry! Last chance!
32MB RAM or Virtual PC

From Apple when you purchase any Power Mac G3 from MacMall!

Manufacturer mail-in offer is valid on desktop or mini-tower G3 models only. Offer is good from 5/1/98 through 8/16/98. Add coupon #31906 to your order. Sorry, offer not valid with the iMac.

Call your Account Manager for more information.

See our Website for more deals!
www.macmall.com

Mention your Priority Source Code: #ZMWD891

Mac Mall
The Mall With It All...For Less!
## Scanners

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Features</th>
<th>Price</th>
</tr>
</thead>
</table>
| PaperPort vx Scanner | 1280 x 1024 | 6 MB | $499  

## Digital Cameras

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Features</th>
<th>Price</th>
</tr>
</thead>
</table>
| OLYMPUS | D-600L | 6 MB | $999  
| NIKON | D620 | 4 MB | $849  

## Media

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Features</th>
<th>Price</th>
</tr>
</thead>
</table>
| FUJIFILM | 10-Pk Zip Disks | 10 MB | $99  

## Storage

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Features</th>
<th>Price</th>
</tr>
</thead>
</table>
| SYQUEST | 1.5GB SCSI External Drive | 100 MB | $249  

## Additional Offers

- **Free Shipping:** On all orders over $50.
- **Factory Refurbished:** Items come with a 1-year warranty.
- **returned/Refurbished Items:** Include return kits and 1 year warranty.
- **ZIP Drives:** Faster than desktop Zip drives.

**Order Any Time.**

**Open 24 Hours.**

**Order Today by 10 pm EST—Get it Tomorrow by 10:30 am.**
Call Us!

**Monitors**

Princeton Ultra 17+ 17" Color Display
- 15.8" Viewable image; 1600 X 1200; 28mm dot pitch; 90 Day Warranty
- $199.99

Promotion: 24-Hour Sale
- Mac Mall Exclusive: FREE Marathon Infinity with Memory Order
- 15% off on all new PC purchases

**Memory**

As Low As $175 per MB

- For Power Mac G3 Series
  - #25730 16MB DIMM (10ns) $159
  - #25747 32MB DIMM (10ns) $159
  - #25750 64MB DIMM (10ns) $119
  - #25821 128MB DIMM (10ns) $179

- For Power Mac 7200-7600/8500-8600/9500-9600 Series
  - #72646 16MB DIMM (60ns) $139
  - #72647 32MB DIMM (60ns) $149
  - #72648 64MB DIMM (60ns) $85

- For Power Mac 4400 Series
  - #13936 16MB DIMM (60ns) $129
  - #13937 32MB DIMM (60ns) $140
  - #13938 64MB DIMM (60ns) $119

- For Power Mac 6500 Series
  - #13961 16MB DIMM (60ns) $135
  - #13963 32MB DIMM (60ns) $140
  - #13964 64MB DIMM (60ns) $89

- For Macintosh PowerBook G3 Series
  - #26310 16MB DIMM (60ns) $65
  - #26311 32MB DIMM (60ns) $79
  - #26314 48MB DIMM (60ns) $115
  - #26315 64MB DIMM (60ns) $219
  - #26315 128MB DIMM (60ns) $285

- For Macintosh PowerBook G4 Series
  - #33147 16MB 600MHz DDR (10ns) $259
  - #33148 32MB 600MHz DDR (10ns) $299
  - #33440 64MB 600MHz DDR (10ns) $175
  - #33442 128MB 600MHz DDR (10ns) $359

- For Power Mac 7200-7600/8500-8600/9500-9600 Series
  - #97311 8MB DIMM (60ns) $35
  - #97312 16MB DIMM (60ns) $39
  - #97217 32MB DIMM (60ns) $85
  - #97314 64MB DIMM (60ns) $135

**Modems**

Smart One 33.6 Data Fax Modem
- $39.99

**Other Essentials**

- Palm III Connected Organizer
  - Includes Mac Connection Kit, cradle, software, stylus, flip cover, and batteries
  - $379.99

- Quickcam (Greyscale)
  - Capture still images in greyscale
  - $399.99

- ArtPad II 4" X 5"
  - Includes Pen Tools 2.0
  - $49.99

**FREE Disk Drive Tune-Up 1.0**

- Install drive or computer purchase from Mac Mall!

**We ship FedEx**

- We do our best to be accurate but occasionally mistakes occur. We are not responsible for any typographical, photographic, or technical errors. Products and packaging may differ from stock available at time of shipment; we reserve the right to substitute equivalent items.

See our Website for more deals! www.macmall.com

Mention your Priority Source Code: #ZMWD891
NEW!

**RAM Doubler 8**

with FREE Marathon Infinity.
Now optimized for Mac OS 8 and Microsoft Office 98. Run more applications simultaneously and manage memory more efficiently. Triples your built-in memory up to 256MB!

For Only **$49.99**

FREE Disk Drive Tune-Up 1.0

With any drive or computer purchase from MacMall!

Order Any Time! **1-800-217-9492**

Open 24 Hours.

Order Today by 10 pm EST—Get it Tomorrow by 10:30 am.
NEW!
Adobe Photoshop 5.0
The world standard in photo design, retouching and image enhancement just got better! New editable text! New undo history palette!

Upgrade for ONLY $179.99!

Order Now and Get 2 FREE Photoshop CDs with a total of 155 royalty-free images! Ask for #30685.

Extensis Mask Pro 1.0
Save $100 now and get the professional masking solution for Photoshop!
Only $179.99
#32830 w/promoprice
of Photoshop 5.0
Reg. price is $279.99

Adobe
Photoshop 5.0

Paint textures and more directly onto 3D models in real time! for Only $298.00
#28902

Adobe
Photoshop 5.0

Norton AntiVirus 5.0
(formerly SAM 4.5)
for Only $24.99
#29475
Price reflects $40 mfr. mail-in upgrade rebate for previous SAM & NUM users. Price before rebate is $54.99.
SYMANTEC

Norton Utilities 3.5.3
The #1 selling utility for the Mac. Upgrade for Only $48.99
#15159
SYMANTEC

RealPC for Only $29.99
#25577
With computer purchase. Price reflects $26 mfr. mail-in rebate. Price before rebate is $46.99. While supplies last.

Insight

Microsoft Office 98
for Only $258.99
#26155
Ask your Account Manager about special offers with purchase.

Microsoft

Norton Utilities 3.5.3
The #1 selling utility for the Mac. Upgrade for Only $48.99
#15159
SYMANTEC

Microsoft Office 98
for Only $39.99
#14425
Price includes $20 mfr. mail-in upgrade rebate for previous Quickenden users. Price before rebate is $59.99.

Microsoft

QuickTime Deluxe 98
for Only $49.99
#32175

QuickTime

NEW Kai's SuperGOO
Real-time liquid image furnware with SuperFusion.
Upgrade for Only $139.99
#27424

Kai's
SuperGOO

Mac OS 8.1
for Only $49.99
#27064

Mac OS 8.1

FreeHand 8 Upgrade for Only $139.99
#27424
FreeHand 8 Design & Motion Suite also available. Call for details!

FreeHand 8

FileMaker Pro 4.0 Upgrade for Only $128.99
#14843

FileMaker

See our Website for more deals!
www.macmall.com
Mention your Priority Source Code: #ZMWD891

Mac Mall
The Mall With It All...For Less!
Action-packed games for Mac!

- Ultra Pinball: The Lost Continent
  ENT1618 Cendant Software $49.95
- Barbie Magic Fairy Tales
  ENT6216 Mattel $29.95
- Bankheads Deluxe
  ENT1816 ASPY MEDIA $39.95
- Bricks
  EDU2641 Cendant Software $29.95
- Bridge B.O.
  ENT0935 Artwooc Software $39.95
- Carmageddon
  ENT1067 ASPY MEDIA $49.95
- Casino Master
  ENT1373 Cendant Software $29.95
- Catz
  ENT1636 The Learning Co. $19.95
- Civilization II
  ENT1034 GT Interactive $54.95
- Creatures
  ENT1515 The Learning Co. $39.95
- DESCENT 2
  ENT1306 MacPlay $29.97
- Dials
  ENT1508 Cendant Software $49.95
- Dogs & Catz Bundle
  EDU2848 The Learning Co. $39.95
- Dogs
  ENT1635 The Learning Co. $19.95
- Eric's Cascade V1.1
  ENT1611 Delta Tao Software $49.95
- Eric's Ultimate Solitaire CD
  ENT1335 Delta Tao Software $39.95
- F/A-18 Hornet 3.0
  ENT1448 Graphic Simulations $49.95
- F/A 19 Hornet: KOREA
  ENT1587 Graphic Simulations $49.95
- Fallout
  ENT1527 MacPlay $49.95
- Fisher Price Ready For School Toddler
  EDU2306 Cendant Software $29.95
- Full Throttle
  ENT0057 Lucas Arts $19.95
- Hoyle Classic Games
  ENT1085 Cendant Software $34.95
- Journeyman Project 3: Legacy Of The Union
  ENT1023 Interplay $29.95
- Kai's Power Goo
  ENT1299 Metacreation $29.95
- King Of Solitaire 2.0
  ENT0752 Artwooc Software $24.95
- Links 5 Course Lib 1
  ENT1634 Access $29.95
- LucasArts Archives Vol. II Star Wars
  ENT1434 Lucas Arts $49.95

For our full selection of games see our website at: http://buymacgames.warehouse.com

---

**TITANIC: ADVENTURE OUT OF TIME**

You've seen the movie, now play the game! A race to alter history on a ship out of time! Match wits with an intriguing cast of more than 25 interactive characters. Strategy and puzzle solving blend seamlessly with the plot line.

Only $49.95!
Item # ENT1627

---

**MECHWARRIOR 2**

Only $39.95!
Ask for Item # ENT1631.

Based on FASA's Battletech universe, MechWarrior 2 brings the brutal world of mobile combat to life.

---

**WARCRAFT BATTLE CHEST**

Only $54.95!
Ask for Item # ENT1063.

All 3 award-winning Warcraft titles in one amazing collection! Take part in the battles between the evil Orcs and the noble humans in these best selling strategy games.

---

**NASCAR RACING**

Only $39.95!
Ask for Item # ENT1412.

Experience the excitement of NASCAR racing! The most popular racing simulation is now available for the Mac.

---

For more information on the NEW Apple iMac visit us at: http://buyimac.warehouse.com
Loaded iMac G3!

Plus, get FREE† CDs!
packed with software when you buy an iMac today!

Loaded iMac 63!
The Learning Co. • Activision • Hasbro • Broderbund • GT Interactive • Bungie

Action-packed games for Mac!

Mac Cube
ENT1633 Aztech
$29.95
MAH JONG PARLOUR
ENT1431 ASPH MEDIA
$39.95
Microsoft Close Combat: Finest Hours
BK191 Microsoft
$19.95
Microsoft Close Combat: A Bridge Too Far
ENT1599 Microsoft
$49.95
Mongol
ENT1394 Hasbro
$39.95
Murder She Wrote
ENT1313 Centerline
$29.95
Myst
ENT0530 Broderbund
$29.95
Myst
ENT1572 Bungie
$49.95
Oblivion
ENT1481 SegaSoft
$29.97
Puzzle Power 2.0
ENT1478 Centerline Software
$19.97
Reaches
ENT1604 Legislative
$34.95
Roader Rabbit 1st Grade
EDU2309 Learning Co.
$29.95
Rocket's New School
ENT1624 Purple Moon
$39.95
Scrabbles
ENT1444 Hasbro Interactive
$49.95
Shanghali Dynasty
ENT1625 Activision
$49.95
Sim City Classic Collector's Series
EDT1628 Electronic Arts
$19.95
Star Wared
ENT1554 Mindscape
$24.95
Star Wars: Dark Forces
ENT0901 LucasArts
$29.95
StarCraft
ENT1565 Cendant Software
$49.95
Star Trek: Starfleet Academy
ENT1445 MacPlay
$29.97
Tie Fighters Collector's
ENT1447 Lucas Arts
$34.95
Tank Construction
EDU2027 Hasbro Interactive
$29.95
Tank Search & Rescue
EDU1937 Hasbro Interactive
$34.95
Train Engineer Deluxe Version 1.0
ENT1339 ArcoMedia
$59.95
Virtual Pool
ENT1341 MacPlay
$19.97
Virtual Springfield: Simpson's
ENT1828 Fox Interactive
$29.95
Where in the World Is Carmen Sandiego 3.0
ENT1322 Broderbund
$39.95
You Don't Know Jack Movies
ENT1472 Cendant Software
$39.95
You Don't Know Jack Vol. 2
ENT1332 Cendant Software
$19.97
You Don't Know Jack Vol. 3
ENT1571 Cendant Software
$34.95
You Don't Know Jack/Movie/Sports Bundle
ENT1629 Cendant Software
$19.95

Order toll-free 24 hours a day, 7 days a week!

MacWAREHOUSE 1-800-434-3036

Order Online @ www.md.warehouse.com

You can also FAX your order: 1-732-905-5254
Canada orders call: 1-800-730-4589

MACWORLD September 1998 133
Apple Power Mac G3

MAC CABLES & ADAPTERS

Power User

We have EVERYTHING you need!

Olympus D-320L Camera

Only $499.95!

Power Mac G3/323MHz Minitower

Variety of configurations

Power Mac G3/266MHz Minitower

Power Mac G3/300MHz Minitower

Power Mac G3/333MHz Minitower

Olympus Iomega 100MB Zip Drive

Iomega 100MB Zip Disks

Microtek ScanMaker V310

Olympus D-320L Camera

Only $499.95!

New Low Price!

Power Mac G3/323MHz Minitower

Price Slashed! Was $1899

Power Mac G3/266MHz Minitower

Only $2699!

Power Mac G3/300MHz Minitower

Only $4599!

Power Mac G3/300MHz Minitower

Only $3359!

Our sales staff is ready to take your order 24 hours a day, 7 days a week. We accept the following major credit cards: Visa, MasterCard, American Express. Your credit card will not be charged until each item is shipped. We ship via USPS, UPS, DHL, and trucking companies. Sales tax only applicable to IL and WI residents and applicable sales tax.

Overnight delivery just $4.95 per order up to 3 pounds. For all orders over 3 pounds, shipping is $4.95 plus $1.50 per pound over 3. Please add an additional handling charge of $3.99 for all orders $50.00 and under.

We have your order. Please place your order for in-stock items up to 12:00 midnight EST (next business day) and we will ship same day for overnight delivery (Barring system failure, etc.). We anticipate being able to ship "out-of-stock" items within 30 days.

All items we sell come with the MacWAREHOUSE 30-Day Guarantee Against Defects. Call our Customer Service Department at 1-800-922-8272 for a Return Merchandise Authorization (RMA) number within 30 days of the original invoice date. Refuse and return to your account, except for products from Apple (1-800-325-APPL) or Hitachi (1-800-555-6319). These manufacturers must be contacted directly, and we will repair or replace products at their sole discretion. All returns are subject to the following: 1. All products must be returned in original packaging. 2. Shipping and handling charges are not refundable. 3. Software and consumables are not refundable. 4. Products designated as "all sales final" are not refundable. If you return Apple or Hitachi hardware to MacWAREHOUSE, you will be assessed a 15% restocking fee which will be charged to your account.

Copyright 1998 Mac Warehouse, Inc. MacWAREHOUSE is a division of Micro Warehouse, Inc. Item availability and price subject to change without notice. We regret that we cannot be responsible for typographical errors. All prices shown in U.S. dollars.

We accept these major credit cards!
New G3 PowerBooks!

As low as $2299!

Only $2299!
233MHz PowerPC G3 processor, 32MB RAM, 2.0GB HDD, 20X CD, 12.1" dual-scan color display, 10Base-T Ethernet.

Only $2579!
233MHz PowerPC G3 processor, 32MB RAM, 2.0GB HDD, 20X CD, Floppy drive, 12.1" dual-scan color display, 10Base-T Ethernet, 56K modem.

