EXCLUSIVE LAB TEST

300 MHz!

Cheaper, Faster, More Options—Apple Build-to-Order Delivers the Fastest G3 Macs Yet, p. 63

ALSO

Web Publisher’s Essential Tool Kit, p. 68
If you wrestle with color professionally, get a match with the Blue Hood.

Introducing the La Cie Electron21,” the monitor with the color-enhancing Blue Hood.

Circle 52 on reader service card
Features

Cover Story
63 The Build-to-Order Dilemma
BY ALLYSON RATES Apple's new 300MHz Power Macintosh G3 is really fast, but can you fit all your options in the box?

68 The Web Publisher's Essential Tool Kit
BY TONYA ENGST There's no one right solution for all Web publishers, but our expert uncovers the best solution for every need.

LAB TEST
81 Java Finally Delivers
BY STEPHAN SOMOGYI AND JASON SNELL Mac Java is so improved that it now beats its Windows counterpart.

LAB TEST
85 Monitors That Show It All
BY SCHOLLE SAWYER Nineteen-inch monitors are now affordable. Macworld picks the best one to expand your screen.

Create

Print
105 10 Menacing Font Foibles
BY KATHLEEN TINKEL Whether you're working with other Macs or with PCs, we show you how to relieve the most-frustrating font-related headaches.

Web
108 Tile Your Site
BY LYNDAL WEINMAN Creating seamless tile patterns for your Web page can be a nightmare. Macworld shows you how to create tiles and sleep easy.

Motion
111 The Black Art of Bluescreening
BY JIM HEID You too can create Hollywood-like scenes with Adobe Premiere and After Effects, if you follow our expert's advice.
Reviews

30 •••• Virex 5.8.1; •• VirusScan 3.0
Virus-protection software compared

32 •••• Claris Home Page 3.0
Web authoring tool

34 ••••• Elastic Reality 3.1
Morphing software

36 •••• Visual Café for Java 2.0
Java programming tool

38 •••• DNews 4.4;
•• NewsRunner 1.0;
•••• Newstand Pro 1.0;
•• RumorMill 1.1
Usenet news servers compared

41 •••• Internet Explorer 4.0
Web browser

43 •••• SiteWarrior 1.1
Web-site-management tool

45 •••• Final Effects Complete
After Effects plug-in suite

46 •••• StuffIt Deluxe 4.5.1
Compression utility

46 •••• EtherPeek 3.5
Network-traffic and -protocol analyzer

48 •••• VideoShop 4.0.1/3D
Video-editing software

48 •••• Surf Express
Web acceleration utility

50 •••• QX-Effects 3.0
QuarkXPress plug-in package

50 •••• Hard Disk Toolkit 2.5
Hard-disk formatter

52 •••• Test Strip 2.02
Color-correction plug-in

52 •••• LANsurveyor 4.0
Network-management software

54 •••• Entable 1.02
Table editor for QuarkXPress

54 •••• Noesys 1.1.2
Data-analysis tool

56 •••• Moviok
Interactive cinema game

58 •••• Deadlock
Simulation game

Opinion

15 Letters

19 The Vision Thing
BY ANDREW GORE
The death of the Newton.

170 The Desktop Critic
BY DAVID POGUE
Join in on our seasonal Easter egg hunt.

10 How to Contact Macworld

Secrets

95 New Answers to an Old Question
BY TED LANDAU
Did you start your day with a blinking question mark? Macworld finds solutions to start-up problems.

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

News

22 Mac Vendors Ponder Netscape Gambit
Software developers are intrigued by Netscape’s surprise decision to give away browser source code.

23 The Proof Is in the Ink-Jet
Epson takes on the color-proofing market with a $10,000 ink-jet printer that features a stand-alone EFI Fiery color server.

24 Pretenders to the Throne
New page-layout programs challenge the dominance of QuarkXPress and Adobe PageMaker.

26 New Releases Strengthen Painter Brand
MetaCreations offers new graphics packages with no-frills natural media and enhanced 3-D painting.

ON THE COVER
Photograph by Mark Johann

Slice through Web publishing problems with our top options, page 68.

Work different.

From: New Microsoft Office 98 Macintosh Edition
Sent: Tuesday, 5:15 p.m.
To: PowerMac users
Subject: It's finally here.

We started from scratch. We threw away all the old stuff. We created an entire division dedicated to the Macintosh and assigned them to build a totally new Microsoft Office for the Macintosh. One that takes full advantage of the Mac OS. One that looks and acts the way you expect it to. So you can move from application to application—from e-mail, to word processing, to the spreadsheet and so on—without ever feeling like you've suddenly entered some kind of bizarre foreign territory. In other words, you're working your Mac like a Mac. You work the way you want to work. And that makes all the difference. New Microsoft Office 98 Macintosh Edition—check it out at www.microsoft.com/macoffice/now.
Mac OS 8.1 uses the first new file system since 1986. HFS+ is faster, dramatically expands your hard disk space, and increases the efficiency and reliability of your entire system.

But you can't update a hard disk to HFS+ without a backup. Use our award-winning backup software, Retrospect, so you can confidently erase your hard disk, reformat it with HFS+, and restore all your files. Same as it was, but better.

To upgrade to Mac OS 8.1, follow these steps:

1) **Get Mac OS 8.1.**

2) **Get backup software you can trust.**
   Retrospect 4.0 is the most recommended backup software available. DantzLab has verified its full compatibility with Mac OS 8.1.

3) **Before installing Mac OS 8.1, back up your hard disk.**
   Retrospect will back up your hard disk to whatever storage device you have—Zip, Jaz, SyQuest, CD-R, tape, even another hard disk. If you don't have a backup drive, get one, not just for Mac OS 8.1, but to protect all your files, every day, from disk crashes, viruses, fire, theft, even operator error.

4) **Update your hard disk drivers.**
   Use Apple's or contact the manufacturer of your hard disk driver software for the latest version.

5) **Install Mac OS 8.1.**

6) **Restore your files.**
   With Retrospect, just click "Restore" and that's it!

**To order Retrospect, call:**

MacConnection—1.800.800.2222
MacWarehouse—1.800.255.6227
MacZone—1.800.248.0800
MacMall—1.800.222.2808

©1998 Retrospect Systems Corporation. Macworld® is a registered trademark of Apple Computer, Inc.
Work different.
(By this time tomorrow.)

Get your copy of
Microsoft® Office 98
Macintosh® Edition
delivered overnight.

Call The MacZone at
(800) 706-9884 Dept. MOPUB.
Or visit www.zones.com/office98/

Orders received before 12:00 midnight EST any weekday (holidays excluded) can be delivered the next business day. So get your copy of Microsoft Office 98 Macintosh Edition now.
Did you get your zip?

Available Now!

VST Zip™ 100 Drive for your:
G3, 3400, 1400 and 190/5300 Series PowerBooks®

Available At:

MacMall 1-800-222-2808

ClubMac 1-800-255-6227

Micro Center 800-998-0040

MacWareHouse 1-800-255-6227

Questions? Call VST (978) 263-9700

1omega

Presidents and CEO
Colin Crawford

Assistants to the CEO
Sharon Stauder

Chief Financial Officer
Stephen Daniels

Business Manager
Eos deFennis

Accounting Coordinator
Ronda Bitter

Vice President of Human Resources
Shelly Ginsenthal

Employee Relations Manager
Marisa Chow

Macworld is a publication of Mac Publishing, L.L.C.

Display Advertising Sales

Vice President, Sales & Publisher
Matt Sweeney

National Sales Director
Steve Plein (415/978-3113)

Sales Marketing Coordinator
Nancy Galantry (415/978-3124)

Western Advertising Director
Karl Ellen (415/978-3155)

Account Executive
Christine Wong (415/978-3192)

National Accounts Manager
Liz Pabón (415/978-3257)

Account Executive
Jessica Ross (415/267-1799)

Administrative Assistant
Josie Waldman (415/978-3609)

National Accounts Manager
Sara Callery (970/327-4499)

Account Executive
Margaret LeVell Green (415/267-4577)

Eastern Advertising Director
Cynthia Ramsey (617/243-1187)

National Accounts Manager
Paul Bonarrigo (508/513-4020)

Account Executive
Jo Zetterelli (516/277-4134)

Research

Senior Research Analyst
Phillip Hibbert

Marketing

Vice President, Marketing
Vickie Welch

Senior Trade Show and Events Manager
Anna Noczel

Creative Services Manager
Kelvin Gee

Production

Vice President of Manufacturing
Anne Foley

Production Director
Cynthia Neustadt

Assistant Production Manager
David W. McAlary

Manufacturing Technical Director
Clayton Halberman

Digital Ad Coordinator
Brian Mullen

Mark Van Stolk

AD Sales Coordinator
Rick Sandowal

Online

Publisher
Jeff Julian

National Accounts Manager
Ed Ramirez

Accounts Manager
Nicholas Harvey

Media Coordinator
Jami Johnson
From the makers of TwinTurbo® come the powerful, perfectly balanced graphics board solutions you've been hoping for. ix3D boards eliminate those long, gut-wrenching moments spent waiting for your computer to execute the 2D, 3D and video functions on which your creativity depends. ix3D boards are powered by IXMICRO's new TwinTurbo 128-3D for raw graphics power you never thought possible. Look for us at your favorite retailer, or check out our Web site for more details. And stop stressing.

**what you do:**
- redraw, stress
- scroll, stress
- render, stress
- rasterize, stress
- model, stress
- filter, stress . . .

**what we do:**
- make all of the above happen faster than you've ever dreamed.
  (without the stress)

ix3D Ultimate Rez
for graphics experts advanced to drive today's largest monitors at extreme resolutions and color depths - while maintaining fast, ergonomic refresh rates. Ideal for 2D, 3D graphics and CAD applications like Adobe Photoshop, Quark Express, Lightwave 3D, and Macintosh.

ix3D Pro Rez
optimizes the performance and value for users who need uncompromising graphics power and who routinely operate 17-19" monitors at moderate resolutions like 1152 x 870. Video upgrade available.

ix3D Mac Rocket
provides home and often users with a boost of pure 128-bit 3D and 3D graphics power, adding speed and performance to all common operations. Video upgrade available.
Juice Up Your Mac With Windows Compatibility!

Squeeze OrangePC into Your Apple!

Our newest Windows® compatibility card, the OrangePC® 550, when armed with the AMD-K6™ or Intel® Pentium 233 MMX™, provides the highest performance solution on the market. To demonstrate the phenomenal power of real hardware-based Windows® compatibility, the OrangePC was benchmarked against a software emulation competitor. Using the Ziff-Davis Business Winstone benchmark running on a Power Macintosh G3, OrangePC ran 7 times faster. 700% more performance, now that’s some serious juice!

The new OrangePC 550 has a stunning set of exclusive features including accelerated 3D video, 3D wavetable sound, 512 KB L2 cache, and 4 MB of video SGRAM – all leading edge stuff!

And the OrangePC’s software application has made quantum strides as well. It sports 32-bit drivers facilitating CD-ROM long file names and NDIS3 networking. Our exclusive SnapShot™ feature allows a Windows® screen to show the Mac environment and the Mac screen to display the Windows® environment in a Mac window. It’s like a “picture in picture” on your TV!

Now available from:

Orange Micro, Inc.
"18 Years of Innovation and Excellence"
1400 N. Lakeview Ave., Anaheim, CA 92807
(714) 779-2772 www.orangemicro.com

© Orange Micro, Inc., 1998

Circle 33 on reader service card
$299 external drive
1 gig Jaz* cartridges for as low as $89.95.

Each cartridge has a huge
one gigabyte capacity

1-Step™ backup software protects
as much as 2 gigs (compressed!)

Access time
15.5ms read/17.5ms write

Average seek time
10ms read/12ms write

Maximum sustained transfer rate
6.62MB/sec. max

---

Clement Mok
Information Architect
Studio Archetype, Inc.

Clement Mok is an idea guy. As creator of award-winning
corporate identities and design solutions for companies like
Microsoft, Twentieth Century Fox, Herman Miller, as well as
Apple Computer, ideas are the capital of his three companies.
Whether he's creating a cyber theme park, compiling tons of
stock photos, or designing the elaborate kingdom of Valhalla for
the local opera, his ideas need space. Big space. Which is what
he gets with the high-capacity Jaz* drive.

So while his office resides in San Francisco's warehouse
district, his ideas reside on handy, removable Jaz disks. Check
out more of Clement's story at www.4inchsquare.com/mwd.

---

The high-performance standard in removable storage
with one million Jaz 1GB drives already out there.
$649 external drive
2 gig Jaz cartridges for as low as $149.

Each cartridge has two monster gigabytes of capacity.
2GB is read/write compatible with 1GB.
1-Step™ backup software can protect up to 4 gigs (compressed).

Access time
15.5ms read/17.5ms write

Average seek time
10ms read/12ms write

Maximum sustained transfer rate
8.7MB/sec. max

For information about connecting your Jaz drive to a Mac or PC, see your reseller or visit us at: www.iomega.com
Turn off the lights!

It's SHOW time!

SHOW offers you an easy way to add dazzling transitions, animated text effects and audio clips to your digital photos to create slide shows with pizzazz.

Kai's Power

Show

Home Photo and Business Presentation Player

- Creates great slide shows fast!
- Works great with digital cameras and scanners!
- Adds instant special effect transitions!

MetaCreations
The Visual Computing Software Company
800.846.0111
www.metacreations.com
Circle 5 on reader service card

©1998 MetaCreations Corp. All rights reserved. MetaCreations and the MetaCreations logo are trademarks of MetaCreations Corp. Kai's Power SHOW is a trademark of MetaCreations Corp.
Gadget Grumbles

HOW COULD YOU BLATANTLY MISLEAD prospective magazine buyers on your February cover? Most of the gadgets in "Gadgets!" had nothing whatsoever to do with the Macintosh—or any computer for that matter (February 1998). The cover was enticing because it suggested that there were gadgets that would interface with a Mac. While some of the ones covered in your article did (cameras, monitor, scanner), many didn’t (cordless phones, voice recorder, speakerphone). You disappointed me big-time.

GERALD A. RISKIN
via Macworld Online

Most Macintosh fans we know have a fascination with cool gadgets (we certainly do!), whether or not they interface with a Mac—although about two-thirds of the products we included do. We rounded up the tech toys our readers would appreciate most, based on the high standards for design and function we Mac users share. C’mon, didn’t anything tempt you?—Ed.

I THINK YOU MISSED A VERY COOL gadget in your “Gadgets!” article (February 1998): a transportable satellite telephone. It works anywhere in the world. You can forget about modems, phone lines, and local numbers to ISPs when you’re traveling. All you have to do is plug your PowerBook or Newton into the satellite phone, and you’re online. Of course, connection speed is slow and you have to be in direct line of sight to a satellite, but still, you have to admit that this is a cool gadget. And it’s only around $6,000.

BRUCE MCLAUGHLIN
Berkeley, California

NT Inclusion . . . or Intrusion?

AFTER READING ANDREW GORE’S “The Relevance Engine,” I was as shocked as the next Mac fanatic when I realized that Microsoft’s NT OS is going to be a continuing topic in Macworld (The Vision Thing, February 1998). I almost spilled my coffee as the notion of such a foe’s intrusion into my trusted, favorite Mac magazine sunk in.

But when I thought about it, it started making sense. After all, in my SOHO workday environment of mixed-platform computing, where we use the Mac OS and Windows 95 connected through an NT server, this information might be useful. The outside firm that does most of the work with the NT server has little understanding of Macs (which make up the majority of computers in the office).

In the past month, I’ve spent countless hours trying to set up a RAS connection from a Mac to the NT server for e-mail, TCP/IP network access, and so on. It has been frustrating, to say the least. The article “Macs and NT: Allies or Adversaries?” (News, February 1998) gave me the information that Apple tech people didn’t know and Microsoft wouldn’t answer without a $190 tech-support package.

Since I’m in charge of Mac administration in the office, I’m looking forward to knowing something about cross-platform compatibility and everyday issues that affect NT server relations with Macs. I hope your continuing coverage of the NT OS as it relates to Macs includes many business situations, not just graphics-related topics. Who knows, maybe this article will be of some relevance after all.

BEN KAUFFMAN
New Holland, Pennsylvania

I READ ANDREW GORE’S COLUMN, and I assure you that I have plenty of sources for information about Windows NT, and Macworld is one place where I have no interest whatsoever in reading about it. It is irrelevant, irrelevant, irrelevant. Windows NT synergizes with the Mac about as much as the whale synergized with Jonah.

I am surprised by your remarks implying that this is in response to e-mail and reader feedback. I do not recall your ever asking readers if they wanted more NT coverage, and I suspect that you are misreading the e-mail you’ve received or are selectively reading it to support a position you have already adopted.

DANIEL P. B. SMITH
Norwood, Massachusetts

KUDOS TO MACWORLD FOR ITS news story on Mac integration for NT. As a support provider and network administrator in a large enterprise increasingly unfriendly to providing

www.macworld.com May 1998 15
The Emblenze WebCharger review (March 1998) was rewritten by David Biedny and Nathan Moody.

We incorrectly described Vicom Technology’s features when referring to Vicom SoftRouter 4.0 (“The Mac’s Brightest Stars,” March 1998). SoftRouter is a remote-access server solution.

Mac-based services (a wealthy institution of higher learning, no less), I have been dismayed by the lack of coverage of Macintosh integration into NT and NetWare environments.

Macworld might help the Mac flourish if it were to provide more information on the availability of cross-platform products and were to give information about Macintosh access to non-Macintosh network services. It’s a shame that I couldn’t find anything of use from the Mac press when recently purchasing an Intel-based server. It would have been nice to hear what works and doesn’t work with Novell’s Macintosh NetWare Client 5.11 and NT Server’s Services for Macintosh from someone other than Novell and Microsoft. The Mac will disappear from enterprise environments if local support and network administrators don’t have the sort of information provided in this ground-breaking piece.

Bayard Bell
Atlanta, Georgia

I think your idea of publishing more material about integrating Macs into non-Mac environments is excellent. Unfortunately, you seem to have been enslaved into the service of the Microsoft hype/misinformation campaign. PCs, particularly PCs in large organizations, are not just NT. Despite the garbage from Redmond, most PC servers out there are Novell, and a large number of them are Unix and even VMS.

The facilities for supporting Macs were downgraded in NT 4 when compared with NT 3.51. It is not, and never has been, Microsoft’s real intention to properly support interoperability with any other operating system. Lip service is paid to other operating systems for marketing purposes.

Twelve months ago I too believed the hype, but since then I have acquired considerable experience in using NT with both PC and Mac clients. It stinks. Furthermore, NT 4 was a significant downgrade that reduced reliability and useful features in favor of marketing objectives.

Bill Northcott
via Macworld Online

Paying for It

It’s surprising to me that Apple now won’t let users speak with a technician about a hardware problem without the user giving out a credit-card number. I found this out recently when the CD-ROM drive on my Power Mac 9600/233 began failing to recognize a CD that played readily on my 8600. Since I was within my one-year hardware warranty, I called Apple to find out how to proceed and discovered that I would have to provide a credit-card number in order to speak to a technician.

“Mike,” a level-2 customer-relations agent, told me that loyal Apple users are always very pleased to provide Apple with their credit-card numbers. Apple wants to be sure that it can charge customers if hardware issues turn out to actually be software issues. In this way, it makes sure to never let a customer get inadvertent software support without paying—but I worry that the company will simply be alienating its customer base.

Kurt Krause
Houston, Texas

I cannot understand how people expect so much from a computer manufacturer. Apple is a business, and businesses must lay people off, reorganize, and change their services to stay profitable. Give the company a break, and be glad you don’t have an autoexec.bat file to call tech support about.

Dee Golden
Austin, Texas

Handkerng for NCs

It’s possible to have network computers without abandoning the stand-alone computer, just as it’s possible to develop Rhapsody and continue development of Mac OS. I oversee Macs and graphics/prepress systems for newspapers in various parts of the country, all of them with internal client-server networks. I’m slated to replace editorial Macs in about 6 of our papers during the next 19 months. Averaging 10 workstations per newspaper, that’s about 60 computers. Let’s see, do I want to pay $2,000 per workstation for glorified typewriters (remember, these are in the news department, not graphics), or would I rather pay $800 per workstation? Hmmm.

There are roughly 7,500 newspapers in the United States alone, and at least 5,000 of those have a circulation of 50,000 or fewer readers. Chances are that those papers are using Macs for production. While the folks handling page-building and graphics at these papers need high-end machines, the reporters do not. They need to be able to type stories, move them across the network, check e-mail, and get on the Web. I can’t think of a better application for NCs, and I hope Apple has people working on them because I plan on buying them.

Lee Walls Jr.
Birmingham, Alabama

Letters should be sent to Letters, Macworld, 301 Howard St., 16th Fl., San Francisco, CA 94105; via fax, 415/421-0766; or electronically via CompuServe (70307,020), MCI Mail (294-8078), America Online (keyword Macworld), AppleLink (Macworld), or the Internet (letters@macworld.com). Include a return address and daytime phone number. Due to the high volume of mail received, we can’t respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of Macworld.
Get up to speed fast with the Canvas 5 Video Workshop Series (US$129 SRP each). Discover the many uses of Canvas 5 with guided, in-depth instruction.

Whether you're a graphic designer or a business communicator, you'll thrive with Canvas 5!

Corporations love Canvas because it's powerful and easy to use.

"My employees learn Canvas first because it does so many things — I don't have to train them to use a bunch of programs."

-Alex Mann, multimedia producer, Mann Consulting

Illustrators and designers love Canvas for its precision and flexibility.

"Canvas is ideal for composing graphics, text and images in one program, especially for manipulating medical drawings and photographs."

-Jamie Simon, senior illustrator, Salk Institute for Biological Studies

Small businesses love Canvas because it streamlines workflow and ramps up productivity.

"I used to work with four graphics programs. Now I use Canvas. It synthesizes everything in one package."

-Bradley Touchstone, architect, Eliot, Marshall and Innes, Inc.

CALL 800.6CANVAS

Get your hands on a free, 30-day trial copy of Canvas 5. Call 800.622-6827 (305.596.5644) or visit our web site at www.deneba.com/macworld/ And if you're already convinced you can't survive without it, visit CompUSA or your favorite reseller today.

This ad was created using nothing but Canvas 5. Try that with any other single graphics program.

© Copyright 1998 Deneba Software. All other trademarks are the property of their respective owners. Limited time offer valid only in North America.
MiniCAD 7
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 to extensive materials lists and cost estimates. As always, MiniCAD 7 offers the same core features that have made it the program of choice for design professionals in more than 80 countries—multi-decimal accuracy for precise drafting, a built-in database/spreadsheet to track costs and materials, an extensive library of industry-specific symbols, cross-platform compatibility (Mac and Windows), and a macro programming language for automating complex and routine tasks.

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 Hatching
- Automatic Wall Joining
- Next-Generation SmartCursor
- Precise Sun Positioning
- Expression Evaluation Inside Textboxes
- Automated Databases/Spreadsheets
- Multi-Decimal Dimensioning
- Rotatable Grid and Customizable Coordinate System
- Plus Dozens of Performance and Interface Enhancements

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.diehlgraphsoft.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!

MiniCAD 7—The only thing small is the price.

Circle 46 on reader service card
MiniCAD is a trademark of Diehl Graphsoft, Inc. All other brands and product names are trademarks of their respective holders.
The Vision Thing

by Andrew Gore

Feet of Clay

THE NEWTON'S DEATH SHOULD BE A LESSON FOR APPLE

IN THE LONG HISTORY OF Apple's blunders, the death of the Newton may qualify only as a footnote. But it's a footnote that speaks volumes about what is at the core of Apple's troubles.

As a coauthor of Newton's Law, a guidebook to the first Newton, I was fortunate to be a firsthand witness to the Newton's life, even before the MessagePad was introduced to the world in August 1993.

So it's with some perspective that I say the failure of the Newton can in no way be attributed to the acumen of the product's designers, who were one of the most creative teams of programmers and engineers I've ever known. No, the responsibility for the Newton's untimely demise must be laid at the feet of Apple executives, who simply didn't get it.

Ignoble Birth

No one will ever forget what an absolute, bone-shattering disaster the launch of the original Newton was: the details of its poor handwriting recognition and other failings have been immortalized in popular culture.

That first MessagePad was literally half-baked, a product that should have stayed in Apple's development oven for at least another six months. Many of the Newton engineers begged Apple not to release the product until it was ready, but Apple was terrified that some other PDA (personal digital assistant) would steal the Newton's thunder, and chose to release a product that wasn't finished.

As it turned out, none of those first-generation PDAs caught on and Apple easily could have waited another year to release the Newton. Apple let itself be motivated by fear, and fear is the worst emotion on which to base a decision.

Although the first MessagePad was deeply flawed and completely overhyped, that didn't mean the Newton was dead in the water. After all, the first two versions of Windows were hardly barn burners, but Microsoft kept at it, chipping away at the product's flaws until customers finally started buying it.

If Apple had followed a similar course, it would be the Newton's OS, not the PalmPilot's, giving Windows CE fits. Think about it: would any of us have guessed that U.S. Robotics would be the one company to design an OS that would kick Microsoft's butt in the marketplace?

Think Small

Apple started on the right track. Rather than abandoning the Newton and starting over, it continued to make refinements. Most recently, the impressively powerful Newton OS 2.0 stood as a release whose technology still trumps anything that Microsoft or U.S. Robotics have to offer.

But Apple never really recovered from that first failure. Long after users had forgiven the Newton's awkward birth, Apple managers obsessed about it. That's a shame, because despite the problems Apple's prelaunch hype created, all that excitement showed that people did want a small, inexpensive device for tracking personal information.

A lot of those people use PalmPilots now, but it didn't have to end up that way. Even today, the Newton's superior interface could grab a sizable portion of the PDA market, if only you could find a Newton that was the size of a PalmPilot.

Here we run up against Apple again. The Newton engineers realized that they had to get small, and over the last couple of years, they did come up with designs for pocket-size, inexpensive Newtons. But Apple was gun-shy, afraid that it couldn't compete with U.S. Robotics' momentum. Instead of trying to fight it out, Apple turned its attention to vertical markets.

Fear of Failure

What ultimately killed the Newton was fear. Apple was afraid of taking a risk, even though risk was the only thing that could have saved the Newton.

At Apple, it takes a hundred people to come up with a good idea but only one to kill it. Unless Apple can start encouraging intelligent risk taking, the company will be doomed to repeat the error it made with the Newton.

I'll admit it: I'm in mourning. Not just for the Newton but for all the great ideas Apple has had that now may never see the light of day. I'm talking not just about ideas for the Newton—I'm talking also about brilliant ideas to improve and extend the Mac.

I can only hope that Apple has finally learned that you can't succeed if you don't take chances. May the Newton be the last of Apple's good ideas to meet an untimely end simply because its creator had feet of clay.

Send messages of condolence to visionthing@macworld.com. In lieu of flowers, please send donations to the Museum of Dead Apple Technologies—we hear it's looking to expand.

www.macworld.com May 1998 19
Internet audio
Can a modem hurl you into the center of a mosh pit? In a word, no. But with near CD-quality audio and smoother-streaming video, the new V.90 U.S. Robotics® 56K* standard modem, comes closer than ever before. It connects up to 80% faster than other 28.8 modem brands. And it's compatible with nine of the top ten Internet providers and over 1,400 more around the globe. No wonder U.S. Robotics is the world's best-selling modem.