Only $3299!
250MHz PowerPC G3 processor, 32MB SDRAM, 4MB SGRAM, 1MB Level 2 cache, 4.0GB IDE hard drive, 20X CD-ROM, 56K modem, 14.1" active-matrix display.

Only $3899!
250MHz PowerPC G3 processor, 32MB SDRAM, 4MB SGRAM, 1MB Level 2 cache, 4.0GB IDE hard drive, 20X CD-ROM, 56K modem, 13.3" active-matrix display.

Only $4199!
PowerBook G3 32MB Memory Upgrade Kit, 32MB SDRAM, Call for full selection.

Order toll-free 24 hours a day, 7 days a week!

MacWAREHOUSE
1-800-434-3036

Order Online @ www.md.warehouse.com

You can also FAX your order: 1-732-905-5254  Canada orders call: 1-800-730-4589

MACWORLD September 1998 135
**Global Village 56K V.90 Modem**

- **t 7" rotolor (15 .9" vie wable)**
- Resolution up to **1152 x 870 @ 75 H z**
- .25mm dot pitch
- **17 " Trln itn s creen (16" vie wable)**
- **1024 x 768 resolution @ 65 H z**
- .25mm aperture grille
- Only **$519.95**

**PowerBook 32MB Memory Upgrades**

- **Only **$199.95!** each**
- Installation available
- 32MB for PowerBook 1400. Ask for item # CP0945.
- 32MB for PowerBook 300. Ask for item # CP0946.

**PalmPilot Professional**

- **Only **$269!** RH1981**
- Includes MacPac translation software
- Flash Upgradable Memory
- Easy-to-read Screen
- FREE "Todo" scheduling software

**Flash Storage Cards**

- **Only **$59.95!** MY7648**
- 1.8MB compact flash
- Digital film for brand name digital cameras including:
  - Nikon
  - Kodak
  - Konica

**Global Village 56K V.90 Modem**

- **Only **$159.99!** BMD3487**
- Compliant with both V.90 and K56Flex technology
- Flash ROM upgradeable

---

**Apple PowerBooks**

**Apple PowerBooks**

**As low as $1499!**

**APLLE POWERBOOK 1400c**

- **166Mhz PowerPC 603e**
- **16MB RAM**
- **2.0GB hard drive**
- **8X CD**
- **11.3" Active-Matrix display**

**APLLE POWERBOOK 2400c**

- **180Mhz PowerPC 603e**
- **16MB RAM**
- **1.3GB hard drive**
- **10.4" Active-Matrix Display**

**APPLLE POWERBOOK 3400c**

- **240Mhz PowerPC 603e**
- **16MB RAM**
- **3.0GB hard drive**
- **12X CD**
- **33.6 modem**
- **12.1" Active-Matrix display**
- **10Base-T ethernet**

**APPLLE POWERBOOK 4400c**

- **333Mhz PowerPC 603e**
- **128MB RAM**
- **1.3GB hard drive**
- **10.4" Active-Matrix Display**

**APPLLE POWERBOOK 5400c**

- **400Mhz PowerPC 604e**
- **128MB RAM**
- **1.3GB hard drive**
- **10.4" Active-Matrix Display**

---

**PalmPilot Professional**

- **Only **$269!** RH1981**
- Includes MacPac translation software
- Flash Upgradable Memory
- Easy-to-read Screen
- FREE "Todo" scheduling software

**Flash Storage Cards**

- **Only **$59.95!** MY7648**
- 1.8MB compact flash
- Digital film for brand name digital cameras including:
  - Nikon
  - Kodak
  - Konica

---

**Global Village 56K V.90 Modem**

- **Only **$159.99!** BMD3487**
- Compliant with both V.90 and K56Flex technology
- Flash ROM upgradeable

---

**Jaz 2.0GB Cartridges**

- **As low as **$99.95!** each**

**APC 200VA UPS**

- **Only **$89.95!** AFC0001**
- Manufacturer's warranty
- Full-time surge protection and instantaneous battery back-up to protect your equipment against brownouts, overloads, and line spikes.

**Power Mac G3 32MB Memory Upgrade**

- **Only **$199.95!** AFC0001**
- 32MB RAM
- Call for full selection.
Desertops as low as $799!

Umax SuperMac S900/200MHz
- 200MHz PowerPC 604e Processor
- 2.0GB Hard Drive
- 32MB RAM
- S12K Level-2 Cache
- 8X CD-ROM
- 6 PCI Slots
- 4MB VRAM
- 10Base-T Ethernet
- Adobe Photoshop
- Color laser printer
- Adobe Pagemaker
- Adobe Photoshop
- Adobe Acrobat
- Microsoft Works
- 600dpi flatbed scanner

As low as $799!
Item # CPU0378

Nikon Coolpix 900 Digital Camera
- 1.3 MegaPixel
- 2.0" color LCD display
- Exclusive DX zoom Nikon lens

Only $899.95
Item # IN7005

Microsoft Office 98
- Includes: Word 98, PowerPoint 98, Outlook Express, and Excel 98
- Upgrade only
- $259.95
Item # UPG60778

Epson Stylus Printers
- As low as $99.95
- Only $49.95

SONY Digital Cameras
- Only $99.95
- BND2479

MicroSoft Office 98
- Includes: Word 98, PowerPoint 98, Outlook Express, Excel 98
- Upgrade only
- $259.95
Item # UPG60778

WWW.WAREHOUSE.COM

Get a FREE gift when you order online.
Every time you order from our full line of Mac products on the Web, you can get one of these FREE*: Marathon Infinity, American Heritage Dictionary, MacSoft Pack CD, and more!

*Prices, supplies, and handling applies. Limit one per customer per order. Shipped in promotional packaging.

Order toll-free 24 hours a day, 7 days a week:
MacWAREHOUSE
1-800-434-3036

Order Online @ www.md.warehouse.com
You can also FAX your order: 1-732-905-5254
Canada orders call: 1-800-730-4589

© 1998 MacWorld
Order Adobe Photoshop 5.0 and get these great programs for only $199.95 each!

Adobe Photoshop 5.0

FREE Adobe PhotoTools and Vertigo 3D HotText when you buy Photoshop 5.0! Ask for Item # MAC9621

$199.95 shipping and handling applies. Shipper is professional packager with CD-ROM. Other good-will supplier lost. Values are based on individual product sell separately as of this magazine printing.

HURRY! Offer good while supplies last!

PHOTOSHOP 5.0 UPGRADE ONLY $199

Ask for Item #UPG0010.

Photoshop 5.0 full version, only $629.95. Item #GRA2551

MacwareHOUSE Exclusive!

Extended On-Site Service

Six great reasons to get complete system coverage:

1. Toll-Free Technical Help available 24 hours a day!
2. Fast On-Site Support with next business day regional response time for most items!
3. Free software if unit cannot be repaired!
4. No Deductible — 100% coverage on parts and labor!
5. 24- & 48-Month Coverage available from date of purchase!
6. Fully Insured — underwritten by A.M. Best!

Service you can depend on. Support and repairs are provided by DFS, Inc., which has been providing superior, price-competitive programs for over 20 years!

Consult the chart below to view warranty benefits best to your needs:

Cost of Computer

Cost of Additional Items

Warranty Price

$1,000 - $2,500

$250 - $4,999

$500 - $10,000

$100 - $199

$50 - $99

$25 - $49

Ask for Item # "Warranty Protection Plan - Extended On Site Service"

Call your sales representative today!

Note: This promotion is not a service agreement, but an add-on of coverage available through DFS, Inc. Please call MacwareHOUSE for further information and visit the complete Service Agreement from DFS, Inc. for exact coverage items and conditions.

FREE F/A-18 HORNET 3.0

Super Supplies Last!

with purchase of 16X, 32X, or 64X CD-ROM Drive.

Ask for Item # DI0557.

$699.95!

Item # DTP0557

Still Available — Version 3.32

$507.95

QUARKXPRESS 4.0

Only $999.95!

Requires purchase of QuarkXPress 5.0 (full version or upgrade). QuarkXPress 5.0 must appear on same invoice.

$1274

with purchase of Photoshop 5.0!

Ask for Item # AAP0510.

As low as $499.95!

Item # AAP0520

VP2000 1: Aeg...$219.

• Requires purchase of Photoshop 5.0 (full version or upgrade). Photoshop 5.0 must appear on same invoice.

VP2000 2: Aeg...$219.

• Requires purchase of Photoshop 5.0 (full version or upgrade). Photoshop 5.0 must appear on same invoice.

QUARKXPRESS 4.0

Only $999.95!

Ask for Item # DTP0557

Still Available — Version 3.32

$507.95

V.90 56K USRobotics FaxModem

Only $147.99!

Ask for Item # URO1500.

Includes software, modem, and 4-foot cable. $15 shipping and handling applies. Shipped in professional packaging, limited time offer!

EPSON

STYLUS COLOR 800 PRINTER

EPSON

PRICE SLASHED! WAS $349

Now only $299!

Only $349.95!

Ask for Item # DTP0510.

$1274

$499.95!

Item # DTP0557

Still Available — Version 3.32

$507.95

PHOTOSHOP 5.0 UPGRADE

Only $199

Ask for Item # UP0863.

Photoshop 5.0 full version, only $629.95. Item # GRA2551

MacwareHOUSE Exclusive!

Extended On-Site Service

Six great reasons to get complete system coverage:

1. Toll-Free Technical Help available 24 hours a day!
2. Fast On-Site Support with next business day regional response time for most items!
3. Free software if unit cannot be repaired!
4. No Deductible — 100% coverage on parts and labor!
5. 24- & 48-Month Coverage available from date of purchase!
6. Fully Insured — underwritten by A.M. Best!

Service you can depend on. Support and repairs are provided by DFS, Inc., which has been providing superior, price-competitive programs for over 20 years!

Consult the chart below to view warranty benefits best to your needs:

Cost of Computer

Cost of Additional Items

Warranty Price

$1,000 - $2,500

$250 - $4,999

$500 - $10,000

$100 - $199

$50 - $99

$25 - $49

Ask for Item # "Warranty Protection Plan - Extended On Site Service"

Call your sales representative today!

Note: This promotion is not a service agreement, but an add-on of coverage available through DFS, Inc. Please call MacwareHOUSE for further information and visit the complete Service Agreement from DFS, Inc. for exact coverage items and conditions.

FREE F/A-18 HORNET 3.0

Super Supplies Last!

with purchase of 16X, 32X, or 64X CD-ROM Drive.

Ask for Item # DI0557.

$699.95!

Item # DTP0557

Still Available — Version 3.32

$507.95

QUARKXPRESS 4.0

Only $999.95!

Ask for Item # DTP0557

Still Available — Version 3.32

$507.95

V.90 56K USRobotics FaxModem

Only $147.99!

Ask for Item # URO1500.

Includes software, modem, and 4-foot cable. $15 shipping and handling applies. Shipped in professional packaging, limited time offer!

EPSON

STYLUS COLOR 800 PRINTER

EPSON

PRICE SLASHED! WAS $349

Now only $299!

Only $349.95!

Ask for Item # DTP0510.

$1274

$499.95!

Item # DTP0557

Still Available — Version 3.32

$507.95

PHOTOSHOP 5.0 UPGRADE

Only $199

Ask for Item # UP0863.

Photoshop 5.0 full version, only $629.95. Item # GRA2551

MacwareHOUSE Exclusive!

Extended On-Site Service

Six great reasons to get complete system coverage:

1. Toll-Free Technical Help available 24 hours a day!
2. Fast On-Site Support with next business day regional response time for most items!
3. Free software if unit cannot be repaired!
4. No Deductible — 100% coverage on parts and labor!
5. 24- & 48-Month Coverage available from date of purchase!
6. Fully Insured — underwritten by A.M. Best!

Service you can depend on. Support and repairs are provided by DFS, Inc., which has been providing superior, price-competitive programs for over 20 years!

Consult the chart below to view warranty benefits best to your needs:

Cost of Computer

Cost of Additional Items

Warranty Price

$1,000 - $2,500

$250 - $4,999

$500 - $10,000

$100 - $199

$50 - $99

$25 - $49

Ask for Item # "Warranty Protection Plan - Extended On Site Service"

Call your sales representative today!

Note: This promotion is not a service agreement, but an add-on of coverage available through DFS, Inc. Please call MacwareHOUSE for further information and visit the complete Service Agreement from DFS, Inc. for exact coverage items and conditions.

FREE F/A-18 HORNET 3.0

Super Supplies Last!

with purchase of 16X, 32X, or 64X CD-ROM Drive.

Ask for Item # DI0557.

$699.95!

Item # DTP0557

Still Available — Version 3.32

$507.95

QUARKXPRESS 4.0

Only $999.95!

Ask for Item # DTP0557

Still Available — Version 3.32

$507.95

V.90 56K USRobotics FaxModem

Only $147.99!

Ask for Item # URO1500.

Includes software, modem, and 4-foot cable. $15 shipping and handling applies. Shipped in professional packaging, limited time offer!
**Symantec • Macromedia • Fuji • Polaroid • Microsoft • Asante • XLRB**

**HP LaserJet Printers**

**HP LaserJet 4000N**
- Only $1499!
- Prints up to 17ppm, 1200 dpi maximum resolution, 100MHz RISC Processor, 500-sheet paper tray.
- Ask for item # BN4825.

**HP LaserJet 6MP**
- Only $929.95!
- Prints up to 22ppm, 1200 dpi maximum resolution, 600MHz RISC processor.
- Ask for item # BN2169.

**NEW HP LaserJet 8000N**
- Only $2779.95!
- Prints up to 24ppm, 1200 dpi maximum resolution, 133MHz RISC processor.
- Ask for item # PR1172.

**Marathon Infinity**
- Free with every order! A090593
- **5-Port 10Base-T Hub**
  - Only $49.99!
  - DEER0864
- **74 Minute CD-Recordables**
  - Only $50 rebate!
  - 49.99e
  - 75c* on 25-pack after rebate
  - ME7785

**Iomega Jaz 1GB Drive**
- Includes a 1.0GB Storage Cartridge with Jaz utility software!
- **Internal only** $279.95!
- Item # DR4840
  - External drive (shown), only $299.95!
  - Ask for item # DR119.

**Jaz 1.0GB Cartridges**
- Buy 5 Jaz 1.0GB Cartridges and get 10 CD-Rs FREE!
- Ask for item # BN0137; only $419.95!

**Norton Antivirus 5.0 Upgrade**
- Only $29.95!
- Item # UT11332

**Order toll-free 24 hours a day, 7 days a week!**

**1-800-434-3036**

You can also FAX your order: 1-732-905-5254. Canada orders call: 1-800-730-4569.

BEST BUY AWARD WINNER!

We are the #1 source for Quantum Capacity for the Extraordinary

CD RECORDABLE
Includes 5 Free Recordable Disks!
- 2x6 Sony mechanism, caddy load, 1MB buffer
- 2x6 Yamaha mechanism, tray load, 2MB buffer
- 4x8 Matsushita (Panasonic) mechanism, tray load, 1MB buffer
- 4x2 Teac mechanism, tray load, 1MB buffer
- 4x2 Plextor mechanism, caddy tray load, 2MB buffer
NEW 8x20 tray load, 2MB buffer

CD REWRITABLE
Includes 3 Free ReWritable Disks!
- 2x6 Philips mechanism, tray load, 1MB buffer
- 2x6 Ricoh mechanism, tray load, 1MB buffer
- 2x6 Ricoh mechanism, tray load, 2MB buffer
- 2x6x6 Yamaha mechanism, tray load, 2MB buffer

Compare our price and you will see we are the #1 source for CD Recorders!