To learn more, contact a U.S. Robotics reseller or visit www.3com.com/56k.
When Netscape announced its plan to release the source code for its Communicator suite of Internet-access clients, you could almost hear the computer industry's collective gasp. For most software developers, the source code—the commands that make a program work—represents their most valuable and protected asset. But Netscape, fighting a do-or-die battle with Microsoft over Internet dominance, decided in January to follow its rival's lead in giving away its browser. By releasing the source code along with the Communicator software, Netscape hopes to enlist hordes of programmers to create Communicator enhancements that it could not produce itself.

So what does this mean for Macintosh users? Should you prepare yourself for an onslaught of exotic new Web browsers? Mac developers say they are excited about the potential of Netscape's offer, and a few have offered hints about forthcoming products that might incorporate Netscape's browser technology. But they are also aware that the devil lies in the details, some of which Netscape is still working out.

**Murky Conditions**  
Netscape admits that it hasn't established the precise terms under which it will make the source code available. Developers can sell packages that incorporate Communicator source code, says Netscape Communicator product manager Todd Goldman, but the company hasn't decided what requirements developers will have to fulfill, such as making their improvements freely available to other programmers. Without that information, “we can't determine exactly what we would or wouldn't be able to do [with the software],” says Macromedia chief technology officer Norm Meyrowitz. As a result, he says, Macromedia will wait a couple of months
before deciding whether to follow Netscape's initiative.

Technical Obstacles Developers who want to use the Communicator source code also face a daunting technical task. Communicator is a huge, complicated beast: about 3 million lines of code developed over a span of four years. Developers who want to use the code will have to pick it apart by hand, learning its intricacies and interdependencies as they go.

"Netscape has given us something with very sharp knives exposed, instead of packaging it up neatly," says Roger Spreen, director of engineering for Adobe PageMill.

Nevertheless, he says, he is intrigued by the possibilities. "Theoretically, this is a great thing for Adobe," he says, citing the countless hours that the PageMill team spends figuring out how browsers render HTML. Adobe embedded Microsoft's Internet Explorer in PageMill 3.0 so that site developers could directly preview their HTML. Spreen says he'd like to do something similar with Netscape's browser code, but he'd prefer that someone else do the hard work of building an application-programming interface that makes it easier to develop Communicator-based products.

Better E-Mail? For some developers, Navigator—the browser component of Communicator—is the least-interesting portion of the software suite. Netscape's e-mail client uses IMAP and LDAP, new processing and directory protocols that most in the industry believe are the future of Internet e-mail but that aren't available from most Mincosh e-mail clients. "Some enterprising company could take [Netscape's e-mail] code and build a cool application on top of that," says Eric Zelenka, WebStar product...
from continuous-tone printers, but under a magnifying glass, you may notice minor banding and other artifacts that would not show up in an Iris print.

On the other hand, the Epson printer, with its 1,440-by-720-dpi resolution, produces sharper text and line art than the 300-dpi Iris printers. And given the $35,000 price difference, many users will no doubt overlook the Iris advantage in photographic output.

In addition to being used as a proofer, the Stylus Pro 5000 will likely be used by digital fine artists who might otherwise turn to the Iris printer. Expect the first models to show up in service bureaus, but given its low price tag, the Stylus Pro 5000 will eventually find its way into ad agencies, design studios, and corporate publishing environments.

**publishing**

### Pretenders to the Throne

**NEW PROGRAMS TAKE ON QUARKXPRESS AND ADOBE Pagemaker**

by Stephen Beale

QuarkXPress and, to a lesser extent, Adobe PageMaker have long dominated the market for professional page-layout software. But this hasn't kept a parade of developers from trying to compete with the desktop publishing titans. The latest to try is SoftLogik (314/305-7878, www.softlogik.com), a small developer of Commodore Amiga software that recently ported its PageStream page-layout program to the Mac.

**Bold Claims** On its Web site, SoftLogik boldly claims to have the best desktop publishing program on the market, and PageStream 3.3 (the first Mac release) certainly has a long list of features, including character style sheets and Bézier drawing tools. It also has one glaring omission—it can't directly import Microsoft Word files—and some of its features, such as 3,000 percent zoom, are of dubious value.

But even if these problems are addressed in a future software release, SoftLogik—and other Quark and Adobe challengers, such as Multi-Ad Services and Manhattan Graphics—face some huge, and likely insurmountable, obstacles before they can establish a beachhead among graphics professionals.

Most designers and publishers depend on other companies—service bureaus, trade shops, and commercial printers—to produce high-quality output from their files. These service providers have largely standardized on a few key applications—QuarkXPress, followed by PageMaker, Adobe Illustrator, and Macromedia FreeHand—that produce the bulk of the jobs coming into their shops. Most service bureaus have technicians who thoroughly understand these programs; they can easily identify and fix common (and sometimes uncommon) problems in the files submitted by customers.

This is a huge advantage, considering the mission-critical nature of publishing software. If you can't get your catalog, brochure, or magazine to print, you lose real money. So if your current page-layout package is working, you need a compelling reason to switch to a different one. None of the current challengers to Quark and Adobe has provided such a compelling reason.

**Plug-in Advantage** QuarkXPress has a second advantage that has given it a big lead over PageMaker and the lesser-known contenders: QuarkXTensions, the technology that allows developers to create programs that customize the page-layout software. Every publishing operation has its own peculiar needs, and QuarkXTensions can be used to transform QuarkXPress into a highly specialized program.

Quark's plug-in architecture is much more powerful than the add-on technologies in other graphics programs. Developers have almost unrestricted ability to integrate their XTensions with the QuarkXPress source code. Adobe PageMaker, by comparison, has a limited application-programming interface; several XTensions developers have said that it would be impossible to create PageMaker versions of their QuarkXPress add-ons.

Adobe Beckons Adobe apparently recognizes this. *MacWeek*, citing anonymous sources, has reported that Adobe is working on a new page-layout application, code-named K2, that will be built from the ground up to challenge QuarkXPress for the wallets of graphics professionals. The new program will reportedly feature a revamped...
Dream Machine.
Not The Bike. The Digital Color Copier.

A Digital Color Copier For Every Department. Every Company. $14,895.

Digital Color + Productive B & W
Converts to network printer-scanner
Unique optional embedded Fiery
Prints up to 11 X 17 format

Brilliant color every office can afford. Spectacular presentations every time. Experience the productivity of easy, smart digital features for thousands less.
Get a demo of your colorful future from the #1 maker of digital copiers in the USA. Call 800 63 RICOH.
Online www.ricoh-usa.com

Aticio Color™ 2003

RICOH
Image Communication
Circle 4 on reader service card
extensions architecture offering capabilities similar to those in X-Tensions. Adobe would not comment on the MacWeek report, but it should come as no surprise: QuarkXPress 4.0 is generally regarded as being superior to Adobe PageMaker 6.5, and the latter's share of the Mac page-layout market has been in slow, steady decline for the past few years.

Adobe is probably the only vendor with a realistic chance of seriously challenging Quark. As the developer of PostScript, Adobe has instant credibility with service-bureau pros; after all, one of the biggest fears is that an incoming job will cause a PostScript error. On the other hand, Adobe will have to recruit X-Tensions developers to port their add-ons to the K2 plug-in architecture, and that may not be easy. But it will be far easier for Adobe than it is for SoftLogik, Manhattan Graphics, and other Quark wannabes.

``New Releases Strengthen Painter Brand``

**Painter Classic gives you more natural-media brushes and fewer palettes.**

by Cathy Abes

Attemping to broaden and consolidate the Painter family of products, MetaCreations (805/566-6200, www.metacreations.com) is releasing a $100 streamlined version of Painter aimed at intermediate users, as well as a new, renamed version of its late traditional media. Classic will include image hoses, the seamless tiling of images, and an extensive library of brushes, but much of Painter's complexity has been stripped away. You won't see Painter's confusing floaters, nor will you be able to create brand-new brushes, although existing ones will still be customizable via sliders.

Classic's simpler interface won't have any hidden palettes. You'll be able to personalize your workspace by tearing off and creating custom palettes.

**Painter 3-Deified** Detailer has been improved and rechristened Painter 3D, both to strengthen the brand identity and to better reflect the program's purpose. It will include such Painter 5 features as dynamic floaters, customizable palettes, and plug-in brushes. New capabilities include map sharing, for applying one texture map to multiple 3-D objects; hierarchies, which allow you to paint just selected parts of a model; multiple-object management, which lets you group objects for texture mapping; and views, which allows you to view an object from any angle.

Due to ship by early April, Painter 3D is expected to sell for about $300. Upgrades from Painter Classic to Painter 5 will be $200.

continued from page 23

``MAC VENDORS PONDER NETSCAPE GAMBIT``

by Gordon Zachary, currently in Prague working as the senior manager for StarNine.

Small Fry The most exciting work on Communicator may come not from large, established companies but from independent Internet citizens who support a particular technology or platform. Just a few weeks after Netscape made its announcement, a gang of loosely organized programmers and non-programmers banded together with the goal of building a free version of Navigator for Apple's Rhapsody OS.

Says group cofounder Raven Zachary, currently in Prague working as the senior Internet analyst for Radio Free Europe/Radio Liberty, "We all intend to make Rhapsody our desktop operating system." He says he has no interest in developing browser refinements for the Mac OS but expects that other independent programmers will take on that task.

**Help from Mozilla Netscape** has established an in-house group called Mozilla, along with an associated Web site (www.mozilla.org), to assist developers who want to create browser variations. The source code for the forthcoming Communicator 5.0 was scheduled to be posted on the Mozilla Web site by March 31. Netscape will also distribute the source code on CD-ROM, possibly at a nominal charge.

Celebrating Apple T-Shirts

Macintosh users may be a tight-knit group, but not as tightly knit as the many T-shirts worn by Apple employees during the company's tumultuous 20-year history. Two years ago, software test engineer Gordon Thygeson began collecting photographs of these mementos, and the result is Apple T-Shirts: A Yearbook of History at Apple Computer, a 204-page coffee-table book featuring photos of more than 1,000 T-shirts given to company employees.

The T-shirts range from staid renditions of the Apple logo to more-outrageous sentiments. One reveals the true meaning of IBM: "I Build Macs." Another, parodying an infamous Mac error message, reads, "Sorry, the AppleSoft engineer 'unknown' has unexpectedly quit."

Thygeson offers the $40 book through his Web site. at www.Appletshirts.com.—STEPHEN BEALE
Introducing two of our most advanced business printers yet, the Elite XL 20/600™ and the Elite XL 20/800™. These business machines allow you to dramatically increase your business productivity.

With the Elite XL 20/600 and 20/800, most documents fly off the printer at an amazing 20 pages per minute, printing multiple copies faster than ever, eliminating unnecessary trips to the copier. The 20/600 and 20/800 also support up to 4 paper sources providing greater printing versatility than ever before. So whether you need 100 memos for the staff meeting in 5 minutes or five 13" x 20" charts for your board presentation, these Elite XL printers will get the job done — and fast.

Purchasing printers direct from GCC provides you with the most affordable prices and unmatched product reliability. Every printer purchased direct is backed by our exclusive Platinum Exchange™ Program, a service designed to provide on-going GCC customer support to keep you continually up and running.

So buy better. Buy faster. Buy direct from GCC.

**Elite XL 20/800**
- New
- 800 x 800 dpi resolution
- 20 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum print area: 13" x 20"
- Ledger, letter, legal, A3, A4, envelope
- 500 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 285 PostScript fonts, 15 PCL fonts
- 24 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 Base T, AAUI), Netware®, LocalTalk®, RS422
- 2nd or 3rd Paper Feeder* Add $299
- Extra 8 MB memory Add $49
- Platinum Exchange Warranty Program:
  - Additional year Add $259
  - Two additional years Add $390
  - Three additional years Add $554

$2599
Business Lease: $59 Month/36 month lease

**Elite XL 20/600**
- New
- 600 x 600 dpi resolution
- 20 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum print area: 13" x 20"
- Ledger, letter, legal, A3, A4, envelope
- 500 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 285 PostScript fonts, 15 PCL fonts
- 16 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 Base T, AAUI), Netware®, LocalTalk®, RS422
- 2nd or 3rd Paper Feeder* Add $299
- Extra 8 MB memory Add $49
- Platinum Exchange Warranty Program:
  - Additional year Add $219
  - Two additional years Add $330
  - Three additional years Add $468

$2199
Business Lease: $76 Month/36 month lease

*The Elite 20/600 and Elite 20/800 supports two additional paper feeders.
Elite 12/600

- 600 x 600 dpi resolution
- 12 pages per minute
- 1 year Platinum Exchange Warranty
- Letter, legal, A4, envelope
- 250 sheet Universal Tray
- 80 PostScript fonts, 15 PCL fonts
- 8 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet (10 Base T)
- Bi-directional Parallel, LocalTalk®, RS422

Platinum Exchange Warranty Program:
- Additional year: Add $99
- Two additional years: Add $150
- Three additional years: Add $213

$999
Business Lease: $35 Month/36 month lease

New Printer!

Printer shown is the new GCC Elite 12/600.

Elite 1212

- 1200 x 1200 dpi resolution
- 12 pages per minute
- 1 year Platinum Exchange Warranty
- Letter, legal, A4, envelope
- 250 sheet Universal Tray
- 80 PostScript fonts, 15 PCL fonts
- 16 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet (10 Base T, 10 Base2), NetWare®
- Bi-directional Parallel, LocalTalk®, RS422

Platinum Exchange Warranty Program:
- Additional year: Add $139
- Two additional years: Add $210
- Three additional years: Add $298

$1399
Business Lease: $49 Month/36 month lease

Elite XL 608 LC

- 600 x 600 dpi resolution
- 8 pages per minute
- 1 year Platinum Exchange Warranty
- Letter, legal, A3, A4, envelope
- 250 sheet Universal Tray
- 80 PostScript fonts, 15 PCL fonts
- 8 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet (10 Base T, 10 Base2)
- Parallel, LocalTalk®, RS422

Platinum Exchange Warranty Program:
- Additional year: Add $179
- Two additional years: Add $270
- Three additional years: Add $383

$1799
Business Lease: $62 Month/36 month lease

*The Elite 1212, Elite 12/600, Elite XL 1208, Elite XL 1208 PlateMaker, and Elite XL 608 LC support one additional paper feeder. The Elite XL 20/600 and Elite XL 20/609 support two additional paper feeders.
Elite XL 20/600
- 600 x 600 dpi resolution
- 20 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum print area: 13" x 20"
- Ledger, letter, legal, A3, A4, envelope
- 500 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 285 PostScript fonts, 15 PCL fonts
- 16 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 Base T, AAUI), Netware®
- Bi-directional Parallel, LocalTalk®, RS422

2nd or 3rd Paper Feeder* Add $299
Extra 8 MB memory Add $49

Platinum Exchange Warranty Program:
- Additional year Add $219
- Two additional years Add $330
- Three additional years Add $468

$2199
Business Lease: $76 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: 13" x 20"
- Ledger, letter, legal, A3, A4, envelope
- 500 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 285 PostScript fonts, 15 PCL fonts
- 24 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 Base T, AAUI), Netware®
- Bi-directional Parallel, LocalTalk®, RS422

2nd or 3rd Paper Feeder* Add $299
Extra 8 MB memory Add $49

Platinum Exchange Warranty Program:
- Additional year Add $259
- Two additional years Add $390
- Three additional years Add $554

$2599
Business Lease: $90 Month/36 month lease

Elite XL 1208
- 1200 x 1200 dpi resolution
- 8 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum print area: 11.69" x 20"
- Ledger, letter, legal, A3, A4, envelope
- 250 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 285 PostScript fonts, 15 PCL fonts
- 32 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 Base T, 10 Base2), NetWare®
- Parallel, LocalTalk®, RS422

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

Platinum Exchange Warranty Program:
- Additional year Add $299
- Two additional years Add $493
- Three additional years Add $700

$3299
Business Lease: $114 Month/36 month lease

Elite XL 1208 PlateMaker
- 1200 x 1200 dpi resolution
- 8 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum print area: 11.69" x 20"
- Polyester plates, ledger, letter, legal, A3, A4
- 250 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 285 PostScript fonts, 15 PCL fonts
- 32 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 Base T, 10 Base2), NetWare®
- Parallel, LocalTalk®, RS422

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

Platinum Exchange Warranty Program:
- Additional year Add $599
- Two additional years Add $900
- Three additional years Add $1278

$5999
Business Lease: $207 Month/36 month lease

- Platinum Exchange™
  Every GCC printer purchased direct is backed by our exclusive Platinum Exchange Program. If anytime during the warranty period a printer problem can't be resolved through GCC Technical Support, we'll send you a replacement printer by the next business day. No downtime while waiting for repairs.
- 30-day money back guarantee.
  Every printer and toner cartridge is fully backed by our unconditional, no-questions asked, 30-day money back guarantee.
- One full-year warranty
  Every GCC printer is protected by a minimum one year parts and labor warranty. Yearly extensions are available.
- FREE unlimited technical support throughout the warranty period.
  GCC Technologies® is on call for you at 781-276-8620, Monday through Friday, 9 AM to 8 PM (EST); Saturday, 10 AM to 4 PM or by email: support@gccotech.com.

To Order
1-800-422-7777
Mon-Fri 9 AM to 8 PM (Eastern Standard Time)
Sat 10 AM to 4 PM (Eastern Standard Time)

Or
Order from our web store
www.gccotech.com

Elite XL 1208 PlateMaker PlateMaker

GCC Technologies is a registered trademark of GCC Technologies, Inc. Elite 1212, Elite 12/600, Elite XL 1208, Elite XL 1208 PlateMaker, Elite 608 LC, 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.

Circle 43 on reader service card
Virus-Protection Software

VIRUSSCAN'S BARE-BONES
FEATURES CAN'T MATCH
VIREX'S ROBUST SOLUTION

Next to hard-drive mishaps, computer viruses are among the most pernicious things that can affect your Macintosh. But although both ailments seem to be out of our immediate control, virus infections are preventable with a combination of common sense and the right antivirus software.

Two competing products offer basic protection from viruses, but with different levels of supplemental features and Mac OS integration. Veteran Macintosh antivirus package Virex, which was recently acquired by Dr. Solomon's Software to replace that company's original minimalist Macintosh offering, continues to offer the best features of currently available products. Alternatively, Virus-Scan for the Macintosh, from Network Associates, offers a no-frills package that consists of the standard application and extension duo, with few bells and whistles and a puzzling interface.

A Virus Bestiary
On the PC platform, the pace of new-virus discovery is positively frantic. In the Macintosh realm, things have been comparatively sedate. Mac-specific viruses are rare beasts, and many Mac users have become lax in their safe-computing habits. Consequently, well-known viruses reappear occasionally within companies and online communities.

Although the shareware product Disinfectant offers a perfectly adequate solution for Mac-specific viruses, a new breed of virus has been leaping over the great platform divide. So-called macro viruses are all the rage on the PC, and with the increasing desire for cross-platform file compatibility, PC-born macro viruses can affect Mac users as well.

Many programs contain macro languages that let users add custom features specific to individual documents—a useful option. But any time you can attach code to a document or application, there's a good chance for abuse. Both Microsoft Word and Excel let macros automatically run when a document is opened—without offering you a chance to say anything about it—a weak link that led to the current spate of macro-virus infestation. It's quite possible to encounter a multiplatform macro virus, and even if such a virus is harmful only on a PC, infected documents making a stopover on a Mac can still act as carriers.

Microsoft Word 98 and Excel 98—
both part of the upcoming Office 98 for Macintosh—each sport a “macro-virus protection” feature that detects whether a document contains a self-launching macro and allows you to prevent the macro from being run. Although Microsoft’s taken the right first step, there’s no way for Word or Excel—or you—to know the intentions of any macro. This is where antivirus software comes in.

Covering All the Bases

Virex 5.8.1 includes an application that scans and repairs and a control panel that provides prevention as well as scan-and-repair features. The straightforward application displays its options in a button bar along the top of its main window; the behavior of this window’s left pane, which contains the list of available volumes, is the program’s sole user-interface irritation. Clicking on a volume toggles its selection on or off; as a result, there’s no simple way to select one volume without first having to manually deselect all the others.

Virex offers several scan-and-repair approaches. The first time you scan a volume, the program scans all its files—optionally including the contents of most compressed files—and remembers each scanned file. Any subsequent time that same volume is scanned, Virex will first check to see whether a file has changed before performing a time-consuming re-examination. Since rescans are quick, you’re less likely to dread the process of regularly scanning and therefore more likely to catch infected files sooner.

Virex’s control panel contains the same scan-and-repair engine as the application and adds the ability to protect against attacks by infected files. When, for example, an infected Word file is opened, a dialog box offers to repair the file before Word actually opens it. In addition, Virex automatically scans newly created files, including archives from programs such as Aladdin Systems’ Stuffit. Although this feature sometimes makes Virex seem overzealous, it also means that any newly downloaded files are intercepted before damage can occur.

Along with its bread-and-butter antivirus features, Virex sports an impressive level of integration with Mac-specific technologies—including contextual menus, the Control Strip, and drag and drop—and this lets you quickly scan volumes, files, and folders.

Basic Functionality

The first time you launch VirusScan 3.0, the program guides you through a series of questions that help the software configure its scanning frequency. But other than this notable feature, VirusScan’s user interface is sparse to the point of being cryptic. The main window shuns text in favor of pictograms but isn’t successful in making all features obvious; you have to go exploring to find what you’re looking for (see “Hide and Seek”).

VirusScan’s configuration wizard lets you modify the conditions required to trigger a scan, including defining a scanning schedule. VirusScan’s extension offers prevention features and contains the basic scanning engine. In fact, the application won’t run unless the extension is in the Extensions folder, which can be a slight problem if you have to move or disable the file, as you might before installing new software. And unlike Virex, VirusScan isn’t particularly friendly about running scans in the background—doing so causes the foreground application to respond sluggishly.

Macworld’s Buying Advice

Both products offer the basic features required of contemporary Macintosh antivirus software, but Virex shows a much greater attention to detail, better Mac OS integration, and the overall polish of a package that has been through several major revisions. Although each package has its flaws, VirusScan has significantly more rough spots and less-complete integration with the Mac environment. Of these two products, Virex is clearly superior.—Stephen Somogyi
Claris Home Page 3.0

THE BEST BASIC WEB EDITOR GETS BETTER

The low-end web publishing niche is crowded with shareware and commercial programs, from Optima System's PageSpinner to Adobe’s PageMill and Symantec’s Visual Page. The newly formed FileMaker, Inc., distinguishes its offering, Claris Home Page 3.0, by adding ease-of-use and new site-management features the competition can’t match.

Database Publishing Made Easy
The big news in this release is integration with FileMaker Pro 4.0 databases (see “The Web Publisher’s Essential Tool Kit,” in this issue). Using the Lasso technology Claris acquired from Blue World, you want to include, and pick one of 18 preset styles for your pages. Although the FileMaker Connection Assistant creates rather bland pages, you can add a bit more style in either the Edit Page or Edit HTML Source mode. The sites I built with the Connection Assistant worked very well and allowed me complete access to FileMaker Pro databases.

If you want total control over your pages and don’t mind working directly with the CDML tags, you can use Home Page’s two FileMaker Connection Libraries. The FileMaker Reference Library contains all the CDML tags in alphabetical order, while the FileMaker Form Library groups them by form type (for example, the tags related to searching are grouped together). Using the Form Library is simple: all you need to do is find the fields you want to use and drag them from the library and onto your page.

In addition to the Connection Assistant, Home Page 3.0 includes seven other assistants to help you create newsletters, presentations, reports, personal pages, and other typical sites. The frame assistant, for example, lets you pick from eight basic frame types and define one frame as a navigational menu; it then automatically generates links in the navigational frame based on the files you assign to the other frames.

Think Globally, Not Locally
Unlike previous versions, Home Page 3.0 can work with a collection of pages as a unified site. Among its new site-management features are a Site Editor window that lets you import a site by dragging a folder from your hard disk; global search and replace; automatic link checking; and FTP capabilities that make it easier to upload files to, maintain files on, and download files from a remote server. You can also create a media folder for storing images, QuickTime movies, and Java applets, and Home Page will automatically consolidate all referenced files in your site into the folder.

Visual Page no longer has an edge over Home Page in table formatting: you can now select the contents of multiple cells and format all of them at once; you can apply background colors or images to either one cell or all cells in a table; and it’s now easier to resize rows, columns, and cells. Version 3.0 also has better support for frames, allowing you to view the contents of frames within the program rather than in a browser.

Home Page has been updated in lots of minor ways as well. You can set primary and secondary browsers for previews and format text in font sets; the help files have been expanded and improved; and the program now supports multiple color palettes, including the all-important Web-safe palette. Another nice touch is a command that resizes the editing window to standard screen resolutions so you can get a feel for how your page will look on different monitors.

Home Page has yet to become the ultimate Web-page editor, however. You won’t find support for dynamic HTML, pixel-precise positioning of elements on pages, or a graphical site view displaying all the links in your site—features found in professional-level tools (such as GoLive’s CyberStudio and Macromedia’s Dreamweaver) costing hundreds of dollars more. On the other hand, Home Page offers better site management than Dreamweaver and better table-editing features than CyberStudio.

Macworld’s Buying Advice
Claris Home Page is the only product (besides FileMaker Pro) that FileMaker, Inc., retained when Apple dissolved Claris, and it’s not hard to see why. The program now handles the vast majority of Web-building tasks with panache, eliminating the petty annoyances found in previous versions. Professional Web designers will probably still prefer programs like CyberStudio, but most people will find that Claris Home Page is the only Web editor they’ll ever need.—TOM NEGRINO

RATING: ★★★★☆
PROS: Great connectivity to FileMaker Pro databases; improved interface; better table and frame support. CONS: Doesn’t do DHTML or precise positioning. COMPANY: FileMaker (408/987-7000, www.claris.com).
LIST PRICE: $99.
SuperMac S900BASE w/G3
8 STANDARD DIMM SOCKETS
6 PCI SLOTS
4 FREE DRIVE BAYS
1 MB BACKSIDE CACHE

Apple G3 Tower
3 DIMM SOCKETS (NON-STANDARD)
3 PCI SLOTS
1 OR 2 FREE DRIVE BAYS
512K BACKSIDE CACHE

Macworld Speed Mark Video Score
Time in seconds (longer is better)

UMAX S900BASE w/G3
9.3

Apple G3/266 Minitower
7.1

Both S900BASE w/G3 and Apple G3/266 tested with stock configuration. Tests conducted by Macworld Magazine. Details can be found at http://macworld.com/2000/march/Reviews.html

Circle 99 on reader service card
Morphing, once overused as a monster shape-shifter, is now a vital part of producing special effects and visual graphics. Most of the good morphs you see today aren’t even recognizable as morphs, and most of those—if they were done on a Macintosh—were likely created using Avid Technology’s Elastic Reality. Designed to morph still and animated images and distort, shift, color-correct, and generate moving mattes, Elastic Reality 3.1 is the most advanced morphing software available on the Mac.

Getting from Here to There
Elastic Reality lets you drag two images (still or moving) from the desktop onto the project window; outline the desired features with Bezier shapes; and transform one image into the other, using the shapes as guides. You can also use shapes as multipurpose masks to constrain color corrections, path animations, and mattes. An assisted-tracing tool speeds masking by detecting color-contrast areas and snapping the Bezier line to the most likely edge. After you create the shapes, another set of tools helps you set up correspondences to link them.