$329
$349
$399
$419
$499
$929
$729
$759
$929
$759
$729
$759
$929

$329
$349
$399
$419
$499
$929
$729
$759
$929
$759
$729
$759
$929

New DLT IDE
6x5 disc changer Nakamichi ML5600XM $189 $249
24x NEC CDROM45KX $87 $147
32x - Slot load Pioneer $139 $199
32x - 512A buffer Ploteor FXT425XM $148 $208

HITACHI 2.5" IDE Drives
4.6GB IDE2189 $999 $5GB IC3252 $495
100GB IDE2052 $799 $5GB IC3254 $495
200GB IDE2052 $799 $5GB IC3254 $495
500GB IDE2051 $799 $5GB IC3254 $495

SLOT LOAD DRIVERS
HP 4mm 2GB 11MB/min CD2500XM $699
Seagate 4mm 2GB 16MB/min ST2400XM $699
HP 4mm 2GB 16MB/min CD2500XM $699
Seagate 4mm 2GB 16MB/min ST2400XM $699

32X 100-500 Pack $175/$169 $1299/$1289 $259/$249
Quantum 2GB (DUO2GBM) $270 Quantum 4GB (DUO4GBM) $340
Seagate 7GB (DUO7GBM) $350

32X TOSHIBA XU264BM $105 $155
50 Pack $79/$79 $159/$159
100 Pack $175/$169 $295/$295

T11E D1901
MEGRAUS
7200rpm 1024K XP3091005 5yr $669 $729
30GB $1199
70GB $1399
40GB $1399

Table Top
$329
$349
$399
$419
$499
$929
$729
$759
$929
$759
$729
$759
$929

Internal Ext
455MB 7200rpm $1299 $1459
9100MB 7200rpm $1899 $2059
ULTRA WIDE SCSI
455MB 7200rpm $1299 $1459
9100MB 7200rpm $1899 $2059

ULTRA WIDE IDE
455MB 7200rpm $1299 $1459
9100MB 7200rpm $1899 $2059

Philips CD Rewritable Drive
External w/ Toast & 1 disk CD3000XM $379 Performance RAID
2 Ultra Wide drives in external case Adapter controller with RAID software
18GB (2-8GB drives) MAC2RAID $1879
36GB (2-18GB drives) MAC2RAID $2099

For all your storage needs www.megahaush.com
Macintosh G3 Powerbook

**Starting At**

- 233MHz G3
- 632MB RAM
- 20X CD ROM
- 2GB IDE HD
- Up To 14" Active Matrix Screen

**Now Shipping**

- 233MHz w/12.1" DS 32MB RAM, 256 HD, 20X CD, 10BT, 12.1" Dual Scan
- 233MHz w/12.1" DS 32MB, 2GB IDE, 20X, 10BT, 12.1" DS, 56K, 1.44MB Floppy...
- 233MHz w/13.3" AM 32MB, 2GB IDE, 20X, 10BT, 13.3" Active, 1.44MB Floppy...
- 233MHz w/14.1" AM 32MB, 256 IDE, 20X, 10BT, 14.1" Active, 1.44MB Floppy...

**PowerMac G3 233MHz**

**Minitower**

- 233MHz G3
- 64MB RAM
- 24X CD ROM
- 4GB IDE HD
- 2MB SGRAM

**NOW ONLY $1699**

**PowerMac G3 233MHz Desktop**

- 233MHz PowerPC G3 Processor
- 133MHz dedicated 64-bit backside bus
- 512K L2 backside cache on processor
- 86MHz system bus
- 32MB RAM + 24X CD

**NEW LOW PRICE**

**PowerMac G3 300MHz**

- 233MHz G3
- 64MB RAM
- 24X CD ROM
- 4GB IDE HD
- 2MB SGRAM

**NOW ONLY $1595**

**Power Mac DESKTOP**

- 233MHz PowerPC G3 Processor
- 133MHz dedicated 64-bit backside bus
- 512K L2 backside cache on processor
- 86MHz system bus
- 32MB RAM + 24X CD

**NEW LOW PRICE**

**Power Mac MINITOWER**

- 233MHz PowerPC G3 Processor
- 133MHz dedicated 64-bit backside bus
- 512K L2 backside cache on processor
- 86MHz system bus
- 32MB RAM + 24X CD

**Now Shipping**

**A $299 VALUE!**

**FREE**

- HomePage 3.0 & Object Dancer with Any Apple CPU Purchase

Ask for Item #PPP 1016

Call for details.
Order with Confidence!

- Guaranteed Low Prices!
- Computer prices change all the time. If you find any item advertised for less in a current national catalog or publication, we’ll match their in-stock price. Call for details.
- A trusted Mac source since 1986!
- One of the largest Computer Direct Marketers, today we have over 2 million customers throughout the U.S.
- If you don’t see it, call!
- We offer a wide selection of 45,000 quality products...everything you need from a single source!
- Expect a great experience every time you shop!
- We have hundreds of Sales Advisors. Each one is trained to give you the courteous service you deserve and help you make the best choice every time.
- Order 24 hours a day, 7 days a week.

$150 Price Drop! Apple® Power Macintosh® G3/233MHz Minitower

- 233MHz G3 processor
- 32MB RAM, exp. to 192MB
- 4.0GB hard drive

Upgrade Today! Photoshop 5.0

With FREE Intellihance!

- Adobe Photoshop 5.0
- MacPac

Palm III with MacPac

- New infrared feature
- New easy-to-read screen
- Additional 2MB RAM
- Store 6000 addresses, 1500 to-do’s and 1500 memos

Order now at www.maczone.com
One-Time Only Special Purchase!

Macintosh® PowerBook® 2400c/180
- 180MHz PowerPC-603e Processor
- 16MB RAM
- 1.3GB hard drive • 10" TFT color LCD screen
- 16-bit stereo with microphone & speaker

Only $1499.99!

Macintosh® PowerBook® G3
233MHz with 12.1" Display
32MB RAM, 2GB hard drive
$2299.99
233MHz with 12.1" Display
floppy module, K56flex modem
$2579.99
233MHz with 13.3" TFT Display
32MB RAM, 4MB SGRAM video
$2999.99
233MHz with 14.1" TFT Display
32MB RAM, 4MB video RAM
$3499.99
250MHz with 13.3" TFT Display
83MHz system bus, 32MB RAM, 4MB VRAM,
4GB IDE hard drive, 1MB backside level 2 cache, K56flex modem
$3899.99
292MHz with 14.1" TFT Display
83MHz system bus, 64MB RAM, 4MB VRAM,
1MB backside level 2 cache, 8GB IDE hard drive, K56flex modem
$5599.99

G3 Desktops (monitors sold separately)
233MHz 66MHz system bus, 32MB RAM, 4GB IDE hard drive,
24x CD-ROM drive
$1699.99
266MHz 66MHz system bus, 32MB RAM, 4GB hard drive,
24x CD-ROM, internal Zip drive
$1999.99

G3 Minitowers (monitors sold separately)
233MHz 66MHz system bus, 32MB RAM, 4GB IDE hard drive,
24x CD-ROM drive
$1999.99
266MHz 66MHz system bus, 32MB RAM, 6GB hard drive,
24x CD-ROM, internal Zip drive
$2499.99
300MHz 66MHz system bus, 64MB hard drive,
4GB IDE video RAM
$3359.99

Preorder the NEW
Apple iMac All-In-One
Computer Now! $1299.99!

Order from
www.jandr.com
AOL Keyword: J&R

Order Code: MW809
(prices good until 9/30/98)

All Major Credit Cards Accepted
Overnight Delivery Available!
### Quantum Stratus drives carry a 3-Year Warranty

| Model Access | Bar | Ext
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantum Ultra Star 9ES</td>
<td>7200 RPM</td>
<td>24 Hour Warranty</td>
</tr>
</tbody>
</table>

---

### UltraStar 9ZX

| Model Access | Bar | Ext
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM 9.1GB</td>
<td>7200 RPM</td>
<td>Bare</td>
</tr>
<tr>
<td>Seagate 9.1GB</td>
<td>7200 RPM</td>
<td>Bare</td>
</tr>
</tbody>
</table>

### Ultrawide SCSI-3

| Model Access | Bar | Ext
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UltraStar 9LS</td>
<td>9.1GB</td>
<td>Bare</td>
</tr>
</tbody>
</table>

---

### ClubMac DDS-3 DAT Drive

**$1079**

- **ClubMac Tape Back-Up**
  - 4-8GB DDS-3 DAT Drive with Retrospect...
  - 12-24GB DDS-3 DAT Drive with Retrospect...
  - 35-36GB DLT Drive with Retrospect...
  - 40-42GB DLT Drive with Retrospect...
  - 35-70GB DLT Drive with Retrospect...

**$2999**

- **ClubMac AIT Drive**
  - 25-50GB AIT Drive with Retrospect...

**$899**

- **ClubMac Zip Drive Solutions**
  - Includes One Free Cartridge
  - Includes One Free Cartridge
  - Includes One Free Cartridge
  - Includes One Free Cartridge

**$1799**

- **Iomega Zip Drives**
  - Includes One Free Cartridge
  - Includes One Free Cartridge

**$1999**

- **Jazz Drive Solutions**
  - 1.2GB Low Price
  - Includes One Free Cartridge

---

### ClubMac CD-ROM 4X/8X

**$429**

- **Blazing Fast!**
  - 32X CD-ROM

**$149**

- **ClubMac CD-Recorders**
  - Ultra Wide SCSI-3

---

### ClubMac 18XP with Retrospect 4.0

**$149**

- **Seagate Barracuda 8LP**
  - 7200 RPM
  - 12MB Cache

**$349**

- **Syquest 2GB**
  - 12MB Cache

---

### ClubMac 4X-12X CD-RW

**$45**

- **Iomega ZIP Drive**
  - 2X/2X/6X CD-RW

**$45**

- **Iomega ZIP Drive**
  - 2X/2X/6X CD-RW

---

### ClubMac 20GB Internal 5.25" Power Mac

**$129**

- **Jaz Drive Solutions**
  - 1.2GB Low Price

---

### ClubMac Media

<table>
<thead>
<tr>
<th>Format</th>
<th>Part</th>
<th>Qty 1-2</th>
<th>Qty 3-5</th>
<th>Qty 6+</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZIP 8MM</td>
<td>1000</td>
<td>$19.95</td>
<td>$16.95</td>
<td>$14.95</td>
</tr>
<tr>
<td>JAZ 1GB</td>
<td>1001</td>
<td>$16.95</td>
<td>$14.95</td>
<td>$12.49</td>
</tr>
<tr>
<td>JAZ 2GB</td>
<td>1002</td>
<td>$16.95</td>
<td>$14.95</td>
<td>$12.49</td>
</tr>
</tbody>
</table>

---

### ClubMac Package

- **$84.95** for Jaz Media

---

### Hard Drives

**Only $199**

- **Quantum UltraStar 9ES**
  - 9.1GB
  - 1-Year Warranty

---

### ClubMac Package

- **$12.95** for Iomega Media

---

### Call for a Free Catalog

**1-800-260-8549**
now on the go!

Apple PowerBook G3/250

- 250MHz G3 processor
- 40GB IDE hard drive
- 32MB SDRAM
- 13.1" TFT XGA active-matrix display
- 20X CD-ROM drive
- Built-in 56k modem
- S-video output connector lets you connect an external monitor, video projector or TV for presentations

Apple PowerBook G3 Series

- Processor: RAM, HD, Display
- G3/233: 32, 2.0GHz, 12.1" TFT
- G3/233: 32, 2.0GHz, 12.1" TFT
- G3/250: 32, 4.0GHz, 12.3" TFT
- G3/292: 64, 8.0GHz, 14.1" TFT

#54478 64MB RAM Upgrade for Apple PowerBook G3...

LOWEST PRICE EVER!

on the ViewSonic E771 17" Color Display

Monitors

<table>
<thead>
<tr>
<th>Name</th>
<th>Dot Pitch</th>
<th>Viewable</th>
<th>Item #</th>
<th>ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>ViewSonic E771 17&quot;</td>
<td>27&quot;</td>
<td>16&quot;</td>
<td>$347.98</td>
<td></td>
</tr>
<tr>
<td>Sony Multiscan 1005ES 17&quot;</td>
<td>25&quot;</td>
<td>14&quot;</td>
<td>$379.98</td>
<td></td>
</tr>
<tr>
<td>ViewSonic D7050 17&quot;</td>
<td>25&quot;</td>
<td>18&quot;</td>
<td>$539.98</td>
<td></td>
</tr>
<tr>
<td>Hitachi LaserOps Mx7145 18&quot;</td>
<td>22&quot;</td>
<td>18&quot;</td>
<td>$709.98</td>
<td></td>
</tr>
</tbody>
</table>

Memory Upgrades

for PowerBook G3

<table>
<thead>
<tr>
<th>Upgrade</th>
<th>Item #</th>
<th>ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>32MB DIMMs</td>
<td>AS LOW AS $54.98</td>
<td></td>
</tr>
</tbody>
</table>

Outperforms Windows version!

Microsoft Office 98

Macintosh

- AS LOW AS $259.98
- $259.98
- $499.98
- $699.98

CALL FOR YOUR FREE CATALOG!

Stay on top of the latest computer products!
# APS High-Performance Ultra SCSI Drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Internal</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS I18000</td>
<td>IBM Ultrastar 8E, 719GB, 7200 rpm</td>
<td>1,295</td>
<td>1,295</td>
<td>1,395</td>
</tr>
<tr>
<td>APS I18000</td>
<td>IBM Ultrastar 18K, 1750GB, 7200 rpm</td>
<td>1,279</td>
<td>1,279</td>
<td>1,339</td>
</tr>
<tr>
<td>APS Q2000</td>
<td>Quantum Fireball ST, 20GB, 5400 rpm</td>
<td>209</td>
<td>209</td>
<td>249</td>
</tr>
<tr>
<td>APS Q4000</td>
<td>Quantum Fireball ST, 40GB, 5400 rpm</td>
<td>229</td>
<td>229</td>
<td>259</td>
</tr>
<tr>
<td>APS Q6000</td>
<td>Quantum Fireball ST, 60GB, 5400 rpm</td>
<td>249</td>
<td>249</td>
<td>259</td>
</tr>
<tr>
<td>APS Q8000</td>
<td>Quantum Fireball ST, 80GB, 5400 rpm</td>
<td>279</td>
<td>279</td>
<td>299</td>
</tr>
<tr>
<td>APS Q10000</td>
<td>Quantum Fireball ST, 100GB, 5400 rpm</td>
<td>309</td>
<td>309</td>
<td>329</td>
</tr>
<tr>
<td>APS ST3000</td>
<td>Seagate Barracuda, 44MB, 2500 rpm</td>
<td>499</td>
<td>499</td>
<td>549</td>
</tr>
<tr>
<td>APS ST9000</td>
<td>Seagate Barracuda, 86MB, 2500 rpm</td>
<td>599</td>
<td>599</td>
<td>659</td>
</tr>
<tr>
<td>APS ST18000</td>
<td>Seagate Barracuda, 165GB, 2500 rpm</td>
<td>1,299</td>
<td>1,299</td>
<td>1,349</td>
</tr>
<tr>
<td>APS ST4500</td>
<td>Seagate Cheetah, 42MB, 3000 rpm</td>
<td>659</td>
<td>659</td>
<td>699</td>
</tr>
<tr>
<td>APS ST9000</td>
<td>Seagate Cheetah, 85MB, 3000 rpm</td>
<td>759</td>
<td>759</td>
<td>809</td>
</tr>
</tbody>
</table>

### High-Performance Ultra Wide SCSI Drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Internal</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS I18000</td>
<td>IBM Ultrastar 8E, 719GB, 7200 rpm</td>
<td>1,295</td>
<td>1,295</td>
<td>1,395</td>
</tr>
<tr>
<td>APS I18000</td>
<td>IBM Ultrastar 18K, 1750GB, 7200 rpm</td>
<td>1,279</td>
<td>1,279</td>
<td>1,339</td>
</tr>
<tr>
<td>APS Q2000</td>
<td>Quantum Fireball ST, 20GB, 5400 rpm</td>
<td>209</td>
<td>209</td>
<td>249</td>
</tr>
<tr>
<td>APS Q4000</td>
<td>Quantum Fireball ST, 40GB, 5400 rpm</td>
<td>229</td>
<td>229</td>
<td>259</td>
</tr>
<tr>
<td>APS Q6000</td>
<td>Quantum Fireball ST, 60GB, 5400 rpm</td>
<td>249</td>
<td>249</td>
<td>259</td>
</tr>
<tr>
<td>APS Q8000</td>
<td>Quantum Fireball ST, 80GB, 5400 rpm</td>
<td>279</td>
<td>279</td>
<td>299</td>
</tr>
<tr>
<td>APS Q10000</td>
<td>Quantum Fireball ST, 100GB, 5400 rpm</td>
<td>309</td>
<td>309</td>
<td>329</td>
</tr>
<tr>
<td>APS ST3000</td>
<td>Seagate Barracuda, 44MB, 2500 rpm</td>
<td>499</td>
<td>499</td>
<td>549</td>
</tr>
<tr>
<td>APS ST9000</td>
<td>Seagate Barracuda, 86MB, 2500 rpm</td>
<td>599</td>
<td>599</td>
<td>659</td>
</tr>
<tr>
<td>APS ST18000</td>
<td>Seagate Barracuda, 165GB, 2500 rpm</td>
<td>1,299</td>
<td>1,299</td>
<td>1,349</td>
</tr>
<tr>
<td>APS ST4500</td>
<td>Seagate Cheetah, 42MB, 3000 rpm</td>
<td>659</td>
<td>659</td>
<td>699</td>
</tr>
<tr>
<td>APS ST9000</td>
<td>Seagate Cheetah, 85MB, 3000 rpm</td>
<td>759</td>
<td>759</td>
<td>809</td>
</tr>
</tbody>
</table>

### APS PowerVault Storage

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Internal</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS T3000</td>
<td>Toshiba 320MB/5400/4, 3600 rpm IDE</td>
<td>115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS T310</td>
<td>Toshiba 320MB/5400/4, 4000 rpm SCDI</td>
<td>115</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### APS Removable Drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Internal</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS SD5200</td>
<td>Sony D5000, 10GB</td>
<td>539</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS JD2FX</td>
<td>Sony D2500, 2GB</td>
<td>479</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS MD400</td>
<td>Fujitsu MU/GP/10MB</td>
<td>549</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS 2GBMO</td>
<td>Sony D2500, 2GB</td>
<td>549</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS 2GBMO</td>
<td>Sony D2500, 2GB</td>
<td>549</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### APS CD-ROM/CD-R/CD-RW Drives & Mastering Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Internal</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS CD24</td>
<td>Sony CD-ROM/CD+/-RW Drive</td>
<td>119</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD32</td>
<td>Sony CD-ROM/CD+/-RW Drive</td>
<td>149</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CDCH</td>
<td>Nakamichi D55/755/1055 CD-ROM, Pro Case only</td>
<td>259</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-R8X</td>
<td>Sony CD-R/RW Drive</td>
<td>499</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-R8X</td>
<td>Sony CD-R/RW Drive</td>
<td>499</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-R8X</td>
<td>Sony CD-R/RW Drive</td>
<td>499</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-R8X</td>
<td>Sony CD-R/RW Drive</td>
<td>499</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-R8X</td>
<td>Sony CD-R/RW Drive</td>
<td>499</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-R8X</td>
<td>Sony CD-R/RW Drive</td>
<td>499</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-R8X</td>
<td>Sony CD-R/RW Drive</td>
<td>499</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PCI Ultra Wide SCSI Host Adapter

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Internal</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS HYPERQIC</td>
<td>Backup up to 8GB* on one standard TR-4/1QC cartridge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS HYPERQIC</td>
<td>Field-ported desktop backup reliability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS I9000W</td>
<td>7200 rpm 9.1GB drive for top-performance workstations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS I9000W</td>
<td>6.3 ms average seek time for OLTP and OLAP</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### APS JAZ II

- Huge 2GB capacity
- Reads and writes 1GB Jaz disks
- Includes cartridge

### APS CD24

- 24X for fluid multimedia!
- Easy tray loading eliminates caddies
- *Please inquire on availability*

### APS CD-RW Pro

- Work faster with 6x record, 2x rewrite & 6x read speeds
- Best choice for databases, graphics, prepress and audio

### APS ST4500W

- Ultimate drive for 3D, CAD and DV pros
- 10,000 rpm Cheetah with Ultra Wide SCSI
- Showed in APS Pro Enclosure

### Order from Our Special Online Catalog @

http://www.apstech.com/mwspecial/

Order online @ http://www.apstech.com/mwspecial/
**Power Macintosh G3**

- **G3/233 Desktop 32/4GB/24X CD-ROM** - $1699
- **G3/300 Mini-Tower 64/4GB/24X CD-ROM/SCRAM** - $3359
- **G3/300 Mini-Tower 128/2GB/24X CD-ROM/SCRAM** - $4699

**MACINTOSH G3 POWERBOOKS**

- **Stylus 3000** - 1872
- **PowerBook 1400C - 166MHz/16/3GB/20X CD-ROM** - $1999
- **PowerBook 3400C - 240MHz/16/3GB/20X CD-ROM** - $4499

**MEMORY BLOWOUT**

- **Power Mac G3**
  - 128MB - $160
  - 64MB - $86
  - 32MB - $35
  - 16MB - $30
  - 8MB - $20

- **5V EDO DIMMS**
  - 64MB - $80
  - 32MB - $45
  - 16MB - $20

- **3.3V EDO DIMMS**
  - 64MB - $80
  - 32MB - $45
  - 16MB - $20

**MORE POWERBOOKS**

- **PowerBook 1400C - 166MHz/16/3GB/20X CD-ROM/ENET** - $2299
- **PowerBook 3400C - 240MHz/16/3GB/20X CD-ROM/ENET** - $4499

**PRINTERS & SCANNERS**

- **Astra 1220** - $225
- **Astra 1200 32Bit 600dpi** - $148
- **Trans. Adptr Astra 1200** - $198
- **Trans. Adptr Astra 1220** - $180

**EPSON**

- **Stylus 800 Inkjet** - $308
- **Expression 636 Executive** - $805
- **Expression 636 Professional** - $1409
- **Stylus Color 1520** - $806
- **Stylus Color 3000** - $1872
- **Stylus Photo EX** - $506

**LACIE**

- **LaCie 24X Ext CD-Rom Drive** - $137
- **LaCie 4X8X CD-R/-Rw/Toast** - $1484
- **LaCie 32X Ext CD-Rom Drive** - $166

**MEMORY BLOWOUT**

- **PowerBook 1400C - 166MHz/16/3GB/20X CD-ROM** - $1999
- **PowerBook 3400C - 240MHz/16/3GB/20X CD-ROM** - $4499

**MORE POWERBOOKS**

- **PowerBook 1400C - 166MHz/16/3GB/20X CD-ROM/ENET** - $2299
- **PowerBook 3400C - 240MHz/16/3GB/20X CD-ROM/ENET/56K** - $4499

**MEMORY BLOWOUT**

- **Power Mac G3**
  - 128MB - $160
  - 64MB - $86
  - 32MB - $35
  - 16MB - $30

- **5V EDO DIMMS**
  - 64MB - $80
  - 32MB - $45
  - 16MB - $20

- **3.3V EDO DIMMS**
  - 64MB - $80
  - 32MB - $45
  - 16MB - $20

**MORE POWERBOOKS**

- **PowerBook 1400C - 166MHz/16/3GB/20X CD-ROM/ENET** - $2299
- **PowerBook 3400C - 240MHz/16/3GB/20X CD-ROM/ENET/56K** - $4499

**MEMORY BLOWOUT**

- **Power Mac G3**
  - 128MB - $160
  - 64MB - $86
  - 32MB - $35
  - 16MB - $30

- **5V EDO DIMMS**
  - 64MB - $80
  - 32MB - $45
  - 16MB - $20

- **3.3V EDO DIMMS**
  - 64MB - $80
  - 32MB - $45
  - 16MB - $20

**MORE POWERBOOKS**

- **PowerBook 1400C - 166MHz/16/3GB/20X CD-ROM/ENET** - $2299
- **PowerBook 3400C - 240MHz/16/3GB/20X CD-ROM/ENET/56K** - $4499
SUBSCRIBER SAVINGS CARD

51% OFF

PLUS A FREE CD-ROM!

As a new subscriber, you are entitled to a reduced rate on Macworld – 51% off the cover price. BONUS: Maximize your desktop publishing power with the *Macworld Clip Art CD-ROM* – FREE with your paid subscription.

- □ 1 year (12 issues) just $39.97. YOU SAVE 44%.
- □ 2 years (24 issues) just $69.97. YOU SAVE 51%.

Name (please print)

Company

Address

City State Zip

- □ Payment enclosed.  □ Bill me later.

Annual newsstand price $71.88. Non-U.S. orders, please add US$20 postage; Canadian GST included.
CDW will beat the price on any Apple Macintosh computer!...

...from an Authorized Apple Reseller; certain restrictions apply; call for details.

Photoshop V5.0
Adobe Photoshop 5.0
Adobe Photoshop is the number one choice for high-end digital photography and publishing. Photoshop's sophisticated tools give you control over color, tone, and image detail like never before.

$1699.00
Adobe Photoshop 5.0

PowerBook G3 series
- 250MHz (CDW 113685) or 292MHz (CDW 113690) PowerPC® G3 processor
- 32MB (CDW 113685) EDO DRAM standard or 64MB (CDW 113690) + 4GB (CDW 113685) or 8GB (CDW 113690) hard drive
- 20X Max CD-ROM drive
- 13.3" (CDW 113685) or 14.1" (CDW 113690) active-matrix display
- One memory expansion slot
- PC Card slot: two Type II or one Type III
- Two built-in stereo speakers

Starting at! $2299.00
CDW 113676

MONITORS

Apple Power Macintosh G3 Series
- 23MHz PowerPC G3 Series 32MB 4GB 24X 250MHz $1699.00
- 23MHz PowerPC G3 Series 32MB 4GB 24X 250MHz $1999.00
- 13.3" 32MB 4GB 24X 250MHz $1999.00
- 13.3" 32MB 4GB 24X 250MHz $1999.00
- 14.1" GS 64MB 4GB 24X 250MHz $2599.00
- 14.1" GS 64MB 4GB 24X 250MHz $2599.00
- 15.0" 128MB 4GB 24X 250MHz $2999.00
- 15.0" 128MB 4GB 24X 250MHz $2999.00
- 17.0" 128MB 4GB 24X 250MHz $3999.00

Apple Power Macintosh G3 Series
- 23MHz PowerPC G3 Series 32MB 4GB 24X 250MHz $1699.00
- 23MHz PowerPC G3 Series 32MB 4GB 24X 250MHz $1999.00
- 13.3" 32MB 4GB 24X 250MHz $1999.00
- 13.3" 32MB 4GB 24X 250MHz $1999.00
- 14.1" GS 64MB 4GB 24X 250MHz $2599.00
- 14.1" GS 64MB 4GB 24X 250MHz $2599.00
- 15.0" 128MB 4GB 24X 250MHz $2999.00
- 15.0" 128MB 4GB 24X 250MHz $2999.00
- 17.0" 128MB 4GB 24X 250MHz $3999.00

NEC

Tubeless 13.3" 128MB external $999.00
Tubeless 14.1" 128MB external $999.00

MONITORS

PHILIPS DIAGNOSTIX

MVS1011 15" VGA 32MB $175.92
MVS1010 15" VGA 32MB $175.92

COMPUTERS

Scanners

SnapScan 310 USB scanner $169.90
SnapScan 610S flatbed scanner $349.90

Norton AntiVirus V5.0

$63.45
CDW 107665

Handheld Computers

Palm PDA Professional $287.20
Palm III $287.46

MONITORS

SUN

24X CD-ROM external $189.00
32X CD-ROM external $189.00
54X CD-Recordable external $299.95
1GB Quantum Ultra SCSI-3 external $279.95
1GB Quantum Ultra SCSI-3 external $279.95
2GB Quantum Ultra SCSI-3 external $399.95
2GB Quantum Ultra SCSI-3 external $399.95
2GB Apple drive Ultra SCSI-3 external $399.95
2GB Apple drive Ultra SCSI-3 external $399.95

COMMUNICATIONS

Magimice 3.0 Ethernet 10BT $295.25
Magimice 3.0 Ethernet PC Card $295.25
Magimouse 1.1 wireless $189.94

CDW DIRECTORY

PC sales $800-275-4239
Mac sales $800-208-4239
Corporate sales $800-204-4239
Government and Education sales $800-377-4239

DIGITAL IMAGING

Nikon

Super CoolScan LS 2000 film scanner $1795.73

Scanners

SnapScan 310 USB scanner $169.90
SnapScan 610S flatbed scanner $349.90

SonicPoint 310 USB scanner $169.90
SonicPoint 610S flatbed scanner $349.90

CONSUMER

$3899.00
CDW 113685
$5599.00
CDW 113690
LEASE FROM Digital Graphix

$0 Down 100% Business Financing
NO Payments for 90 Days!

9600/350
DTP Hi-Exo Solution
PowerPC 9600/350 w/24xCD
768MB RAM, 4GB HD, 1MB Cache
ViewSonic 21" P210 monitor
IMS 8MB PCI video card
Microtek ScanMaker III/Trans/Photoshop
3GB Zip 100 w/1 cart
$9030
Lease Package Only $9030

PowerPC 9600/350 w/24xCD
768MB RAM, 4GB HD, 1MB Cache
Apple Keyboard
ViewSonic 21" P210 monitor
IMS 8MB PCI video card
Microtek ScanMaker III/Trans/Photoshop
3GB Zip 100 w/1 cart
$9030
Lease Package Only $9030

G3 266D Custom
PowerPC G3 266 DT w/24xCD
384MB RAM, 4GB HD, 1MB Cache
Apple Keyboard
$279 PER MONTH

G3 300 Tower
PowerPC G3 300 w/24xCD
384MB RAM, 4GB HD, 1MB Cache
Apple Keyboard
$139 PER MONTH

G3 300 Tower
PowerPC G3 300 w/24xCD
384MB RAM, 4GB HD, 1MB Cache
Apple Keyboard
$169 PER MONTH

G3 300 Tower
PowerPC G3 300 w/24xCD
384MB RAM, 4GB HD, 1MB Cache
Apple Keyboard
$199 PER MONTH

SyQuest & ZIP Drives
ZIP 100 External $119
SyQuest 1.5GB External $229
Syquest 200MB External $79

Optical & CDR Drives

Iomega Max 2GB Ext. $199
Iomega Max 2GB Ext. $249

Lease Sale · Up to $300 Instant Rebate

Monitors

Sony 1005 ES 15", 1280x1024, 25mm
$269
ViewSonic E771, 1024x768, 28mm
$340

Hard Drives

Quantum 2.2GB 7200 rpm £1ms
$59

Scanners

LineOmatic Book Scan 310 $179
Agfa Scanum 210 20MB Color II $179

Digital Graphix
Your Value Added Macintosh Source
800-680-9062 USA & CANADA
310-783-1525 FAX
310-783-1515 INTERNATIONAL
20655 S. Western Ave #132 Torrance, CA 90501