The extremely useful Group Editor lets you name shapes and groups of shapes. Within each group are several editable parameters: color correction, distortion, transparency, layer depth, shadows, path control, scale and rotation transformations, and more. You can save or load the groups and edit them with the intuitive Curve Editor. With the Group Editor’s layering options, you can assign the groups to individual layers. Some groups can block out other groups, which is useful for masking areas that move over one another during the course of an animation.

Elastic Reality’s Sequence Editor offers a visual layout of the project frames and has four “tracks” for importing images: A- and B-roll tracks, a matte track, and a background-image track. The display isn’t as customizable as it could be; the iconic representation of frames on the tracks is displayed one frame at a time and can’t be changed to every nth frame, creating a problem for movies with a high frame count. In addition, Avid could have simplified some aspects of the overall interface by combining several of the editors. For example, the Sequence Editor and the Curve Editor probably could have been combined to resemble the timeline in Adobe After Effects, a program likely to be familiar to Elastic Reality users.

Fear Not the Mask
A good level of control over masks is absolutely necessary in professional video production, and Elastic Reality delivers. By adjusting the Bezier mask shapes around the image you want to matte and keyframing those adjustments, you can quickly create a fairly decent traveling matte (an animated mask that tracks the object it’s masking). You can group matte shapes and apply them to each other using Boolean operations, varying opacity, and edge sharpness and then export the mattes separately or embed them as an alpha channel within the rendered footage.

Motion paths in Elastic Reality let you animate images moving along predefined Bezier shapes. For example, you want to combine a still overhead shot of a race car and animate it through a race track: not only can you “trace” the car’s predefined routes; you can also point the car in the direction it’s moving. The sole drawback is that only two elements can appear on top of the background image. To get around this, you could render out portions of the animation and continue to bring the rendered file into the background plate, compositing layer after layer until the animation is complete. You could also include all the elements to be animated in one image file, allowing multiple masks to be combined into groups that can be animated individually.

Another notable drawback is Elastic Reality’s inability to auto-update previews: every update has to be rendered, and rendering time is related to the size and resolution of the final image. When adjusting the curves in a group, for example, you can’t view the results immediately. Even a preview thumbnail would be a welcome addition. And although a wire-frame preview animates the Bezier paths, it’s almost useless when fine-tuning color-correction and distortion intensities.

When you’re ready to render, Elastic Reality lets you choose from among more than 20 file formats, including QuickTime, Adobe Photoshop, Progressive JPEG, and TIF. The output dialog box offers numerous options for saving and naming files; another nice touch is a Format Info button that shows you the selected file parameters (such as alpha-channel capabilities, color space, and size). Elastic Reality 3.1 also introduces support for field rendering, a welcome (and overdue) addition. Rendering speed on a 250MHz G3 Macintosh is excellent.

Macworld’s Buying Advice
Elastic Reality 3.1 is the best, most comprehensive morphing program for the Mac. The learning curve, price, expensive support policy ($5.99 per minute), and hardware-key copy protection put it out of the reach of casual QuickTime-movie makers; Elastic Reality is intended for the professional video market. In the absence of low-end alternatives for the Mac or morphing plug-ins for Adobe Premiere and After Effects, Elastic Reality is your best bet for high-quality, Hollywood-caliber morphing effects.—David Biedny and Travis Estrella

You want to buy a UMAX SuperMac — the lone Apple-licensed Mac clone. And therein lies your quandary. You know SuperMacs are tops in features, performance and price. And they’re 100% Mac-OS compatible. In fact, as an Apple licensed design, our 5900’s are just as compatible with Mac software as Apple’s Power Macintosh 9500’s.

But then you wonder: Is UMAX going to be around to support my purchase for the long term?

Well, here are some hard facts about UMAX that will put your mind at ease:

**UMAX IS BIG — $700 MILLION IN SALES.**

A publicly traded Taiwanese corporation around for over ten years, UMAX has worldwide annual revenues of over $700 million. We make SuperMacs, Intel-based workstations, servers, mother-boards, DRAMs, digital cameras, notebooks and of course, scanners (where UMAX is #1 in the U.S.). UMAX is here to stay — today and tomorrow.

**2-YEAR WARRANTY AND TECH SUPPORT.**

UMAX has doubled the length of the basic S900 warranty:

- Two years for all S900’s purchased after March 1, 1998 — including tech support!

Nobody else even comes close to this level of service and support (ranked number one by MacWorld magazine).

It’s our promise to you, backed by UMAX’s size, profitability and diverse manufacturing capabilities.

**UMAX IS COMMITTED TO THE POWERMAC PLATFORM.**

We don’t just make great SuperMacs. We’re continuing to make leading edge ones. Proof? The SuperMac S900BASE w/G3 — the most powerful and expandable Mac-OS compatible computer ever (and now for under $3000!).

It won MacWorld’s Eddy Award and Editor’s Choice Award for Best Professional System. Digital content creators will love the 6 PCI slots, 8 DIMM slots (for up to 1 GB of RAM), 7 total drive bays and a 250 MHz PowerPC 750 (G3) processor with a full 1 MB of backside cache!

And no matter what, we’ll be selling our award-winning SuperMacs at least through the end of 1998, and perhaps way beyond.

**Buy UMAX SuperMacs today — with confidence. We’re here to stay.**
Visual Café for Java 2.0

A JAVA PROGRAMMER'S PARADISE

JAVA MAY BE A GENERAL-PURPOSE programming language, but its utility so far has been limited mostly to jazzing up Web pages and connecting them to server-side databases. On the other hand, producing effective advertising and an efficient way to process the subsequent sales transactions aren't bad ways to make a living these days if you're a programmer. Two new offerings from Symantec—the Professional Development and Database Development Editions of Visual Café for Java 2.0—give Mac programmers a quick way to cash in on commercial Java projects.

Hotter, Sweeter Java
Visual Café for Java 2.0 Professional Development Edition supplies every item on our Java wish list (see “The IDEs of Java,” Reviews, October 1996) and more. It supports Sun Microsystems’ Java Development Kit 1.1, a set of JavaBeans for assembling precompiled functions, and offers a Creator Assistant for formulating your own. A new breakpoint view in the debugger makes Visual Café more convenient for typical Java debugging chores than its only competitor, Metrowerks’ CodeWarrior Java package (Roaster Technologies’ Roaster, a Mac Java pioneer, is no longer available). And the whole package works under Apple’s Macintosh Runtime for Java 2.0, currently shipping with OS 8.1 and soon to support System 7.6.1 as well.

But the Professional Development Edition’s most attractive feature is an interface that lets you drag and drop a huge assortment of components into a visual-editing window and then edit the resulting code in another window as if it were text. Many programming environments claim to offer that capability, but Visual Café’s implementation works well enough for commercial programming. We’ve been promised “visual programming” for a decade, and Symantec delivers by targeting Visual Café’s well-designed interface and huge component set at the relatively modest tasks most Web Java programmers still face.

The HTML-based help system is a tutorial on object programming in its own right; only the program’s scope makes it daunting for first-time programmers. And applets can be not only created but also tested rapidly, since you can run them inside Visual Café without invoking a cumbersome browser.

Data Automation
From the Mac perspective, there are really only two kinds of databases: FileMaker Pro, whose cozy confines are familiar to several million Apple customers, and everything else—SQL-capable databases ranging from ACI US’s 4th Dimension to Oracle and DB2. Visual Café for Java’s Database Development Edition goes beyond the Professional Development Edition with two packages for connecting browser clients to databases on remote servers. By using the versatile Data-Aware Project Assistant, the first package, a trial version of Blue World’s Lasso, makes it relatively easy to pass data back and forth between a client browser and FileMaker Pro running on a Mac server.

For tasks that go beyond FileMaker, Visual Café offers Symantec’s dBAnywhere, which lets you connect to the rest of the world’s legacy data storage. dBAnywhere comes with prewritten drivers for connecting to Sybase, Informix, Microsoft SQL Server, and Oracle databases and offers adequate support for ODBC-compatible databases.

The tricky part is that dBAnywhere’s server software runs under Windows 95 or NT and needs to run Sybase SQL Anywhere Standalone Engine (provided on the CD) or Microsoft Access. But a Mac programmer venturing into legacy-database connection can reasonably be expected to do Windows NT homework these days, and it helps that the instructions (in actual printed manuals) are a model of clarity. A utility called dBNavigator completes the package by offering a simple, practical overview of open server-side databases while you’re connected.

dBAnywhere’s performance on a relatively inexpensive Web server (a 233MHz Pentium) is quite acceptable. One quibble is that the Windows versions of Visual Café are significantly better optimized, in speed and code size, than their Mac equivalents. But a G3 Mac with more than 32MB of RAM will let you modify code and see results nearly instantly, taking advantage of canned solutions that will save you weeks of coding time.

Macworld’s Buying Advice
These new editions of Visual Café for Java let you design and implement applets in record time, the main priority in a world where development cycles are clocked in days rather than months. If you’re committed to Java and face project deadlines every month, Visual Café for Java 2.0 is just what you need.—CHARLES SEETER

Visual Café for Java 2.0

Database Development Edition

RATING: ★★★★½ PROS: Easiest Java-based connection to SQL or FileMaker databases
CONS: Server software runs on Windows NT; Mac tools slower than Windows counterparts; needs at least 32MB of RAM
COMPANY: Symantec (541/334-6054, www.symantec.com)
COMPANY’S ESTIMATED PRICE: $499.95.

Visual Café for Java 2.0

Professional Development Edition

RATING: ★★★★½ PROS: True visual programming for Java
CONS: Needs newest hardware and more than 32MB of RAM for acceptable performance
COMPANY: Symantec (541/334-6054, www.symantec.com)
COMPANY’S ESTIMATED PRICE: $299.95.
Ready for a photo album without all the loose pictures, bent corners, and sticky plastic pages? Then it's time to go digital. With the capacity of 70 floppies, a genuine 100MB Zip disk can hold dozens of digital photos in perfectly organized files. So you can preview, print, or digitally retouch to your heart's delight. And with over 10 million out there, you'll find Zip drives just about everywhere you go. In fact, most leading PC companies now offer ZIP BUILT-IN™ drives. Of course if you already have a computer, you can always buy an external Zip drive. Then keep all your photos on a neat little Zip disk. And give those musty old books the boot. Get your Zip drive and Zip disks wherever you get computer products. Or check us out on the Web at: www.iomega.com/zip

Use only genuine Zip disks featuring this symbol in your Zip drive.
Usenet News Servers

THE NEWS IS GOOD: SERVERS ABOUND FOR THE MAC

Network Administrators who want to give their users access to Usenet newsgroups will probably want to select the news that's appropriate for them. Four news servers for the Macintosh—DNews 4.4, NewsRunner 1.0, Newstand 1.0, and RumorMill 1.1—collect news for delivery to your local users, offering multiple upstream news connections, user groups, password authentication, and message-size filtering (to block messages containing large binary files). The server you choose depends on the number of users you need to serve, the volume of news you expect to process, the speed of your Internet connection, and your budget.

Newsfeed versus Active Pull

Traditional news servers require a newsfeed—an upstream server that delivers news at scheduled intervals. Because the newsfeed server contacts your downstream server, this approach requires a dedicated Internet connection; it also means you'll get news you don't want. An alternative to newsfeeds is Active Pull. It's slower than a newsfeed, but because your news server initiates contact with the upstream server, Active Pull doesn't require a dedicated Internet connection.

NetWin's DNews 4.4 takes the Active Pull approach by default (it also supports traditional newsfeed delivery), but it doesn't read news from the upstream server until a user with a news-reader client tries to access a particular newsgroup. Thereafter, DNews keeps that group up-to-date as long as users continue to read it. DNews is painful to set up; once you get it working, though, it runs automatically, maintaining just the newsgroups you've permitted and that users are reading. This clever on-demand retrieval compensates for Active Pull's slower performance by reducing the volume of news transferred.

Hi Resolution's NewsRunner 1.0, the slowest of the servers tested, also uses Active Pull. But because you use a graphical interface to list the groups to be pulled, NewsRunner is much easier to set up than DNews. Rather than letting users access downloaded news with a news-reader application, NewsRunner either e-mails the news to selected users or outputs it as HTML for posting on a Web server. For small volumes of news, the e-mail approach works fine and may even be more convenient for some users. The HTML interface isn't as easy to use as a news reader, however. And neither delivery method allows users to reply to messages.

The Big Feeds

An industrial-strength news server with a graphical interface that makes for easy setup, Imagina's Newstand 1.0 is notable for its blazing speed—this server captures news faster than the others. It comes in two forms: a Lite version for small, single-server organizations, and a Pro version for companies that have multiple sites and need to run mirror servers downstream from a main server. Newstand doesn't support Active Pull, so a dedicated connection is required. However, because it supports streaming-delivery mode—the fastest of all news-delivery protocols—it's ideal for serving up large volumes of news. Indeed, Newstand is the only server that can receive and process a full Usenet newsfeed of more than 15,000 newsgroups and 10GB of news per day.

Stairways Software's RumorMill 1.1, which supports both newsfeed and Active Pull, isn't nearly as fast as Newstand. It's just as easy to set up, however, and it's faster in newsfeed mode than the Active Pull servers. Unfortunately, one important feature—streaming-delivery mode—didn't work during testing, causing the application to crash. Stairways says the problem will be fixed in a future release.