Choose 36 at www.macworld.com/getinfo
# BUSINESS OPPORTUNITIES

## PRODUCT INDEX

<table>
<thead>
<tr>
<th>Category</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Operations</td>
<td>152-153</td>
</tr>
<tr>
<td>Bar Code</td>
<td></td>
</tr>
<tr>
<td>Inventory Management</td>
<td></td>
</tr>
<tr>
<td>Print Utility</td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td></td>
</tr>
<tr>
<td>Education/Entertainment</td>
<td>153-155</td>
</tr>
<tr>
<td>Discount Software</td>
<td></td>
</tr>
<tr>
<td>Communications/Networking</td>
<td>154</td>
</tr>
<tr>
<td>Cross Platform Modems</td>
<td></td>
</tr>
<tr>
<td>Peripheral Products</td>
<td>156-157,177</td>
</tr>
<tr>
<td>Digital Media</td>
<td></td>
</tr>
<tr>
<td>Magnetic Media</td>
<td></td>
</tr>
<tr>
<td>CD Rom</td>
<td></td>
</tr>
<tr>
<td>System &amp; Peripherals</td>
<td>156-172</td>
</tr>
<tr>
<td>Digital Advertising Coordinator:</td>
<td></td>
</tr>
<tr>
<td>Mac Scott</td>
<td>415.243.3510</td>
</tr>
<tr>
<td><a href="mailto:mac_scott@macworld.com">mac_scott@macworld.com</a></td>
<td></td>
</tr>
<tr>
<td>Graphics</td>
<td>172</td>
</tr>
<tr>
<td>Clip Art</td>
<td></td>
</tr>
<tr>
<td>Memory &amp; Upgrades</td>
<td>172-175</td>
</tr>
<tr>
<td>Memory Upgrade</td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td>175-176</td>
</tr>
<tr>
<td>Printing</td>
<td></td>
</tr>
<tr>
<td>Data Recovery</td>
<td></td>
</tr>
<tr>
<td>Digital Production</td>
<td></td>
</tr>
<tr>
<td>Repair</td>
<td></td>
</tr>
<tr>
<td>Account Representative:</td>
<td></td>
</tr>
<tr>
<td>Spencer Frasher</td>
<td>212.503.5864</td>
</tr>
<tr>
<td><a href="mailto:spencer_frasber@zd.com">spencer_frasber@zd.com</a></td>
<td></td>
</tr>
<tr>
<td>CAS Advertising Coordinator:</td>
<td></td>
</tr>
<tr>
<td>Nayumi Mitsuka</td>
<td>212.503.5278</td>
</tr>
<tr>
<td><a href="mailto:nayumi_mitsuka@zd.com">nayumi_mitsuka@zd.com</a></td>
<td></td>
</tr>
<tr>
<td>Sales Manager:</td>
<td></td>
</tr>
<tr>
<td>Monifa Kelly</td>
<td>212.503.5155</td>
</tr>
<tr>
<td><a href="mailto:monifa_kelly@zd.com">monifa_kelly@zd.com</a></td>
<td></td>
</tr>
</tbody>
</table>

### Bar Code Solutions

- **Bar Code Fonts**
- **Labeling Software**
- **Scanners/Lasers**
- **Graphic Utilities**

**FREE EXPERT CONSULTATION!**

**FREE LIFETIME TECHNICAL SUPPORT!**

**MONEY-BACK GUARANTEE!**

**UPC/EAN, CODE 39, ITF, POSTNET, 2D, and more!**

![Bar Code Solutions Banner](banner.png)

**Download Demo Software and Fonts Online at:** [www.bearrock.com](http://www.bearrock.com)

---

**Bar Code Solutions**

- **Over 170 bar code variations**
- **A totally new MBCBARCODA package including over 30 variations of Code 128, UPC, PostNet, ITF, Codabar, Code 39, book and magazine codes, voucher codes, SSC codes and much, much more!**
- **Apple compatible!**
- **Color control!**
- **Most accurate bar code creator available!**
- **Unlimited free telephone support!**
- **Powerful and OS compatible and 6000th System 7.1.**

**Also POSTSCRIPT & Thermal Label Printing Software!**

---

**SOFT PRO**

**1-800-876-7529**

- **Microsoft Office**
- **Microsoft Word**
- **Microsoft Excel**
- **Microsoft Access**
- **Adobe Photoshop**
- **Illustrator**
- **Adobe PageMaker**
- **QuarkXPress**
- **Microsoft FrontPage**
- **Microsoft Publisher**
- **Microsoft Outlook**
- **Microsoft Project**
- **Microsoft Visio**
- **Microsoft PowerPoint**
- **Microsoft Access**
- **Microsoft Word**
- **Microsoft Excel**
- **Microsoft Publisher**
- **Microsoft Project**

**Macintosh Off.**

- **Mission Software**
- **Excel 97**
- **Works 7.0**
- **QuarkXPress 5.0**
- **Adobe PageMaker 5.0**

**Paint**

- **Paint Shop Pro**
- **Freehand**
- **CorelDRAW**

**CD-ROM**

- **CD-ROMs**
- **CD-ROMs**
- **CD-ROMs**
- **CD-ROMs**
- **CD-ROMs**
- **CD-ROMs**
- **CD-ROMs**

---

**POINT OF SALE • INVENTORY CONTROL**

**Software & Hardware for:**

- **Retail/Wholesale**
- **Mail Order**
- **Internet Commerce**
- **Rentals**
- **Service/Repair**
- **Manufacturing**
- **FileMaker Tools**

**Fully Integrated Accounting**

- **Multi-Site Billing**
- **Cross Platform**
- **Barcode Readers**
- **Receipt Printers**
- **Cash Drawers**
- **Mag Strips**
- **Ribbons/Paper/Labels**
- **Credit Card Authorization**
- **Deposit Software**

**POWERS DIRECT**

**900-232-7625**

- **(800) 622-7670 • sales@posdirect.com**
- **(618) 985-2307 • fax: (618) 985-3014**

---

**MBCBARCODA**

**The new version of**

**1-800-876-7529**

**We'll Beat any price**

**ALL TRADEMARKS ARE PROPERTIES OF THEIR RESPECTIVE OWNERS.**

---

**FREE EXPERT CONSULTATION!**

**FREE LIFETIME TECHNICAL SUPPORT!**

**MONEY-BACK GUARANTEE!**

**UPC/EAN, CODE 39, ITF, POSTNET, 2D, and more!**

---

**Download Demo Software and Fonts Online at:** [www.bearrock.com](http://www.bearrock.com)
Finally, a Powerful Thermal Transfer Printer for FileMaker Pro®, Quark®, Illustrator®, or Mac-Barcode® ProLabel!

One Stop Shopping with Friendly Support from the Experts. Call Us for Free Bar Code Consulting and Information!

- Mac·Barcode® ProLabel v2.0
- Desktop SmartScanners
- Mobile! Simple! Fast! Accurate!
- Walk-About for Newton® and Other HPCs

The Mac-Barcode Co.
800-733-7592 or Visit Our Web Site at:
www.mac-barcode.com
Tel: 508-746-4242 Fax: 508-746-6030

STUDENTS, TEACHERS,
SCHOOLS SAVE UP TO 80%

We’ll Beat ANY
Advertised Price!!

• Adobe, Microsoft, Lotus, & Berland products available
• Final Cut Pro...
• 30 Day Back Guarantee
• Free Shipping in USA
• Toll Free Tech Support

1-800-345-4220
Or Call 408-498-9998

Website: www.barcodehq.com

Object-Oriented BASIC® 100% Visual Interface Builder
Compiles 680x0 and PowerPC® Imports Visual Basic projects
Supports XCMDs, PowerPC Shared Libraries, AppleScript
and REALbasic Native Plug-ins • Retails for $99.95

REALbasic is a trademark of REAL Software, Inc.

Choose 419 at www.macworld.com/GetInfo
Choose 487 at www.macworld.com/GetInfo

Create REAL applications
with one finger...

Use the others for something else.
More Serial Ports for Your Mac!  
**USB**  
**The New**  
**Keyspan USB Card**  
Add USB to your PowerMac  
• PCI card which provides two Universal Serial Bus ports  
• Simple and affordable  
• Shipping next month  

**SX Serial Card**  
Better than a Switch or Juggler  
• Provides simultaneous use of ports  
• More stable than port sharing products  

The #1 PCI Serial Card for Mac  
• 2 or 4 port PCI serial cards available  
• For Comm Toolbox savvy software  
• SX-2 just $229, SX-4 only $329  
• 30 day money back guarantee  
• 5 year warranty  

**For Mac & PC**  
One PalmRouter+  
One Modem+  
One ISP account+  
One Phone line =  
Internet access for up to 16 Users  

10BASE-T/2 Ethernet PCMCIA Card offers reliable, high-performance connections, with full-duplex operation.  

**Macsense Products Available Through**  
**ClumBat MacMail**  
**MacWarehouse**  
**Macsense**  

**PalmRouter**  
• The most economical way to get everyone on the Internet  
• Ideal for the classroom, small office or home  
• Serves as a 4 ports 10BASE-T Ethernet LAN Hub  
• Up to sixteen LAN workstations share one Internet account  

**10BASE-T/2 Ethernet PCMCIA Card**  
• Compact modules for twisted pair and BNC with Auto-Media detection  
• Hot-Swap capability  
• Low power consumption  

**Distributor, Reseller & Rep Welcome**  

**Macsense Connectivity Inc.**  
Tel (1-800-642-8860 Fax (408) 744-1060  
1290 Ramwood Ave #B Sunnyvale, CA 94089  
http://www.macsense.com  

**Networks Macs and PCs Leave You Stranded?**  
Let PC MACLAN Save You ... Time, Money and Resources  
Now whether you’re a small business, home office or workgroup you can operate as efficiently as a corporate network with PC MACLAN — the leading solution for sharing printers, files, drives and more between Mac OS and Windows PCs, including remote and internet access.  
• Add PCs to a Mac-based Network  
• Print to AppleTalk or PostScript Printers from a PC  
• Share Drives, Email and Applications Cross-platform  

PC MACLAN is available for Windows NT, Windows 95 and Windows 3.x ... and at our prices, PC MACLAN won’t drain your networking budget!  

www.miramarsys.com  
1-800-862-2526  

**Choose 408 at www.macworld.com/GetInfo**

**Authorware $399**  
Kali's PowerT.  

**CodaFinalize $245**  
KPT Bryce 3D  

**CorelDRAW $129**  
MissCAD 7  

**Debot.Toolbox $279**  
MS FrontPage  

**Director 6**  
MS Office 98'  

**Dreamweaver $160**  
MS Word 6.01  

**Electric Image $1329**  
Norton Utilities  

**Eye Candy 3.0**  
Painter 5.0  

**FileMaker Pro**  
Studio Pro 2.1  

**Final Draft 4.1**  
WordPerfect 3.5  

**Flash 2.0**  
145  

**Form-Z 2.92**  
Call Japan.LangK $125  

**Choose 411 at www.macworld.com/GetInfo**

**Choose 409 at www.macworld.com/GetInfo**
Peripheral Products CD Rom
Systems & Peripherals

---

CD-ROM PRODUCTION

1000 Retail-Ready Stamped CDs
Includes two color discs, four color glossy insert & tray cards, jewel case, and poly wrap. Complete turnkey — just send a CD-R and art file! Call for details.

Catalysts

Your CD-ROM Production Source
http://www.catalyst.com

CD-R Gold by Catalyst

Easy to use labeling kits
CD-R alkaline screening service
Short run CD-R duplication
4.1Gb/hour stand-alone dumper

CD-R media as low as $1.49

---

Wall Street Supply

20" SONY - $399 Ref.
17" SONY - $299 Ref.
Multiscan Monitors:
21" Hitachi $875 New
20" Rasterops Trinitron $799 New
21" SONY $1399 New
24" SONY 900 90W $3399 New
20" SONY 28SE $799 New

(888) 433-6066 / (954) 458-5886
http://www.cdw.com/avm/index.html

410 N.W. 10 Terrace  Hallandale, FL 33009

---

www.mediasupply.com - The online source for CD-R and CD-RW products!

CD-R Media

Mitsui Gold $1.39
Sony $1.39
Verbatim Silver $1.49
TDK Silver $1.59
TDK Digital Audio $6.49
Genisys Silver $9.99
Generic CD/RW $39.99

Prices per 200 units, with Jewel Case.

---

CD-R & CD-RW Drives

Yamaha 4260 CDRW Internal $499
Yamaha 4260 CDRW External $549
Panasonic 4x/8x Internal $399
Panasonic 4x/8x External $449

Drives include Adaptec Toast, Direct CD & I CD-RW or 5 CD-R.
External Cabinets includes SCSI cable and terminator.

---

CD-R Duplicators

MediaFORM S900 8 drive unit $699
MediaFORM S300 3 drive unit $399
MediaFORM 4000 3 drive unit $349
MediaFORM S500 2 drive unit $199
Ringamo Thermal Printer $399
MediaFORM 4 color printer $199

---

(888) 433-6066 / (954) 458-5886

Phone: 610-458-9100 • Fax 610-458-9464
e-mail: info@mediasupply.com

New
dustry

---

Software

Acute Photoshop version 6.0
Adobe Illustrator version 7.0
Adobe PageMaker v5.5.2.1
Adobe After Effects
Apple Express package
Microsoft Office suite

RASTEROPS

Macworld Shopper

---

PC Hardware

PC Hardware

---

PC Hardware

---

PC Hardware

---

PC Hardware
**MacWorld Shopper**

**Magnetic Media • CD Rom  Peripheral Products Systems & Peripherals**

---

**Used Macs & PowerBooks For Sale**

**We Buy Top Used Macs! Paid**

**Clean Computer Mice FAST**

**Cleaner & Labels Kit**

**Macsales**

**Hawke Systems**

**Color Packages - Custom configurations available on all packages**

**Refurbished Floppy Drives**

**Extrav**

**Printers**

**Service Parts**

---

**Macworld September 1998**

---

---
PowerMac 6500/225
32/2GB/12XCD pictured with optional ZIP Drive
$999
Factory Refurbished
PM6500/250. $1099
Color LaserWriter 12/600PS
- supports Mac, DOS, UNIX, even Windows
- true 600x600-dpi printing
- Color Photo/Grade
- prints up to 12 ppm
- LocalTalk, Ethernet, and Parallel ports
$899
Includes set-up kit
8/1GB/4XCD
NEW $1999
Performance 6020/75
- 75 MHz PowerPC 602e
- Internal 14.4 modem
- 15'' Apple Multiscan
- keyboard & mouse
NEW $1999
MACINTOSH CPU's
950/16MHz, 350/2GB/12XCD, refurb...$1499
950/200, 350/2GB/12XCD, refurb...$1299
950/200, 16/2GB/8XCD, refurb...$1499
950/150, 32/2GB/8XCD, refurb...$1199
7600/132, 32/2GB/8XCD, refurb...$1198
720/200, 16/2GB/8XCD, refurb...$748
720/220, 16/1GB/4XCD, refurb...$948
Performa 620, 161/2GB/4XCD, refurb...$948
Performa 6400/180, 161/6GB/4XCD ref...$899
MACINTOSH LOGIC BOARDS
Mac ii logic board refurbished...$49
Mac iix refurbished...$99
Mac ii logic board refurbished...$129
Quadra 605 logic board refurbished...$49
Mac iilx logic board refurbished...$79
Mac iic logic board refurbished...$99
Power Mac 7100/60 logic board refurb...$349
Performer 600 logic board refurbished...$129
LC logic board refurbished...$249
Performer 630 logic board refurbished...$199
Centris 650 logic board refurbished...$109
Quadra 800 logic board refurbished...$299
Quadra 840/W logic board refurbished...$299
Quadra 950 logic board refurbished...$399
Cerritos 610 logic board refurbished...$149
Cerritos 610 logic board refurbished...$249
Performer 550 logic board refurbished...$278
Performer 575/580 logic board refurbished...$399
VIEDO CARDS
E-Machines DoubleColor SX NEW (NuBus) $79
RasterOps 24MX NEW (NuBus) $199
SuperMax 634 PDCO (NuBus) refurb...$249
PowerMac HPV Card (1MB) refurb...$199
PowerMac A/V Card (2MB) refurb...$399
NEW $199
PC COMPATIBILITY CARDS
Parc 166 MHz, 12''PCI card (refurb)...$399
586 100 MHz, 7'' PCI card (refurb)...$199
486 66 Mhz for PM 6100 NEW...$79
LOGIC BOARD UPGRADES
Personal NT to NTR upgrade NEW...$399
PowerMac 8100 to 8500/132 (exact)...$749
Quadra 950 to G500 950/122 (exact)...$749
PowerMac 600 to 8100/90 (exact)...$399
PowerMac 600 to 8100/75 (exact)...$399
PowerMac 600 to 820/75 (exact)...$399
PowerMac 600 to 820/100 (exact)...$399
Quadra 860 to PowerMac 6100/80 (exact)...$449
Quadra 660 to PowerMac 6100/80 (exact)...$349
Powerbook 160/140cs PowerPC upgrade...$449
PowerBook 580 series PowerPC upgrade...$449
NEW $999
Quadra 950
- 80 Configuration
- 33-MHz MC68040
- 5 Nubus slots
NEW $499
Newton 130
- 279
- Refurbished
- FREE Leather Carry Case!
ONLY $299
When you purchase a Macintosh CPU!
Apple 17'' Multiscan
- NEW $729
BRAND NEW!
$649 with Internal 4X CD
Performance 6400/200
32/2.4GB/8XCD Video Editing
NEW $499
Apple 17'' Multiscan
- NEW $729
Only $299
When you purchase a Macintosh CPU!
WE Stock Mac parts!
1-800-227-3971
MAC WORLD September 1996 139
We are open Mon-Sat, 9am-6pm
10435 Santa Monica Blvd.
Los Angeles, CA 90025
Tel (310) 446-1771
Fax (310) 475-7744
or email us at
compamer@artnet.net

Government, University, and Fortune 1000 P.O.'s are welcome!
International Orders Please call (310) 446-1771

8600/300 MiniTower
Features: 300MHz 604e Processor
• MiniTower
• 32 Meg RAM
• 4 Gig HD
• 24X CDROM
• Internal Zip Drive
• A/V In/Out

$1699

4400/200 PC Compatible
Features: 200MHz 603e Processor
• Desktop Case
• 32 Meg RAM
• 2 Gig Hard Drive
• COROM
• 166 mhz DOS Card

$1099

Check out our Web!
WWW.COMPU-AMERICA.COM
• Updated Daily
• Online Ordering
• Stock/Availability
• Color Photos
• Complete Specs
• No Wait! No Hold!
• Completely Accurate

1-800-533-9005
Macintosh
Powerbooks

4400/200 DOS

$1099

G3 233MHz

$1399

G3 266MHz 256MB 4x4MB VR

$1999

Macintosh Workgroup Servers

$1999

4400/200 W/DOS

$1099

For Only...

Visit Us At Our Web Site http://www.LACC.com
24Hrs A Day -- On-Line Catalog & Ordering
E-mail us at: lacc@lacc.com or Call us at (800) 689-3933

All prices subject to change without notice • All Prices reflect cash discount • * reflects Factory refurbished units
# Macworld Shopper

## TRADE YOUR MAC FOR A NEW ONE. WE PAY TOP $$$ FOR YOUR MAC & MEM.

### CALL FOR UPGRADES

<table>
<thead>
<tr>
<th>Shopper</th>
<th>G3 266 MHz/32/6x/CD 1995</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G3 233 MHz/32/6x/CD 1495</td>
</tr>
<tr>
<td></td>
<td>9600 350 Mhz C2 88160 3090</td>
</tr>
<tr>
<td></td>
<td>9600 300 Mhz C2 60810 3090</td>
</tr>
<tr>
<td></td>
<td>9600 350 Mhz C2 52030 45</td>
</tr>
<tr>
<td></td>
<td>2660 32/4G/24x/Zip/AV 1995</td>
</tr>
<tr>
<td></td>
<td>G3 Power Books Call</td>
</tr>
</tbody>
</table>

### Upgrade

<table>
<thead>
<tr>
<th>Powerbook</th>
<th>G3 Power Books Call</th>
</tr>
</thead>
<tbody>
<tr>
<td>G3/300MT64/4G/24x</td>
<td>$2999</td>
</tr>
<tr>
<td>G266MT32/6G/24x/Zip/AV</td>
<td>$2209</td>
</tr>
<tr>
<td>G266DT32/16GB/24x/Zip</td>
<td>$1729</td>
</tr>
<tr>
<td>G266MT32/16GB/24x</td>
<td>$1729</td>
</tr>
<tr>
<td>G3/233DT 32/4G/24x</td>
<td>$1489</td>
</tr>
<tr>
<td>G3/233MT 32/4G/24x</td>
<td>$1489</td>
</tr>
</tbody>
</table>

### Power Mac

| G3/300MT64/4G/24x | $2999 |
|                   | 20" 850 |
|                   | $1295 |
|                   | 17" 750 |
|                   | $679 |
|                   | 64/200MP |

### RAM

| SDRA 32/64/128MB | $50/106/225 |
| DIMM 32/64MB | $47/105 |

### Memory/Storge

| 128x1024x128x32x | $2999 |
|                   | 20" 850 |
|                   | $1295 |
|                   | 17" 750 |
|                   | $679 |
|                   | 64/200MP |

### AppleVision

| 20" 850 | $1295 |
| 17" 750 | $679 |
| 64/200MP | $449 |

### Apple CPU Upgrade

| $2999 |
| $2209 |
| $1729 |
| $1729 |
| $1489 |
| $1489 |

### Check website for latest price.

### Pricing:

- All products now. Competitive pricing. Credit cards only. 2.5% extra. CA 8.25%. Atractive volume discount. Iml and resellers welcome. sales@macstore.com * 650-742-0760

### Retail:

- Apple 33.6 k PCMCIA +$60
- Apple 33.6 k PCMCIA +$105
- Apple 33.6 k PCMCIA +$50
- Apple 33.6 k PCMCIA +$25
- Apple 33.6 k PCMCIA +$15
- Apple 33.6 k PCMCIA +$10
- Apple 33.6 k PCMCIA +$5
- Apple 33.6 k PCMCIA +$2

### Check website for latest price.

### AppleVision

| 20" 850 | $1295 |
| 17" 750 | $679 |
| 64/200MP | $449 |

### Apple CPU Upgrade

| $2999 |
| $2209 |
| $1729 |
| $1729 |
| $1489 |
| $1489 |

### Check website for latest price.

### Pricing:

- All products now. Competitive pricing. Credit cards only. 2.5% extra. CA 8.25%. Atractive volume discount. Iml and resellers welcome. sales@macstore.com * 650-742-0760

### Retail:

- Apple 33.6 k PCMCIA +$60
- Apple 33.6 k PCMCIA +$105
- Apple 33.6 k PCMCIA +$50
- Apple 33.6 k PCMCIA +$25
- Apple 33.6 k PCMCIA +$15
- Apple 33.6 k PCMCIA +$10
- Apple 33.6 k PCMCIA +$5
- Apple 33.6 k PCMCIA +$2

### Check website for latest price.

### AppleVision

| 20" 850 | $1295 |
| 17" 750 | $679 |
| 64/200MP | $449 |

### Apple CPU Upgrade

| $2999 |
| $2209 |
| $1729 |
| $1729 |
| $1489 |
| $1489 |

### Check website for latest price.

### Pricing:

- All products now. Competitive pricing. Credit cards only. 2.5% extra. CA 8.25%. Atractive volume discount. Iml and resellers welcome. sales@macstore.com * 650-742-0760

### Retail:

- Apple 33.6 k PCMCIA +$60
- Apple 33.6 k PCMCIA +$105
- Apple 33.6 k PCMCIA +$50
- Apple 33.6 k PCMCIA +$25
- Apple 33.6 k PCMCIA +$15
- Apple 33.6 k PCMCIA +$10
- Apple 33.6 k PCMCIA +$5
- Apple 33.6 k PCMCIA +$2

### Check website for latest price.

### AppleVision

| 20" 850 | $1295 |
| 17" 750 | $679 |
| 64/200MP | $449 |

### Apple CPU Upgrade

| $2999 |
| $2209 |
| $1729 |
| $1729 |
| $1489 |
| $1489 |

### Check website for latest price.

### Pricing:

- All products now. Competitive pricing. Credit cards only. 2.5% extra. CA 8.25%. Atractive volume discount. Iml and resellers welcome. sales@macstore.com * 650-742-0760

### Retail:

- Apple 33.6 k PCMCIA +$60
- Apple 33.6 k PCMCIA +$105
- Apple 33.6 k PCMCIA +$50
- Apple 33.6 k PCMCIA +$25
- Apple 33.6 k PCMCIA +$15
- Apple 33.6 k PCMCIA +$10
- Apple 33.6 k PCMCIA +$5
- Apple 33.6 k PCMCIA +$2

### Check website for latest price.

### AppleVision

| 20" 850 | $1295 |
| 17" 750 | $679 |
| 64/200MP | $449 |

### Apple CPU Upgrade

| $2999 |
| $2209 |
| $1729 |
| $1729 |
| $1489 |
| $1489 |

### Check website for latest price.

### Pricing:

- All products now. Competitive pricing. Credit cards only. 2.5% extra. CA 8.25%. Atractive volume discount. Iml and resellers welcome. sales@macstore.com * 650-742-0760

### Retail:

- Apple 33.6 k PCMCIA +$60
- Apple 33.6 k PCMCIA +$105
- Apple 33.6 k PCMCIA +$50
- Apple 33.6 k PCMCIA +$25
- Apple 33.6 k PCMCIA +$15
- Apple 33.6 k PCMCIA +$10
- Apple 33.6 k PCMCIA +$5
- Apple 33.6 k PCMCIA +$2

### Check website for latest price.
SHOPPING GENERAL'S WARNING: Buying Computer Products From A Mail Order Company, Computer Superstore, Or Your Local Dealer, May Be Hazardous To Your Wallet.

Mac Pro Systems & Software
Since 1988
Buy • Sell • Trade • Upgrade • Repair
New • Used • Refurbished
Small Ad Lowest Prices
Any Ad is a Mac Pro Ad
Check out our Wholesale Specials @
www.mac-pro.com
800-525-3888
fax: 408-369-1205

www.datamicro.com
Desktop Systems
1-800-345-1234
Notebook Systems
Sales: (310) 398-3300
Discount Warehouse
for all your MAC Platform needs.

www.PowerBook1.com
Your Source for all PowerBook Upgrades and Accessories

Introducing The "Flip Disk"
High capacity, portable storage for your PowerBook... Just plug it in & it works!

PowerBook IDE Drives
PowerBook G3/250MHz - $979
PowerBook G3/216MHz - $689
PowerBook G3/240MHz - $829
VIEWpower 1400 (16-bit video) - $239
Bookendz Dock for 3400/1400 - $179
MCE powrUP 1400/G3 Bundle:
Includes: NUpower 1400/G3 250MHz/1 MB cache & IBM 4.0 GB 2.5" IDE HD $1329

PowerBook SCSI Drives
For use in PowerBooks Series 200 - 2400:
512MB $189
1GB $219
2GB $299
3GB $399
5GB $499
8GB $589
16GB $799

VST ZIP
PB 1400
PB 3400, G3, S300, 190
NEW G3 Series
Flip Disk
2.1GB $499
3.2GB $579
4.0GB $679
5.0GB $799

MCE powrUP 1400/G3 Bundle:
Includes: NUpower 1400/G3 250MHz/1 MB cache & IBM 4.0 GB 2.5" IDE HD $1329

Kritter Cam $249
CapSure Card $129
640x480, 30fps Video for 3400/2400/G3

www.data-micro.com
Discount Warehouse
for all your MAC Platform needs.

ICN Innovative Computer & Networking, Inc.
One-Stop Online Computer Shop
For Our Most Current Prices Please Visit:
www.icni.com
Name Brand Computer Systems Parts And Peripherals

Shopper
Mac BYTE
NO PAYMENT FOR 6 MONTHS!
BUY • SELL • TRADE
• CASH FOR MACS
• NEW & USED MACS
• WITH WARRANTIES
• FED EX OVERNIGHT SHIPPING
• Visa/Mastercard/Amex/Discover
• Clean Credit/COD
800-432-2983
4223 Glencoe Ave., Suite C210
Marina del Rey, CA 90292
FAX: 310-446-4799
E-MAIL: MacByTrad@email.com

Mac Pro Systems & Software
Since 1988
Buy • Sell • Trade • Upgrade • Repair
New • Used • Refurbished
Small Ad Lowest Prices
Any Ad is a Mac Pro Ad
Check out our Wholesale Specials @
www.mac-pro.com
800-525-3888
fax: 408-369-1205

PowerBook IDE Drives
PowerBook G3/250MHz - $979
PowerBook G3/216MHz - $689
PowerBook G3/240MHz - $829
VIEWpower 1400 (16-bit video) - $239
Bookendz Dock for 3400/1400 - $179
MCE powrUP 1400/G3 Bundle:
Includes: NUpower 1400/G3 250MHz/1 MB cache & IBM 4.0 GB 2.5" IDE HD $1329

PowerBook SCSI Drives
For use in PowerBooks Series 200 - 2400:
512MB $189
1GB $219
2GB $299
3GB $399
5GB $499
8GB $589
16GB $799

VST ZIP
PB 1400
PB 3400, G3, S300, 190
NEW G3 Series
Flip Disk
2.1GB $499
3.2GB $579
4.0GB $679
5.0GB $799

All MCE PowerBook hard drives carry a 30 day Money Back Guarantee & ship with Torx Tool. If needed, additional installation manuals, Anti-static wrist strap, SCSI Drive and all Device Utility Software.

www.data-micro.com
Discount Warehouse
for all your MAC Platform needs.

ICN Innovative Computer & Networking, Inc.
One-Stop Online Computer Shop
For Our Most Current Prices Please Visit:
www.icni.com
Name Brand Computer Systems Parts And Peripherals

Mac BYTE
NO PAYMENT FOR 6 MONTHS!
BUY • SELL • TRADE
• CASH FOR MACS
• NEW & USED MACS
• WITH WARRANTIES
• FED EX OVERNIGHT SHIPPING
• Visa/Mastercard/Amex/Discover
• Clean Credit/COD
800-432-2983
4223 Glencoe Ave., Suite C210
Marina del Rey, CA 90292
FAX: 310-446-4799
E-MAIL: MacByTrad@email.com

Mac Pro Systems & Software
Since 1988
Buy • Sell • Trade • Upgrade • Repair
New • Used • Refurbished
Small Ad Lowest Prices
Any Ad is a Mac Pro Ad
Check out our Wholesale Specials @
www.mac-pro.com
800-525-3888
fax: 408-369-1205

PowerBook IDE Drives
PowerBook G3/250MHz - $979
PowerBook G3/216MHz - $689
PowerBook G3/240MHz - $829
VIEWpower 1400 (16-bit video) - $239
Bookendz Dock for 3400/1400 - $179
MCE powrUP 1400/G3 Bundle:
Includes: NUpower 1400/G3 250MHz/1 MB cache & IBM 4.0 GB 2.5" IDE HD $1329

PowerBook SCSI Drives
For use in PowerBooks Series 200 - 2400:
512MB $189
1GB $219
2GB $299
3GB $399
5GB $499
8GB $589
16GB $799

VST ZIP
PB 1400
PB 3400, G3, S300, 190
NEW G3 Series
Flip Disk
2.1GB $499
3.2GB $579
4.0GB $679
5.0GB $799
## SCSI hard drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Int.</th>
<th>Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2gb Quantum Viking 7200rpm</td>
<td>$169</td>
<td>$219</td>
</tr>
<tr>
<td>3.2gb Quantum Fireball 5200rpm</td>
<td>$169</td>
<td>$219</td>
</tr>
<tr>
<td>4.5gb Seagate Barracuda 4200rpm</td>
<td>$169</td>
<td>$219</td>
</tr>
<tr>
<td>4.5gb Seagate Rialto 5400rpm</td>
<td>$245</td>
<td>$329</td>
</tr>
<tr>
<td>4.4gb Quantum Fireball 4200rpm</td>
<td>$169</td>
<td>$219</td>
</tr>
<tr>
<td>4.8gb Quantum Fireball 5200rpm</td>
<td>$245</td>
<td>$329</td>
</tr>
<tr>
<td>5.1gb Fujitsu 5200rpm 3yr</td>
<td>$595</td>
<td>$649</td>
</tr>
<tr>
<td>9.1gb Seagate Barracuda 10000rpm</td>
<td>$749</td>
<td>$979</td>
</tr>
</tbody>
</table>