Macworld's Buying Advice

Of the four contenders, Newstand is the most professional; its clean user interface, speed, and high-volume capabilities make it a natural choice for organizations that depend on reliable news service. If you don't have the dedicated Internet connection Newstand requires, DNews is a good alternative. For news delivery via e-mail, NewsRunner is the best choice, although you may find its read-only nature limiting. RumorMill, while the cheapest of the lot, is currently too unreliable to be used for mission-critical applications.—Mel Beckman

DNews 4.4


NewsRunner 1.0


Newstand 1.0


RumorMill 1.1

Now that your presentations have gone Hollywood, why not let your handouts follow suit. With the capacity of 70 floppies, a genuine 100MB Zip disk can hold your multimedia stuff. Audio stuff. Video stuff. Charts that do the Watusi. With over 10 million out there, you'll find Zip drives just about everywhere you go. In fact, most leading PC companies now offer ZIP BUILT-IN drives. Of course if you already have a computer, you can always buy an external Zip drive. So when the applause dies down, you can either pass out disappointing stacks of paper, or surprise them with copies of the real thing. Get your Zip drive and Zip disks wherever you get your computer products. Or check out our Website: www.iomega.com/zip.
Go to extremes on the industry's hottest Windows NT™ and Intel Pentium™ II processor-based desktop machine for graphics professionals — the ExtremeZ™ Graphics Workstation from Intergraph Computer Systems. It's the only MacFriendly™ NT workstation available. Look at what the ExtremeZ delivers:

- **Superior graphics and blazing performance** for 2D and 3D graphic design, new media, and prepress, especially for transferring files across networks in highly productive workflows!

- **Mac/NT connectivity** for integrating the ExtremeZ into existing environments, providing full peer-to-peer connectivity to Mac systems through AppleTalk!

- **Power to read/write Mac media** on an NT box!

- **Easy-to-use** features and commands and a great out-of-box experience with prebundled apps and lots of other options!

- **Platform for graphics applications you now use** — Adobe Photoshop™, Illustrator™, QuarkXPress™, Painter, FreeHand™, plus many more — and they look and feel the same regardless of OS!

- **Service and support** from a dedicated publishing team!

Ready to take your creativity to extremes?

1-888-296-6977, ext. 1002

www.intergraph.com/publishing
Internet Explorer 4.0

MICROSOFT'S BROWSER ADDS NEW FEATURES—AND NEW BUGS

When Microsoft released the first Macintosh version of the Internet Explorer Web browser, it was a revelation. Unlike Netscape's slow and bulky browser, Explorer was small and speedy (albeit missing some of Navigator's features). With Internet Explorer 4.0, Microsoft has caught up with Netscape: the new version not only matches Navigator feature for feature but also has become equally unwieldy and bug-ridden.

Version 4.0 does offer some innovative features you won't find in Navigator. Perhaps the coolest new feature is the program's excellent support for viewing Web pages when you're not connected to the Net. If you try to visit a site when you're not online, Explorer displays the last loaded version of that site. Explorer also makes it easy to archive Web pages or entire sites for offline reading.

Another innovation is the Explorer Bar, a series of tabs that bring up separate panes displaying your browsing history, favorites, and other items. The biggest time-saver is the Search tab, which lets you perform Internet searches in the Explorer Bar's pane but view the resulting pages in the main browser window. Other interface innovations are Toolbar Favorites—a great shortcut to your most-visited sites—and a persistent Go menu that blows away Navigator's.

Explorer 4.0 excels at displaying Java applets embedded in Web pages; its built-in Java engine is remarkably faster than either Netscape's implementation or the Java engine bundled with Mac OS 8.1. And version 4.0 marks the debut of Active Channels, menus listing content from various Web sites. But while this seems a clever way to allow access to favorite sites, at press time only 19 channels (out of almost 1,000) were optimized for the Macintosh. Most unoptimized channels don't display correctly, if at all, in the Mac version of Explorer.

For all its innovations, however, Explorer 4.0 still offers plenty of disappointments, from stability problems to incompatibilities with Web pages that take advantage of new HTML features. Support for Dynamic HTML is poor at best; many of the DHTML pages I visit-
ed didn't display correctly, and most animations took more than twice as long to display as in either Navigator or the Windows version of Explorer.

Explorer's HTML rendering is quirky in general: paragraph breaks are often misrendered as line breaks, and tables in complicated layouts are sometimes drawn on top of text. Perhaps most annoying of all is that when you copy text from a Web page into an e-mail message, Explorer strips out all the return characters, transforming the copied page into one enormous paragraph.

What impressed me most about the original Explorer was how much faster than Navigator it was. But Explorer 4.0 feels sluggish; my start-up home page took several seconds to open, and many complex pages seemed to take an eternity to render. Explorer also crashed periodically, ostensibly at random.

Macworld's Buying Advice
Internet Explorer 4.0's price is right, but this is a disappointing upgrade that adds some nice features at the expense of stability. Most frustrating is the lack of full support for DHTML, making Navigator the only choice for viewing cutting-edge Web sites on a Mac. If you do a lot of offline browsing, install Explorer 4.0. Otherwise, stick with your old browser and hope that Microsoft rights the wrongs of Explorer 4.0 in its next release.—JASON SNELL

RATING: 2½
PROS: Nice interface touches; strong offline-browsing features; fast Java engine.

It's a "signed, sealed and delivered in half the time" kind of mailer.
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.

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 resolution, high speed 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.

Now You See It.™
www.atitech.com/macwo

Circle 42 on reader service card
SiteWarrior 1.1

POWERFUL, SPEEDY WEB-SITE BUILDER

COMPLEX WEB SITES WITH hundreds or thousands of pages pose special problems for site builders. Redesigning such sites means changing every page by hand—unless you separate the content of the pages from their style by using templates. Until recently, this approach required the expensive Vignette StoryServer or the freeware UserLand Frontier. ProVue Development's SiteWarrior 1.1 beats the former's cost and the latter's steep learning curve, letting you manage large sites effectively and with minimal drudgery.

SiteWarrior's underlying technology, ProVue's Panorama database, makes the program tremendously powerful in terms of scripting and managing large amounts of content. Because Panorama keeps all its data in RAM, SiteWarrior is also speedy at tasks such as global search-and-replace and page rendering but can handle sites with hundreds of pages in only 8MB of memory.

SiteWarrior lets you take advantage of your existing HTML knowledge with its HTML-based SuperTags, 12 powerful macros that generate complex structures such as tables of contents and lists. To create navigation bars, for example, you build a template containing the proper HTML, and the one-line ButtonGroup SuperTag creates the entire navigation bar for you at render time. To change a navigation menu, you simply change the template; the modification propagates throughout the site the next time it's rendered. Other SuperTags range from the simple Date and Time tags to the powerful MergeImport, which takes a tab-delimited file or Panorama database and turns it into multiple Web pages.

SiteWarrior's tag database makes working with HTML easier. You can drag tags from the database into the document window, where you can modify their attributes. Because tags can be added to and deleted from the database, you can update the file when the HTML standard changes. SiteWarrior also lets you define tag nicknames: snippets of HTML you use throughout your site can be defined once and then referenced by a simple tag. JavaScript, Dynamic HTML, and Cascading Style Sheets are not so much supported as simply ignored. You can add any of these to a page, and SiteWarrior will just pass them through the rendering process. Given that the goal of Cascading Style Sheets is to separate form from content, it would be nice if SiteWarrior had a tool to help you build style sheets.

As with many site-management tools, if you use another program to change an already rendered page, those changes will be lost the next time you render that page. If you need to modify certain pages in other editors, you can include text from external files at render time.

But SiteWarrior isn't for people who prefer WYSIWYG Web editors. To take advantage of its powerful features, you need to be able to learn not only HTML but also SuperTags. Unfortunately, a non-Mac-like user interface and lack of support for standard Mac features such as drag and drop make SiteWarrior more difficult to learn. Improved documentation would help ease the learning curve. And although SiteWarrior is powerful, it isn't bug-free; one of my SiteWarrior files became corrupted, and I encountered minor screen-redraw problems.

Macworld's Buying Advice

SiteWarrior takes the drudgery out of creating and managing large Web sites. Although it's best suited for large sites and has a daunting learning curve, if you prefer working with HTML—but want to avoid writing it for every page—SiteWarrior is a powerful tool.—DORI SMITH

SuperClear™ It's the latest advancement in screen performance and, not surprisingly, it comes from ViewSonic®, the biggest company in Display Technology™ and the leader in the 17” (various viewable) market.

The focus is on clarity.
The 0.26mm dot pitch G773 17” (16.0” viewable) monitor sets new standards for image clarity. The reason is our SuperClear Screen—ViewSonic's latest engineering breakthrough. It combines the exceptional focus found in high contrast conventional CRTs and the superior colors found in aperture grille CRT monitors. The result: Absolutely the clearest, brightest images and most vivid colors available on a 17” (various viewable) monitor. At any price. Period.

Easy on the eyes.
Easy on the environment.
The G773, with 1,024 x 768 resolution at 87Hz, is the perfect choice for home office, students and surfing the Internet. And, in keeping with ViewSonic's commitment to environmental concerns, the G773 meets strict TCO '95 standards which reduce heat emissions, lower power consumption and mandate the use of recyclable parts. Compliance to this TCO certification insures that ViewSonic monitors are environmentally and ecologically friendly as well as user friendly.

To fully appreciate the clear advantages of the G773 though, you really need to see it in person.

For the dealer nearest you, call ViewSonic at (800) 888-8583 ask for agent 81223, or visit our website at: www.viewsonic.com.
Final Effects Complete

VIDEO PRODUCERS WHO USE Adobe After Effects have a vast selection of third-party plug-ins to choose from when they need to expand After Effects' repertoire. MetaCreations has taken two of the best of these collections, KPT Final Effects and Studio Effects; thrown in more than a dozen new filters; and wrapped it all up in a $1,195 package called Final Effects Complete. True to its name, this is the most complete set of After Effects filters you can buy.

Most of the filters in Final Effects Complete are identical to those of its predecessors. All of Final Effects' and Studio Effects' greatest hits are here, including the gorgeous Page Peel, in which one layer peels back to reveal another; Light Burst, which casts glowing rays of light through a layer's alpha channel; Spotlight, which simulates a spotlight, whose angle, softness, and color you can animate; and Burn Film, which simulates film burning under the heat of a projector lamp.

Final Effects and Studio Effects also offered a broad array of particle generators that simulate rain, fireworks, bubbles, and explosions. Final Effects Complete adds two new ones: the Hair generator, which could grow locks on a bowling ball, and Drizzle, which creates concentric rings reminiscent of raindrops splashing into a pond. The package also includes a dozen filters for distorting video, a common After Effects job. The two new filters are Bend It, which warps a layer, and Power Pin, which lets you stretch a layer as though it were a sheet of rubber.

Two of Final Effects Complete's new filters create 3-D perspective effects. The Cylinder effect wraps a layer around an imaginary cylinder whose dimensions you can customize. More impressive is the Advanced 3D effect, which makes short work of creating tilting, rotating, and spinning effects. Advanced 3D also offers far more lighting options and a more realistic motion blur than does After Effects' built-in Basic 3D filter.

The rest of the new filters run the gamut from wire removal (for removing the wires that support, say, an actor suspended in front of a blue screen) to blurring (to create dizziness-inducing motion-blur effects). A new lighting filter creates dazzling rays of light.

All of Final Effects Complete's 60-plus filters are optimized for multiprocessor machines, and the package is also available for Windows 95 and NT. To further sweeten this rich dish, Final Effects Complete includes much better documentation than its predecessors. The manual is more thorough and better illustrated, although I'd have liked additional insight into the new Advanced 3D filter. The CD-ROM contains sample movies and projects, and a videotape lets you see the filters in action from the comfort of your Barcalounger.

Macworld's Buying Advice

At $1,195, Final Effects Complete costs almost as much as Adobe's After Effects Production Bundle. If you already own either Final Effects or Studio Effects, MetaCreations' upgrade price of $495 (or $195 if you own both) will make your day. If your wallet still whines, investigate DigiEffects' Aurorix and Berserk—although they can't match Final Effects Complete in breadth, at $289 each they cost far less. But if you've got a Titanic budget and want the most complete array of After Effects plug-ins available, you'll want Final Effects Complete.—JIM HEID
Stufflt Deluxe 4.5.1

MINOR BUGS, MAJOR USEFULNESS

As the Internet becomes more popular, the gulfs between Unix-descended complexity and the Mac’s ease of use and the Net’s Unix-descended complexity becomes ever wider. Fortunately, the problem of downloading and e-mailed files in bizarre formats is fading, thanks to Stufflt Deluxe. If a file’s name ends in .sit, .cpt, .pkg, .zip, .arc, .gz, .tar, .Z, .hla, .uu, .uqx, .bin, or MIME, Stufflt Deluxe 4.5.1 can turn the file back into something usable faster than ever before.

Version 4.5 is finally Mac OS 8 compatible, right down to its contextual menu—control-click on a document’s Finder icon to see a pop-up menu of Stufflt’s commands. Otherwise, the new-feature list is short: you can now unstuff files that are in Base64/MIME, a common Internet compression format. The Stuff and Mail command in Stufflt’s Finder menu isn’t new, but it now works with America Online, Claris Entourage, and Lotus cc:Mail. Finally, Stufflt can now mount disk images, such as ShrinkWrap and Apple Disk Copy files.

But the shareware products Stufflt Expander 4.5 and DropStuff 4.5 can decode all those formats, too. So what makes Deluxe deluxe? Finder integration. As in Stufflt Deluxe 4.0, you can manipulate .sit files exactly as though they were ordinary Finder folders—opening them into windows, dragging files in and out, and so on. Key- strokes (⌘-S and ⌘-U, respectively) stuff and unstuff highlighted Finder icons, and only Deluxe offers the convenience of Space-Saver, a control panel that automatically compresses old files in the background.

Unfortunately, Deluxe 4.5’s birth has been rough. The first release, according to Aladdin’s Web site, treated users to such phenomena as “a multicolored patch appearing in the menu bar” and system crashes. Yet even the free 4.5.1 updater fails to nail several embarrassing bugs: Space-Saver doesn’t work with Mac OS 8.1; the MIME-unstuffing feature conks out if you highlight more than a handful of files; the ⌘-U and ⌘-S keystrokes sometimes stop working; and the glorious, sanity-saving “Delete archive after expanding” option doesn’t work for some kinds of Internet-downloaded files—such as MIME. (Aladdin says it’s working on fixing the problems.)