### IDE hard drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Int.</th>
<th>Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1gb Quantum Fireball 7200rpm</td>
<td>$169</td>
<td>$219</td>
</tr>
<tr>
<td>5.1gb Quantum Fireball 5200rpm</td>
<td>$169</td>
<td>$219</td>
</tr>
<tr>
<td>7.4gb Quantum Fireball 5200rpm</td>
<td>$169</td>
<td>$219</td>
</tr>
<tr>
<td>10.2gb Quantum Fireball 5200rpm</td>
<td>$169</td>
<td>$219</td>
</tr>
</tbody>
</table>

## IDE/SCSI removable storage

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Int.</th>
<th>Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5GB Zip</td>
<td>$159</td>
<td>$199</td>
</tr>
<tr>
<td>2.8GB Zip</td>
<td>$279</td>
<td>$329</td>
</tr>
<tr>
<td>3.5GB Zip</td>
<td>$399</td>
<td>$459</td>
</tr>
</tbody>
</table>

## Removable Storage

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Int.</th>
<th>Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5GB Zip</td>
<td>$159</td>
<td>$199</td>
</tr>
<tr>
<td>2.8GB Zip</td>
<td>$279</td>
<td>$329</td>
</tr>
<tr>
<td>3.5GB Zip</td>
<td>$399</td>
<td>$459</td>
</tr>
</tbody>
</table>

## Level 2 CacheUpgrades

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Int.</th>
<th>Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>256k L2</td>
<td>$159</td>
<td>$199</td>
</tr>
<tr>
<td>1MB L2</td>
<td>$399</td>
<td>$459</td>
</tr>
<tr>
<td>512k L2</td>
<td>$399</td>
<td>$459</td>
</tr>
<tr>
<td>1MB L2</td>
<td>$999</td>
<td>$1199</td>
</tr>
</tbody>
</table>

## PowerBook hard drives

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Int.</th>
<th>Ext.</th>
</tr>
</thead>
<tbody>
<tr>
<td>160 Mb Apple</td>
<td>$89</td>
<td>$129</td>
</tr>
<tr>
<td>106 Apple</td>
<td>$89</td>
<td>$129</td>
</tr>
</tbody>
</table>

## G3 PowerMac

Call for Best Price
at all New G3 PowerMac MiniTowers, Desktops and PowerBooks

Prices and specifications subject to change without notice. 19% restocking fee applicable for all returned merchandise unless noted otherwise. Returns not accepted without return authorization number.
### Macintosh Computers

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple iBook 12/640</td>
<td>$870</td>
</tr>
<tr>
<td>Apple 12/800</td>
<td>$999</td>
</tr>
<tr>
<td>Apple 12/840</td>
<td>$1199</td>
</tr>
<tr>
<td>Apple 12/1000</td>
<td>$1299</td>
</tr>
<tr>
<td>Apple 12/1280</td>
<td>$1499</td>
</tr>
<tr>
<td>Apple 12/1400</td>
<td>$1599</td>
</tr>
<tr>
<td>Apple 12/1600</td>
<td>$1699</td>
</tr>
<tr>
<td>Apple 12/1920</td>
<td>$1899</td>
</tr>
<tr>
<td>Apple 12/2000</td>
<td>$2099</td>
</tr>
<tr>
<td>Apple 12/2400</td>
<td>$2299</td>
</tr>
</tbody>
</table>

### MacWorld Shopper

#### Products

- **Apple Color Display**: $249
- **Apple Color LaserWriter**: $499
- **Apple Laserwriter EIT**: $399
- **Apple Laserwriter III**: $399
- **Apple Laserwriter Select 360**: $399
- **Apple Color Laserwriter 12600 PS**: $499
- **Apple PowerBook 100 1280/12**: $1,600
- **Apple PowerBook 540c 133/30/19.2**: $1,699

#### Pricing

- **Memory**: $499-$599
- **Digital Camera**: Kodak D-2550: $299
- **Olympus D-600IR: $399
- **Polaroid D-2005**: $149

### Macworld Complimentary Software Solutions

- **Adobe Photoshop 4.2/Retail**: $299
- **Adobe Photoshop 3.5/LE**: $199
- **Adobe Illustrator 5.5/7.0**: $299
- **Adobe PageMaker V.6.0/V.6.0**: $299
- **Adobe Premiere LE/4.2**: $99
- **Adobe Photoshop 5.5**: $199
- **Adobe PageMaker**: $299
- **Adobe Acrobat 3.0**: $499
- **Apple Laserwriter EIT**: $399
- **Apple Laserwriter III**: $399
- **Apple Laserwriter Select 360**: $399
- **Apple Color Laserwriter 12600 PS**: $499
- **Apple PowerBook 100 1280/12**: $1,600
- **Apple PowerBook 540c 133/30/19.2**: $1,699

#### Contact Information

**Office**: 718-778-4600
**Fax**: 718-778-4848

**Visits**

Visit us on-line at: www.preowned.com
The all new RCD 4x12, a powerful 4x writer 12x reader Recordable CD System. Now users can easily create custom CDs up to 650 MB or 74 minutes of audio in about 15 minutes. Prices from $499.

The industry's highest capacity removable disk storage system: the APEX 4.6 GB Optical Hard Drive. With speed comparable to a hard drive and unsurpassed reliability. Prices from $1395.

PINNACLEMICRO
800.553.7070
Telephone 949.789.3000 www.pinnaclemicro.com

MacWorks 800-482-2705
Apple Macintosh Upgrade Bundle Apple Accessories Second Monitor Bundle Power Mac Bundle
Apple 603/73 $19
Apple 604/200 $199
Apple 604/400/600 $399
Apple G3 Video Card $189
MacPower ASSMo $29

$199 $199 $149 $99

GET ALL THREE ONLY $399 http://www.macworks.com

1-888-447-3728 • MacResQ • www.macresq.com

Mac OS 8.1 $18.99 FileMaker Pro 3.0 $29 Mac OS 8 $49

IBM UltraStar XP 2.1 Gig 3.5" SCSI-2/Wide-internal
$129

1 Gig 3.5" SCSI-Internal
$99

MacOS 7.6 Mac Res-Q

 systems & peripherals • sales & service

Performas PowerBooks
410/469/478 Call 520/469/550
550/516/545 520/12/240/192/560
580/350/CD $750 540/462/860
631/850/CD $650 500/850/550
6200/850/CD $550 840/850/550
5200/350/CD $500 520/850/550
500/250/CD $50 520/500/550
Power Macs G3 Call
7200/550/Call 7040/550/Call
7600/550/Call 7600/550/Call
6500/550/Call 6500/550/Call
5500/550/Call 5500/550/Call
Memory
4 MB 72-pin $12
8 MB 72-pin $20
16 MB 72-pin $33

Printers
Stylo 1600 $150
Stylo 1640/2400 $175
Stylo 6400/2000 $200
Stylo 6440/2000 $225

Monitors
14" Color $185
15" Apple Multi $205
17" Apple Multi $450
22" GS $500

Top dollar paid for memory, PowerBooks and CPUs.

What's it Worth? Download MacAppraiser.2.x www.uce.com
800-755-3033
Tel: 770-612-1205 Fax: 770-612-1239
1099-A Enterprise Way Atlanta, Georgia 30367
We can build you a complete Mac system for under $650! Used and trade-ins only.

- PowerMac G3 233 desktop, 32 Mb RAM, 4 Gb Drive, 1x2 CD, 15" Color display. Only $599!
- PowerMac G3 266 desktop, 32 Mb RAM, 4 Gb Drive, 1x2 CD, 17" Color display, only $699!
- PowerMac G3 266 desktop, 32 Mb RAM, 4 Gb Drive, 1x2 CD, 17" Color display, only $799!
- PowerMac G3 300 desktop, 32 Mb RAM, 4 Gb Drive, 1x2 CD, 17" Color display, only $999!

We’ll take your Macintosh computer in trade toward the purchase of any product we sell! Call one of our expert Mac consultants for complete details!

MacMax Monitors
- PowerMax Monitors are designed specifically for the rigorous demands of the Mac! They are available in a wide range of sizes and prices, from just $119.
- PowerMax Monitors are fully compatible with all Macintosh models, and are available in a variety of colors and finishes.
- PowerMax Monitors are backed by a one-year warranty, and are available for immediate delivery.
- PowerMax Monitors are available in a wide range of sizes, from 15" to 21.5".

We’re out of room! Call for great prices on RAM, Powerbooks, software, laser printers, scanners, CD-ROMs, video cards, storage devices, and more.

800-613-2072

Knowledge is Power

We accept educational and corporate purchase orders, and are experts in financing for virtually any size business!

ORDER ON LINE AT WWW.POWERMAX.COM!

OVER 20,000 MAC ITEMS AT YOUR FINGERTIPS!

Visit us online at WWW.POWERMAX.COM!
CD-Recorder Kits

AVD Panasonic 4X/8X CD Recorder
Int: $399 Ext: $449

Other AVD Kits
Yamaha 4X/6X CD Recorder
Int: $469 Ext: $519

Yamaha 4X/2X/6X CD/RW
Int: $499 Ext: $549

CD-R Blanks
Mitsubishi Gold & Verbatim
BLUE. Printable Spindle, CDRW too!
As Low As
Int: $329 Ext: $379

Other Duplication Systems
Mediastore CD-Clone Recorder
120 CDs per hour with a pro duplication system. The
CD-Clone is a 30+ recorder system complete with a
PC workstation - all in one handsome enclosure.
Int: $279 Ext: $329

Data Storage

Iomega Jaz 2GB + Cartridge
Int: $549 Ext: $599

DVD-Recordable
Now record your own 3.95GB DVD ROMs
Int: $449 Ext: $499

CD Duplication

30 Recorder Duplication System
CD-Clone Mediastore CD Clone Recorder
120 CDs per hour with a pro duplication system. The
CD Clone is a 30+ recorder system complete with a
PC workstation - all in one handsome enclosure.
Int: $279 Ext: $329

Other Duplication Systems
Mediastore 4004 CD-Direct Duplication
Int: $239 Ext: $289

Mediastore 5006 CD/DVD Duplicator
Int: $499 Ext: $549

Mediastore 270150 CD/DVD Duplicator
Int: $599 Ext: $649

Jaz 1GB drive or Jaz 2GB
(add $300) drive in one unit
Int: $279 Ext: $329

Yamaha 4X/6X
+ Jaz or SyJet
Int: $449 Ext: $499

Teac 4X/12X + Jaz or SyJet
Int: $519 Ext: $569

Yamaha 4X/2X/6X CD-RW + Jaz or SyJet
Int: $499 Ext: $549

ORDER TOLL FREE
800.555.5551
open M-S: 7 a.m. - 6 p.m. (PST) • Int'l ph. 714.570.5551 • fax 714.279.1690

“SAME-TIME” Internet Sharing and more...

All-in-one Hardware connectivity suite

Risk Free Special Offer

“Same-time” Internet access for the entire network
Ethernet connectivity for new or existing LANs
Built-in multi-protocol print server

Connecting 3 MACs to the Internet
has never been easier

- No software to Install
- No network needed
- Necessary cables included

Available through:

Tiger Global MISCO MERISEL

Web: http://www.protec.ca
E-Mail: sales@protec.ca

Sharing Resources Is Our Business

Tel: 1-514-630-3802 Ext. 245, Fax: 1-514-630-2987
1 800 363-8156 Ext. 245

WebShare

One modem

One telephone line

One Internet account

Less than $200*
Macworld Shopper

NEVER UNDERSOLD ON MEMORY PRODUCTS
LIFETIME MEMORY REPLACEMENT WARRANTY

Data Memory Systems
24 Keewaydin Dr.
Salem, NH 03079
Tel: 603-898-7750
Fax: 603-898-6585
E-mail: sales@datamem.com

- SIMMs, DIMMs, SDRAM, VRAM
- EDO Memory, CACHE
- Printer Memory, Modems
- Network Products
- PowerBook & Notebook Memory Upgrades

ORDER ON-LINE 24 HOURS @ http://www.datamem.com/macworld
CALL 1-800-662-7466 TOLL FREE

Macworld’s NEW Online Reader Service

Introducing Get Info. Now you can get information on all the products and services you see in Macworld.
Only get it faster. Simpler. Better. Now. All you have to do is visit one site:

www.macworld.com/getinfo

That’s it. You can have the information delivered to you by e-mail, postal mail or even telephone. It’s quick. Convenient. Fast. So next time you’re interested in a product, don’t get a stamp. Get Info.
MAKE YOUR MAC A G3 FOR $499.95...

WITH A POWER PC PROCESSOR UPGRADE FROM SONNET

• Make your Mac a G3 for $499.95
• With a Power PC processor upgrade from Sonnet

You can get all the speed you need and save thousands of dollars with reliable Sonnet Power PC® and 68040 processor upgrade products. Sonnet cards are fast, inexpensive, easy-to-install, and 100% compatible with every application, including Mac OS 7 & 8. In one easy step you will have the power of G3 at your fingertips. You just plug in a new processor board. The rest of your computer system remains the same. You simply work faster. Sonnet backs every product with a three-year warranty and free technical support.

UPGRADE VIRTUALLY ANY POWER MAC WITH A G3, 604E, OR CACHE...INCLUDING 6100/1100/8100

Transform your Power Macintosh computer into a G3 Powerhouse! The Crescendo® G3 features processor speeds up to 300 MHz and ultra high-speed backside cache at a 2:1 ratio, delivering up to a 1000% overall speed improvement. The cards run at fixed speed in PCI Power Macs, and automatically adjust to the highest possible processor speed in NuBus Power Macs, ensuring maximum performance. Sonnet supports a Power Mac 7100 or 8100 PDS AV or video card with an optional adapter kit.

Why buy a 604e? With the newly reduced 604e prices, the Crescendo 604e is an affordable upgrade choice for those on the tightest of budgets. A 604e processor has a fast FPU and can run some applications faster than a G3. Not ready for a processor upgrade? Level 2 cache is the most cost-effective way to run your Power Mac faster. Run up to 230% as fast by simply plugging in cache.

Crescendo Cards for PCI Macs
- PowerMac 7300/7500/7600/8500/8515/8600/9500/9515/9600
- Workgroup Server 7350/8550/9650
- PowerWave • UMAX J700/S900
- 604E 233 MHz $199.95
- G3 233 MHz/512K Cache $499.95
- G3 266 MHz/1M Cache $799.95
- G3 300 MHz/1M Cache $999.95
- 256K, 512K, & 1MB Level 2 Cache Available for Any Power Mac $39.95-$199.95

Crescendo Cards for NuBus Macs
- PowerMac 6100/7100/8100/9150
- Workgroup Server 6150/6500/6170
- PowerWave • UMAX J700/S900
- 604E 233 MHz $199.95
- G3 233 MHz/512K Cache $499.95
- G3 266 MHz/1M Cache $799.95
- G3 300 MHz/1M Cache $999.95
- Adapter 700/800 PDS AV/Video $199.95

RUN YOUR ’030 MAC UP TO 500% FASTER AND RUN OS 8

With a 68040-based Presto® processor upgrade card, you can increase performance by up to 500%. The Presto 040 80/40 MHz with 128K level 2 cache for the Mac Ici, Ili, Iix, Ii, and Performa 600 is only $199.95, with FPU ‘299’*. (48 adapter required for Mac Iicx or Ii.) The Presto 040 50/25 MHz for Mac LC, LCII, Color Classic, or Performa 250/400/405/410/430 is $149*. Adding a Presto card is the only way to run Mac OS 8 on ’030 Macs (LC & Iicx Mac OS 7). Run Mac II, Mac SE, SE/30, or Performa 400-430 twice as fast or more with a 33MHz ’030 Allegro starting at $69*. Sonnet Technologies, Inc.