Macworld’s Buying Advice: Over the years, Stufflt’s importance to Mac fans has gradually changed. In this age of high-capacity hard drives and inexpensive Zip disks, we no longer need Stufflt to save us disk space; instead, we need it to extract useful data from cryptically encoded downloads. Both the commercial and the shareware Stufflt perform this conversion beautifully, but the shareware costs only $30. The additional $100 for the Deluxe version may help you get the most out of Stufflt—but Aladdin needs to eliminate the last few minor bugs first. —David Pogue

EtherPeek 3.5

STATE-OF-THE-ART NETWORK ANALYZER

Most network analyzers serve as first-aid kits, letting novice users find and treat common network miseries. AG Group’s EtherPeek is more like a set of sophisticated surgical instruments; used skillfully, it can help you diagnose and repair virtually any network problem. EtherPeek 3.5 offers a slew of new features at the same reasonable price that made version 3.0 a must for network administrators.

EtherPeek consists of an analyzer program that takes over an Ethernet card in your Mac to capture packets, a comprehensive set of interface modules for various Ethernet cards, and a library of protocol decoders and packet-analyzer plug-ins. This release expands EtherPeek’s exhaustive protocol library to the limit, covering virtually every known networking protocol (with detailed online reference documentation), and new hardware modules add support for any Ethernet adapter.

The basic analyzer captures every packet on your LAN at 10 or 100 Mbps, letting you filter based on any packet element; context-sensitive triggers start and stop packet capture and generate sound, pager, or AppleScript alerts. EtherPeek displays traffic summary histograms by protocol or node and presents network use and error rates in real time. A name-resolution feature automatically looks up device names to make the displays more meaningful. And the new EtherPeek OT Module system extension dramatically improves performance by working with Open Transport to take advantage of PCI Fast Ethernet adapters.

EtherPeek’s most useful new feature is its SUMMARY Statistics window, which lets you capture and save baseline statistics for your network when it’s operating normally and then compare those statistics with current measurements when the network bogs down. At a glance you can see unusually high traffic or error rates and quickly isolate the cause of performance problems.

Also new in this version are the ability to generate HTML output for statistical graphs; the automatic assigning of names to hardware addresses; and plug-in modules that let you detect Land and Ping of Death hacker attacks, display the contents of Telnet sessions, monitor files transferred via FTP, and keep track of IP-routing error messages. Many small improvements to the user interface make EtherPeek even easier to use than before.

Macworld’s Buying Advice: Network problems can be hard to track down and correct. With its encyclopedic protocol knowledge, helpful online documentation, sophisticated plug-ins, and handy comparative statistics, EtherPeek is the instrument of choice for serious diagnosis and treatment. —Jim Callahan with Jason Eggleston

RATING: ★★★★★ PROS: Comprehensive protocol support; comparative summary statistics; HTML output; sophisticated plug-in analyzers.

MACWORLD May 1998
Step into the world of motion with FreeHand 8.

The world of design is in motion. Toward more powerful effects, animation, and the Web. FreeHand™ moves your print designs to a new level with tools like editable transparency, a customizable interface that streamlines integration with your other tools, and the industry's fastest redraws. Move into the world of Web design with vector graphics that download quickly with superior quality, anti-aliased text, and support for the leading Web animation tool, Macromedia® Flash™. Get FreeHand 8 alone — or upgrade to the Design in Motion™ Suite, which also includes Flash and InstaHTML 2 for turning FreeHand layouts into Web pages and save up to $300. Just call 1 800 457-1774 and mention code 805. Or visit http://special.macromedia.com/f8/m for all the details.
**VideoShop 4.0/3D**

**VETERAN VIDEO EDITOR ADDS 3-D SUPPORT, MUSIC MAKER**

**THE ACCELERATION**

The slower you surf, the better you've arranged imported media in the Project window, where you can view a production as a timeline or as a storyboard that displays one frame of each clip. The storyboard view is useful for assembling rough edits and rearranging clips, and it's unique to VideoShop.

Another VideoShop feature you won't find in Premiere is a window that lets you layer and resize clips and draw motion paths for clips to follow as they play, opening up more motion-animation possibilities than Premiere offers. All the usual transitions are here, along with an array of filters that's more interesting than Premiere's.

Even more interesting is VideoShop's new support for 3-D effects: you can import a QuickDraw 3D-format 3DMF file and map a video clip onto it, though the process is a bit unwieldy (you have to add two types of specialized tracks and then associate them with the clip you're mapping). Version 4.0.1 also includes a scaled-down version of AirWorks' TuneBuilder, which builds custom-length music soundtracks in a variety of musical styles. TuneBuilder is more cumbersome than similar products, but it works.

Although Strata has improved VideoShop, weak spots and design lapses remain. Importing PICT images is a cumbersome, multistep process; you can't nudge clips in the Canvas window by using the arrow keys; the Project window doesn't autoscroll as you stretch clips or move tracks; and the Preview window always opens at the same location—which happens to be halfway off a 640-by-480-pixel monitor—even if you previously repositioned it. And although VideoShop works with most Adobe Photoshop plug-ins, it doesn't accept Premiere plug-ins, making a broad array of video and audio add-ons unavailable.

**Macworld's Buying Advice**

Surf Express is a runner-up to Premiere for most uses, though the $89 promotional price may make its weaknesses easier to live with. It will still cost less than Premiere when the price reverts to $495, but its shortcomings won't be buried under quite as much savings.—**JIM HEID**

| RATING: | PROS: Easy to learn and use; novel QuickDraw 3D support. | CONS: Doesn't support Premiere plug-ins; some design lapses. |

You can search Surf Express's cache for words or phrases and narrow your search by date. Although this is a big improvement over standard browser caches, which aren't searchable, the FindCache feature still needs work: searches are often slow, even on a fast Power Mac, and some words never seem to make it into the cache. Another feature is designed to fetch commonly viewed pages before you request them, increasing the chances that they'll be retrieved from the cache rather than loaded again from the Web. Enabling this SmartCacher feature seems to have little effect, however.

**Macworld's Buying Advice**

For modest users, Surf Express makes the wait for Web pages less painful, especially for frequently visited sites. If you have an ISDN connection, you'll still find Surf Express useful, though you'll perceive less improvement; if you're lucky enough to have a truly high-speed connection to the Internet, Surf Express isn't for you.—**TOM NEGRIANO**

| RATING: | PROS: Accelerates loading of previously viewed sites; cached pages are searchable. | CONS: Doesn't live up to performance claims; SmartCacher is ineffective. |

---

**Surf Express**

**THE SLOWER YOU SURF, THE BETTER THE ACCELERATION**

One of the most common complaints about the Internet is the speed at which web pages download. The new Surf Express 1.0, from Connectix, tries to improve your surfing experience by helping your browser display frequently visited pages faster. It's no panacea, but it does help, especially if you have a slow Internet connection.

The Power Mac-only Surf Express works by replacing the caching mechanism built into all Web browsers with a more efficient system. Instead of storing dozens or hundreds of small cache files in a folder on your hard disk, Surf Express saves the text and graphics of the Web pages you visit in a database. The next time you visit those sites, the program retrieves from the database the page elements that haven't changed since your last visit. Therefore, the program doesn't help you get to Web sites any faster; it simply speeds up the display of sites you've already seen.

I tested Surf Express on three Internet connections—a 33.6-Kbps modem, a dual-channel ISDN line, and a cable modem operating at roughly T1 speed—and found that the slower the connection, the more noticeable the acceleration. For example, a graphics-heavy page took 90 seconds to load with the 33.6-Kbps modem and only 7 seconds to reload from Surf Express's cache. With the cable modem, the page loaded in just 15 seconds but still took about 7 seconds to reload from Surf Express. (ISDN download page in 41 seconds and reload it in 7 seconds.) Without Surf Express, Navigator's cache required 13 seconds to reload the same page. That's significant acceleration, but it's hardly the "up to 36 times faster" touted by Connectix.

Remembrance of Things Cached  Surf Express 1.0's pie chart shows you how much you've been accessing the local cache instead of loading new pages from the network.

You can add a new track, a new page, or a new area of a page to the cache. The cache area is visualized as a pie chart in the Remembrance of Things Cached window. You can also add and remove clips from the cache, as well as replace clips in the cache. Surf Express also has a SmartCacher feature that automatically detects frequently visited pages and adds them to the cache. You can also manually add pages to the cache or remove them.

Another feature is the ability to set up a hierarchy of cache areas. You can create a new cache area for each browser, or for each type of content (such as images or text). This allows you to control which types of content are cached in each area.

In conclusion, Surf Express is a useful tool for improving the speed of your Internet experience. It's not a cure-all, but it's definitely worth a try if you're frustrated with slow Internet connections.

---

**Video Cubism**

VideoShop 4.0.1/3D can map clips onto 3-D surfaces, which you can spin and resize using Tweak tracks.
Which APC UPS is right for your system?
Get Your FREE Catalog and UPS Selection Guide

☐ YES! I want to know how to choose the right UPS for my Mac. Please send me my FREE catalog and APC UPS Selection Guide.

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

Name: ____________________________
Title: ____________________________ Company: ____________________________
Address: _______________________________________________________________
City/Town: ____________________________ Zip: ____________________________ Country: ____________________________
Phone: ____________________________
Brand of UPS Used? ____________________________ # ____________________________
# of Macs on Site? ____________________________
Brand of Servers Used? ____________________________ # ____________________________

©1998 APC. All Trademarks are the property of their owners. BK4B7EB-US • E-mail: apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA
Nothing Lasts Longer

The world's best-selling UPSs now start at $99

Now the world's best-selling desktop UPS units offer you even more value for your power protection dollar! With over 45% of all data loss and downtime caused by bad power, your APC investment pays for itself the first time you use it.

New: More power and guaranteed "Best in Class" Longest Runtime.

Our runtime will meet or exceed that of any same VA UPS for desktop applications, or your money back!

Multipath protection for your whole system

APC protects your CPU, monitor, external modem, laser printer, fax machine, and zip drives, and provides telephone/network surge suppression.

User-renewable UPS system

APC QuickSwap® battery packs are the quickest and easiest way to safely renew a UPS, unlike "disposable" UPSs which don't allow safe user replacement and mean the end of your investment.

APC products are available at:  

FREE! Catalog and UPS Selection Guide

Just mail or fax this completed coupon for your FREE catalog and UPS selection Guide. Better yet, order them today at:

promo.apcc.com  

Name: __________ Company: __________
Address: __________
City/Town: __________ Zip: __________ Country: __________
Phone: __________
Brand of UPS used? __________ # __________
# of Macs on site? __________
Brand of Server used? __________ # __________

Circle 72 on reader service card
**QX-Effects 3.0**

SPECIAL EFFECTS FOR QUARKXPRESS

Some programs are great toys; others are must-have workhorses. The new Extensis QX-Effects 3.0.1—which, in its earlier incarnation, was part of QX-Tools—is both. This plug-in for QuarkXPress 3.3 and 4.0 lets you apply shadows, embossing, glows, and bevels to box frames and text. If you create ad copy, brochures, or other effects-intensive designs, you’ll simply have a blast trying out these features.

QX-Effects not only makes it easy to create effects but also gives you a lot of control over the process. When creating a shadow, for example, you determine its angle, color, opacity, and blur. After you’ve experimented with the live preview, which shows you the effect of each setting, you click on the Finish button and wait for QX-Effects to generate the effect (a process that can take several minutes, even on a PowerPC 750-based Mac).

Once you have the effect you want, you can save all the settings for later use. Effects are automatically added to the QX-Effects menu for easy access (you can also delete them from the menu). Once you create an effect, however, you can’t change it; QX-Effects creates a bitmapped image of the effect and places the image in a picture box, so if you want a different effect, you have to create a new one with new settings.

QX-Effects comes with eight predefined effects, but don’t use them if you’re applying the effects to text that overprints bitmapped images: you’ll want to blend the effect into the image (which must be a TIFF file), something the canned effects can’t do. If you don’t blend the effect, the picture box that contains it ends up under the original text and on top of (and thereby obscuring) the bitmapped image. If you do blend the effect, QuarkXPress creates a new picture box containing the effect blended into a copy of the original, underlying image. Once you’re happy with the effect, you can delete the original image’s picture box to save disk space and printing time.

Be prepared to allocate a lot of memory to QuarkXPress if you blend effects into images. To use QX-Effects with text overlaying half-page, 300-dpi TIFF images, I had to bump up the memory allocation to 40MB. It would be nice if QX-Effects could save RAM by swapping out the image it creates to disk.

**Macworld’s Buying Advice** QX-Effects 3.0.1 should be on your shopping list if you use special effects in QuarkXPress. At a street price of about $130, it’s a bit pricey. But its only real competition is a Lowly Apprentice Production’s $100 ShadowCaster, which is limited to creating only shadows and offers fewer controls.—Galen Gruman

---

**Hard Disk Toolkit 2.5**

FORMATTER GETS A SMOOTHER LOOK

Typical Mac users don’t even think about hard-disk drivers. Indeed, hard disks usually come preformatted with a driver installed, and many users have no idea of the virtually invisible, but crucial, software that lets the operating system talk to their hard disks and removable devices. But as essential as these unsung heroes are, FWB’s Hard Disk Toolkit (HDT)—a veteran Mac disk-tools package—offers more than just a driver.

Although the transition from HDT 1.8 to 2.0 was an abrupt shift for HDT’s users (some of whom felt the upgrade had actually removed capabilities), HDT 2.5 offers a much less jarring change. At first glance, the new version appears almost identical to 2.0, but it’s clear that the upgrade smooths many of the rough spots in 2.0’s user interface. Initializing disks is now a much more streamlined process, and this version revives the ability to create equal-sized partitions on a freshly formatted drive—a definite improvement over 2.0’s process of creating them one at a time.