DOUBLE YOUR QUADRA SPEED!

With a 68040-based Presto® processor upgrade card, you can increase performance by up to 500%. The Presto 040 80/40 MHz with 128K level 2 cache for the Mac Ici, Ili, Iix, Ii, and Performa 600 is only $199.95, with FPU ‘299’*. (48 adapter required for Mac Iicx or Ii.) The Presto 040 50/25 MHz for Mac LC, LCII, Color Classic, or Performa 250/400/405/410/430 is $149*. Adding a Presto card is the only way to run Mac OS 8 on ’030 Macs (LC & Iicx Mac OS 7). Run Mac II, Mac SE, SE/30, or Performa 400-430 twice as fast or more with a 33MHz ’030 Allegro starting at $69*. Sonnet Technologies, Inc.

RUN YOUR ’030 MAC UP TO 500% FASTER AND RUN OS 8

With a 68040-based Presto® processor upgrade card, you can increase performance by up to 500%. The Presto 040 80/40 MHz with 128K level 2 cache for the Mac Ici, Ili, Iix, Ii, and Performa 600 is only $199.95, with FPU ‘299’*. (48 adapter required for Mac Iicx or Ii.) The Presto 040 50/25 MHz for Mac LC, LCII, Color Classic, or Performa 250/400/405/410/430 is $149*. Adding a Presto card is the only way to run Mac OS 8 on ’030 Macs (LC & Iicx Mac OS 7). Run Mac II, Mac SE, SE/30, or Performa 400-430 twice as fast or more with a 33MHz ’030 Allegro starting at $69*. Sonnet Technologies, Inc.

DOUBLE YOUR QUADRA SPEED!

Plug QuadDoubler™040 100/50 MHz processor upgrade card into your Quadra, Centrois, or Workgroup Server 60 and double your speed for $249*. The Centrois 610 version runs at 80/40 MHz and is value priced at $149*. Compatible with Mac OS 8.1. All QuadDoubler include an FPU.

Sonnet Technologies, Inc.
18004 Sky Park Circle, Irvine, CA 92614
Tel: 714-261-2800 Fax: 714-261-2461
E-mail: sales@sonnettech.com

- 800-786-6260
- http://www.sonnettech.com

Visa, MasterCard, and American Express no surcharge. Government, corporate and education POs welcome. Sonnet products are covered by a three-year limited warranty. Prices are subject to change without notice. Returns require an authorization and are subject to a restocking fee. Sonnet, the Sonnet logotype, Allegro, Crescendo, Presto, QuadDoubler and the Simply Fast logotype are trademarks of Sonnet Technologies, Inc. Power PC is a trademark of International Business Machines Corporation. Mac LC compatible through System 7.1. Mac X compatible through System 7.5. Allegro ’030 cards support the maximum Mac OS version that Apple supports on the companion Macintosh. ©1998 Sonnet Technologies, Inc.
WE FIX UPS UNITS

We repair battery backup systems for a fraction of the cost of a new one:
- Battery replacement & complete repairs
- Blanket 12-month warranty
- Free full diagnosis & load testing
- Fast turnaround
- Multi-Unit discounts
UPS batteries last 3.5 years... Don't be left in the dark.

POSTCARDS!

1000
1000
11 Postcards Business Cards
$145 $60
Ready in 5-7 days!

Coastal Business Merges, Inc.
1-888-2FIX-UPS
www.cbm.com

MAC REPAIR & UPGRADE

24 HOUR SERVICE TURNAROUND • LONGER WARRANTY FREE DIAGNOSTIC • COMPETITIVE PRICE

* Specialize in component repairs:
  • Power Mac • Power Book • Logic boards
  • Advance Exchanges

DT & T
MACINTOSH SERVICES, INC.
800-622-7977
720 East Evelyn Ave., Sunnyvale, CA 94086 • Tel: 408-720-9899 • Fax: 408-720-9499
http://www.dmtservices.com

WHY IS THE COMPETITION SHAKING?

BECAUSE
1-800-4-MEMORY
IS HERE

WE CAN BEAT
ANY QUOTED PRICE ON ANY MEMORY FOR ANY COMPUTER (NOTEBOOK, DESKTOP, PRINTERS) ANYWHERE ...

PERIOD!

LIFETIME WARRANTY
FREE TECH SUPPORT
NO CREDIT CARD SURcharge
MOST ORDERS SHIPPED SAME DAY

CALL AROUND THEN CALL US

CHECK OUR WEB SITE FOR SPECIALS
WWW.18004MEMORY.COM

Data Recovery in hours.

LAZARUS DATA RECOVERY
Working at the speed of business.
800-341-DATA

PROFESSIONAL DATA RECOVERY SERVICES.

Hard Drives, Floppy Drives, Syquest, EZ-135, ZIP, JAZ, Optical & Bernoulli.

TOTAL RECALL
THE DATA RECOVERY COMPANY
800-743-0594
WWW.RECALLUSA.COM

FREE SHIPPPING CALL FOR DETAILS

Macworld

Memory & Upgrades

Repair • Printing • Data Recovery Services

MacTech Edit

INTERNATIONAL

Macintosh Repair, Sales & Upgrades

24 Hour Turnaround

Powerbook Specialists

Component Level Repair

Great Memory & Hard Drive prices

3337 El Camino Real
Palo Alto, CA 94306
Phone: 650.845.6400
Fax: 650.845.6411
www.mac techno.com

1-888-622-3493
WE GET TO THE CORE OF THE PROBLEM
WHOLESALE WATERLESS COLOR PRINTING
FROM YOUR COMPUTER FILES

1000 FULL COLOR BUSINESS CARDS FOR $100
1000 FULL COLOR POSTCARDS FOR $149

Printed waterless at 300 line screen from your computer files on Super Premium 10pt. Kromekote with our FREE scratch-resistant aqueous coating.

Stephen F. Sampalesi
Chairman-CEO

FEATURING 300 LINE SCREEN WATERLESS OFFSET PRINTING

4- COLOR WATERLESS SPECIAL
5,000 4x6 POSTCARDS
Printed 4-Color Process (4/1) from your files on 10 pt. Kromekote with FREE aqueous coating. Your choice of black or any one PMS color on back. Get 10,000 Postcards for only $1,099

Digital Imaging
Slides & Negatives $3.75
4x6 Chroma/News $3.00
Large Posters & Displays $4.50
Scanning: Hi & lo Res $4.50
Photo CD Scans & LVT Output $1.50
Short Run 1200 dpi Color Output $1.00
Quantity Prints, Slides, Overheads Show & Tell $199
212 840-2612 • 212-840-7953 (Fax)

Choose 411 at www.macworld.com/Getsite

Choose 418 at www.macworld.com/Getsite

Your requests for printing quotes to request@copycraft.com

1800 794 5594
CALL TODAY FOR A FREE COPY OF OUR NEW FULL COLOR CATALOG

Visit http://www.copycraft.com for more 4-Color Specials!

7 good reasons to choose DriveSavers:
1. We're the most trusted and respected data recovery specialists.
2. 24-hour, onsite, and weekend service available.
3. Proprietary techniques so advanced we retrieve data others might simply abandon.
4. Over 12 years of data recovery experience.
5. Certified to maintain most drive warranties.
7. All storage devices; Mac OS, DOS, Win95, WinNT, OS/2, UNIX, Sun, SGI, Novell.

COPYCRAFT
PRINTERS, INC.
4413 62nd Street • Lubbock, TX 79424 • FAX: 806.794.1305

Email your requests for printing quotes to request@copycraft.com

1.800.794.5594
CALL TODAY FOR A FREE COPY OF OUR NEW FULL COLOR CATALOG

Modern Postcard
"I always look at the entire Macworld Shopper section to see what is available. I also like to check the prices of all the different products."
—Owner, Computer Consultants

Visit DriveSavers at: www.drivesavers.com

Choose 415 at www.macworld.com/Getsite

FULL COLOR PROMO CARDS
$95
500 copies

Choose 418 at www.macworld.com/Getsite
DUPLICATION POWERHOUSE SPECIALS!

CD-R MEDIA

AMC only offers the best in CD-R media. We stock large quantities of Mitsui, TDK and AMC media in gold, silver and printable surface - we have what you need for less!

- AMC Blank (no logo) 50-pk w/jewel case .............. $69.99
- Mitsui-Gold 25-pk w/jewel case ..................... $49.99
- Mitsui-Gold 100-pc spindle ......................... $159.99
- TDK Silver 150-pc spindle ......................... $239.99

Check our website for other types, quantities & specials!

CD-R RECORDERS

- AMC 4x8 Recorder .............................................. $199.99
- Yamaha 4x2x8 CD-FW ......................................... $149.99
- Matsushita 4x8 Recorder ...................... $799.99
- Yamaha 4x2x6 Rewritable ...................... $849.99

AMC 2-HI COMBINATIONS

AMC's 2-Hi's combine a CD-Recorder & 1GB Jazz or 1.5 GB Syjet Drive for the ultimate CD Master Station! Software available for Mac or PC's.

- AMC 4x8 Recorder .............................................. $199.99
- Yamaha 4x2x8 CD-FW ......................................... $149.99
- Matsushita 4x8 Recorder ...................... $799.99
- Yamaha 4x2x6 Rewritable ...................... $849.99

CD-5900 8 CD Duplicator

The CD-5900 will duplicate up to 24 650mb CD-R's per hour, and can duplicate up to 32 CD's simultaneously with add-on tower units. That's almost 100 CD's per hour! Call for all of the details on this low-priced powerhouse from MediaFORM and AMC.

Starting at: $3,799.

Buy NOW and receive up to 100 blank CD-R's FREE!*

*Offer good only on select MediaFORM CD-ROM Duplicators. Call for details.

MEDIAFORM CD-2701

Simplify your CD-R production. The CD-2701 delivers both simple operation and unattended duplication of up to 50 CD-Rs. Spindle based operations eliminates any handling by you or production staff.

Starting at: $4,999.

CD-4004 (1-4) CD Duplicator ................. $2,399.
CD-6300 (1-4) CD Duplicator ................. $3,095.
CD-2601 36 CD Duplicator ................. new lower price $4,199.

CALL FOR OUR FREE CATALOG TODAY!

Or request one online at: www.mwm.amc-direct.com/catalog
Register to WIN...

When you visit Macworld Online, the ultimate Macintosh buyer's guide, just register and become eligible to win FREE professional Mac hardware and software from APPLE, MACSOFT, or NETOBJECTS!

Macworld Online
Introducing a NEW Service to Macworld Readers...

Macworld's NEW ONLINE Reader Service

www.macworld.com/getinfo

Introducing Get Info. Now you can get information on all the products and services you see in Macworld. Only get it faster. Simpler. Better. Now. All you have to do is visit one Web site:

www.macworld.com/getinfo

That's it. You can have the information delivered to you by e-mail, postal mail or even telephone. Or you can click on a link that will take you straight to the vendor's Web site in one easy step.

Software Therapy

AT $150 AN HOUR, CAN ANYONE CURE MICROSOFT GUILT?

I've got a serious problem. Doc, you've got to help me!

"What seems to be the trouble?"

"I hate Microsoft!"

"Congratulations—you're normal. Next patient!"

"No, wait. You don't understand!"

"Feet off the rug, please. What don't I understand?"

"I hate the way Microsoft destroys innovative start-up companies. Its business tactics are reprehensible. And when Bill Gates comes on TV in that fake sweater and pretends he's benevolent, I get physically ill."

"Listen, I've got real patients with real problems, so if you'll just—"

"I have a real problem, dammit!"

"Ooh! Well! Other than a touchy streak eight lanes wide, what is it?"

"I'm starting to like Microsoft software.... Hey, Doc, what are you doing with that syringe?"

"I think I've finally found my breakthrough case to present at the Software Therapy Expo. Mind if I run a few tests?"

"Get away from me with that thing!"

"It's Word 98. I've fallen in love with Word 98: the speed, the sound effects, even the little tool bars...."

"Don't tell me: you even drew little tiny pictures for all your buttons."

"Doesn't everyone?"

"You know, there are some very fine assisted-living communities in this area—"

"And then there's Max."

"Max?"

"The little animated Mac in the Help window. When you haven't typed anything for a while, he starts getting punchy. The other night, he started dismantling himself like a Rubik's Cube. I started worrying: 'Oh my God. I'm boring him.' And then—"

"I'm afraid to ask."

"I had to take a phone call. Max got so bored that he heaved a big sigh and keeled over. There was this sound like machinery shutting down...."

"This is a problem?"

"Don't you get it? I killed him!"

"You what?"

"I bored him to death. I should have kept writing! I should have looked up a Help topic! I could have saved him!"

"Have a tissue."

"Thanks...."

"Feet off the rug, please."

"But it's not just Word 98, you know. For years, I'd been using Netscape Navigator, just like we anti-Microsoft Mac users are supposed to. And it kept unexpectedly quitting. And for the longest time, I thought it was my fault. But then I was at my twelve-step meeting—"

"Which is..."

"AOLaholics Anonymous...."

"I should have known."

"... and everyone started standing up and saying, 'Netscape locks up on me, too!' It suddenly hit me: hey, I'm an empowered individual. I can switch!"

"So you tried Microsoft Internet Explorer?...."

"And let me tell you, Doc, my life changed. It's got a menu of dates—with submenus listing sites you visited each day. No more, 'What was that site I visited last Tuesday? It autocompletes URLs for you. It lets you turn off animated GIFs—talk about restoring sanity, Doc! And it's fast, and it never crashes—"

"You're using Explorer 4.0?"

"Please! I'm just troubled, Doc, not certifiable."

"Forgive me."

"I'm running 4.01. Anyway, I just started thinking: 'You know? For the first time, Microsoft has started putting in features I can actually use!'"

"It must have been an accident."

"So then I had to buy some plane tickets. Do you know that on Microsoft's travel-agency Web site, Expedia.com, you can actually pick the seats you want by clicking on an airplane seating chart?"

"I can scarcely contain myself."

"I don't know what to do; I hate Microsoft, but I'm kind of loving its software."

"I think I know what your problem is. You've got Microsoft Guilt."

"Microsoft Guilt? Jeez, I don't remember that one. Did it come in the Value Pack folder?"

"It's not software, you fool. It's a syndrome!"

"Oh my God! Is it bad?"

"It's sweeping the nation."

"Is it treatable?"

"But I'm afraid we're out of time."

"No, wait! Just tell me! Am I doomed? Tell me; I can take it! I've got to know!"

"See you next week."

DAVID POGUE (www.davidpogue.com) is the 1997 Computer Press Association award winner for best columnist.
America Demands Digital Color For Everyone

Affordable Digital Color. For Every Company. Every Department.

From $11,500
Afiicio Color
A complete range of digital solutions

Brilliant digital color every office can afford. Spectacular presentations every time. Experience the productivity of smart digital features for thousands less. Ask for a demo of the most affordable, fully featured, fully connectable digital color systems in the U.S.

For more details, call 800 63 RICOH. Online www.ricoh-usa.com

Choose 4 at www.macworld.com/getinfo
Hey, we know the places you can buy Macs and Mac stuff aren't exactly popping up like Starbucks these days. But we've got you covered. With high performance accessories like our TurboMouse and Orbit trackballs, easy-to-use Mouse-in-a-Box, and 2- and 4-button mice. And now there's our hot new Keyboard-in-a-Box. You see, we've been making Apple products since 1981. And we're going to keep right on making them, until the Feds shut down Microsoft and Apple regains its rightful place as the king, the sovereign monarch, the mighty potentate of the cyberuniverse. Until then, check out the Maccessories at www.kensington.com.

Choose 1 at www.macworld.com/getinfo