HDT 2.5 comes on a single, bootable CD-ROM, which also sports a “crisis tool” that lets you attempt to make software-related repairs on the driver and partition map of your disk. HDT also offers other, less immediately visible areas of improvement, including a PowerPC-native driver for IDE disks and the ability to easily create custom partition types, such as for DOS—in instances where removable media are shared across platforms—or PowerPC versions of Linux.

Although case of use is important when setting up a disk, a driver should be reliable and get the highest performance possible out of the drive—in that order. HDT’s overall reliability track record has been good, and version 2.5 adds a new Event Monitor feature that alerts you if your drive’s hardware looks as if it’s about to go south. If a disk begins to encounter read or write errors, or something similarly untoward, HDT 2.5’s new driver can alert you that something is amiss.

Despite HDT 2.5’s overall polish, the package still has flaws. It doesn’t support SCSI Disk Mode for PowerBooks with IDE drives (which includes most recent models), and the HDT 2.5 driver for removable media is incompatible with the Mac OS Disk First Aid’s Repair mode.

**Macworld’s Buying Advice** HDT’s 2.5 upgrade is notable for its overall polish rather than for any single innovation. It does everything it used to do, only better, and has added useful features such as event monitoring. HDT 2.5 still has some rough spots, but the $29 upgrade from HDT 2.0—which comes bundled with many non-Apple drives—is a no-brainer; upgrades from previous versions are similarly reasonable.—Stephan Somogyi

---

**RATING: ★★★★½ PROS: Provides a high degree of control over effects; lets you customize effects menu. CONS: No undo; expensive; RAM-intensive. COMPANY: Extensis (503/274-2020, www.extensis.com). COMPANY’S ESTIMATED PRICE: $129.95.**
Your Fears Unleashed.

Your Senses Expanded.

Your Reality Altered.

Forever...
Test Strip 2.02
COLOR PLUG-IN GAINS FEATURES

Vivid Details' Test Strip simplifies color correction by letting you view variations in color cast, exposure, and saturation either on-screen or in a printed test proof. The latest version of this handy Adobe Photoshop plug-in, Test Strip 2.02, adds several productivity enhancements along with faster performance and improvements to the plug-in's exposure controls.

As with the original version, Test Strip 2.02 presents four color-correction modes: Color Balance, One Color, Exposure, and Saturation. Color Balance displays the original image plus eight variations: darker, lighter, and with greater or lesser amounts of primary colors (RGB or CMY). Each image's variants are shown in 15 percent increments, but a slider control lets you make modifications. Whereas Test Strip 1.0 displayed its variations in nine sectors of a single image, the new version offers the option of viewing individual thumbnails of the entire image.

One Color displays variations of a single primary color. By default, the image is divided into five vertical strips showing reduced and increased amounts of that color; the software also provides horizontal and three-strip layouts. A Flip Layout button lets you rearrange the strips, making it easy to see the effects of color adjustments on different parts of the image. A similar Saturation mode lets you increase or decrease saturation with a slider.

Exposure offers control over brightness and contrast. Test Strip 1.0 adjusted these settings with a linear transfer function, sometimes causing image data to be lost; the new version includes a curve-adjustment option that better preserves the image. A new Auto White/Black Point button expands tonal range by moving the darkest and lightest pixels to black and white.

Test Strip's Before & After panel allows you to review changes you've made to the image. New in version 2.02, an editable task list presents all modifications you've made and lets you change these settings without going back to the original panel. This capability partially compensates for the single Undo in Test Strip 2.02 (the original version offered unlimited Undos). Image modifications can also be recorded in the Photoshop Actions palette.

Test Strip ships with 115 effects and 72 photographic filters, but not the kind you apply from Photoshop's Filters menu. Instead, these presets perform standard image modifications, such as removing casts caused by common lighting conditions.

Macworld's Buying Advice
Test Strip 2.02 offers an intuitive approach to color correction at a reasonable price, but a few features remain missing, including thumbnails in most modes and the ability to pan in magnified views. Nevertheless, the upgrade adds several useful features to this valuable Photoshop plug-in.—Stephen Beale

LANsurveyor 4.0
NETWORK MONITOR WEAK ON IP

With the advent of TCP/IP-based intranet servers, IP-based Mac file sharing, and IP-based third-party network tools, Mac LAN administrators are being forced out of their cozy AppleTalk enclaves and into the big, scary world of mixed IP and AppleTalk networks. The latest update to Neon Software's LANsurveyor aims to help administrators live with this diversity by adding support for TCP/IP devices and services. Alas, LANsurveyor 4.0's TCP/IP capabilities are few and late on the scene.

LANsurveyor 4.0 consists of a central network-management application that scans your network for AppleTalk computers and routers, maps them, and monitors their status. It also includes a remote Responder application that you can install on users' Macs to collect detailed status and inventory information.

New in this release are the tallying of hardware and software components for on-demand inventory reports, scheduled file distribution, SNMP-mail notification, and the ability to launch and quit applications running on remote machines. Also new is the ability to identify IP-based services. Unfortunately, because you need the Responder application to collect most IP-oriented information, automatic discovery and monitoring are limited to Macs. IP-based printers, non-Macintosh file servers, and routers are all invisible to LANsurveyor unless you configure them manually.

Part of LANsurveyor's new IP compatibility includes support for SNMP, the standard network-management language spoken by IP devices. Using SNMP, LANsurveyor can query any SNMP-capable device and read traffic counters that measure the amount of data the device is moving. But because LANsurveyor reports only the current value of the traffic counters, you have to write down numbers and manually compute data rates in bytes per second. Worse, LANsurveyor lets you specify only one SNMP community name; if your network has several community names, you can't monitor every device. Instead, LANsurveyor itself still uses the obsolete AppleTalk protocol to talk to its remote Mac Responders. That means you can't use any of LANsurveyor's new inventory features across a TCP/IP-only router.

Macworld's Buying Advice
LANsurveyor 4.0 adds some useful new features, but it misses the boat completely by restricting these features to old-guard networks. Coupled with the inability to discover IP devices on its own, that makes LANsurveyor a poor choice for managing a LAN. You may find products such as Dartmouth's InterMapper a better solution, or at least an essential adjunct.—Mel Beckman

RATING: 4/4½

RATING: 3'/2
Completely original engine, ruthless AI, hyper-realistic environmental effects, portals, and an endless multiplayer universe of user created, hot linked levels...welcome to the Bermuda Triangle of the galaxy

Coming Soon...
**Entable**

UNEVEN TABLE TOOL FOR QUARKXPRESS

If only QuarkXPress's table-creation tools were as powerful as its typographic tools. Alas, the program lacks such basic amenities as column shading and automatic placement of vertical rules between columns. Stepping into this gap in QuarkXPress is Entable 1.02, a new table-creation program from Tableworks (formerly Npath). But despite an abundance of features that let you quickly create and modify tables, Entable needs some fine-tuning—and better compatibility with XPress 4.01.

Entable is a stand-alone application rather than an XTension; you create table files that are linked to boxes within XPress, and an XTension added to XPress's Tools palette makes switching between the two programs nearly transparent. In contrast, the Tableworks XTension—Entable's predecessor and closest competitor—has you create tables within XPress, using grids of text and picture boxes. Unhitched from XPress, Entable can offer a more versatile feature set that lets you control the appearance of cells and text. Even better, the files Entable generates are smaller and print more quickly than similar tables created with the Tableworks XTension.

To create a table box with Entable, you select the table-creation tool and click and drag a rectangle. You can then import a previously created table, import all or part of the currently active table, or generate a new table from a text file or from selected XPress text. When you save a table that's been linked to an XPress document, that document is updated automatically.

XPress users will find much to like about Entable. Besides an XPress-like interface and compatibility with some of XPress's most powerful features, it has some powerful features of its own: it lets you create multpage tables, slant the cells in rows and columns, flow text horizontally or vertically, embed XPress text boxes and picture boxes within tables, and create 3-D cells.

But Entable has several idiosyncrasies, from the benign (longer imported color names are truncated) to the unacceptable (you can't double-click on a word to select it). One could forgive Entable's quirks if it worked flawlessly with XPress; however, switching between the two programs produces screen-redraw problems in XPress, occasionally followed by system crashes. In addition, Entable itself exhibits some minor display problems.

Macworld's Buying Advice Entable is a feature-packed utility that fills a gaping hole in QuarkXPress. Although the 1.02 update solves some of the stability problems, you might want to wait until the remaining quirks are ironed out before entrusting your table-creation chores to this otherwise promising newcomer.—John Cruise

**Noesys 1.1**

VISUALIZE YOUR DATA

When you see images from space or a weather map on the evening news, you may be looking at data that's coded in HDF (Hierarchical Data Format). Because an HDF file can contain a data directory, annotations, definitions, and multiple raster images in addition to basic floating-point numeric tables, HDF has become the most common format for graphically representing scientific and other technical information. An indispensable program for handling HDF data is Noesys 1.1.2, from Fortner Software. Actually a bundle of three data-visualization tools—Fortner's Plot, Transform, and T3D—Noesys is now the Mac and Windows standard for visualizing numerical data.

Using numbers in a spreadsheetlike table format as a two-dimensional slice for input, Noesys produces colorful 2-D and 3-D graphics. Unlike Microsoft Excel, Noesys can gracefully accept multimillion-point data sets, work with structured subsets of gigabyte-size arrays, organize 3-D data into neatly ordered sets of 2-D slices, view and edit original data in decimal or hexadecimal mode, and use a huge set of easily customized 8- or 24-bit color palettes (included) to represent your numbers. In practice, finding the right color scale for representation is often the key to seeing the one important fact lurking in a set of three million data numbers, and Noesys is the right tool for this job.

Noesys includes a FORTRAN 90-based macro language for processing the data in your tables. Although the macro interpreter is quite fast, Noesys's raw speed at adding or differencing megabyte-size tables is even more impressive. And because switching color palettes is nearly instantaneous, searching for the most revealing visual representation of your data is more a pleasant activity than a chore.

I have only two complaints about Noesys. First, although it can convert netCDF, TIFF, and PICT images to HDF, a longer list of conversion functions would make Noesys useful in a wider range of disciplines. And given that Noesys costs nearly $800, a printed manual should be part of the package rather than a $45 option.

Macworld's Buying Advice If you're involved in scientific imaging, you probably already know about Plot, Transform, and T3D. The new upgrade to Noesys is an excellent adaptation to the new Web realities of document exchange. If you work with economic or medical data, the examples on Fortner's Web site will show you how Noesys can go beyond the graphing functions of your current statistics package. It's truly inspiring to see software that can turn a Macintosh into an ideal visualization device.—Charles Seiter

**Reviews**

<table>
<thead>
<tr>
<th>RATING:</th>
<th>PROS:</th>
<th>CONS:</th>
<th>COMPANY:</th>
<th>LIST PRICE:</th>
</tr>
</thead>
</table>
Mini DV It’s not simply image making. It’s history making. It’s the brave new world of the Canon Optura Digital Camcorder. The first Mini DV camcorder ever to harness the power of a digital motor drive. The only camcorder that shoots like a 35mm SLR camera.

**First Digital Motor Drive™**
The ability to shoot 30 full-frame images per second is an amazing camcorder first. Canon’s Digital Motor Drive never misses a moment, so you never miss a shot. High action images are captured with only the highest quality resolution, and individual frames can be selected and enjoyed on-screen or as digital prints.

**Exclusive Progressive Scan CCD**
A giant leap from the past, only the Optura incorporates the superior image-capturing capability of a Progressive Scan CCD. This unique image sensor significantly improves picture quality and allows you to shoot at lightning fast speeds. So now, for the first time, you’re able to shoot in “Movie,” “Photo” or “Digital Motor Drive” mode.

**Canon Signature Features**
The Optura also comes with Canon’s exclusive RGB Primary Color Filter, which rivals 3CCD systems. It offers the world’s longest optical Mini DV zoom—a 14x Optical/35x Digital Zoom—equal to a 37-1,309mm lens on a 35mm camera. Plus an Optical Image Stabilizer, FlexiZone Autofocus, Programmed Auto Exposure, Shutter and Aperture Priority Modes, two-inch Color View Screen, Color Viewfinder, 12-bit/16-bit Digital Stereo and optional E-TTL EOS Speedlites for flash photography.

**Unlimited Creativity By PC**
With an IEEE1394 interface, a video capture board and software, the Optura allows you to download, edit, manipulate and output the world’s finest videos and stills with just the click of your mouse.

Discover the new world of digital imaging. For complete information, call us at 1-800-OK-CANON or visit us at www.canondv.com.
MAKING FUN OF BAD MOVIES is a pastime with a long and respectable history. If you've ever seen the hecklers on Mystery Science Theater 3000 or giggled at Woody Allen's overdubbed dialogue in What's Up, Tiger Lily?, you know how much fun movie-mocking can be. Movioke, a new CD-ROM from Bandai Digital Entertainment, lets you record new dialogue onto 12 clips from hokey old movies. Movioke is even funnier in practice than it is on paper. As software, however, it needs polish.

Movioke (think "movie karaoke"), you click on Record to play the two-minute movie clip; the original soundtrack drops out during your chosen character's speaking parts. As the script scrolls by at the right side of the screen, you record your own rendition of the lines; when the scene is over, you click on Play to view the scene with your voice neatly spliced into the soundtrack.

But the novelty of rerecording the original dialogue wears off faster than you can say "Plan 9 from Outer Space." It's much more fun to dub in completely different dialogue, doing your best to match the length, mood, and even lip movements of the original lines. One of the examples on the CD turns a condemned man's melodramatic march to the electric chair into a desperate quest for toilet paper; another turns a mobster into a traveling salesman. The CD includes a good mix of ludicrous sci-fi scenes and generic two- or three-person scenes that offer much more flexibility.

Unfortunately, the CD's host—the ordinarily hilarious Dennis Miller—looks bored and unprepared, obviously reading from a TelePrompTer. Worse, the same handful of tiresome Miller remarks brackets every recording and playback. Movioke would be dramatically improved by a name host with the time and patience to record a nonrepeating collection of quips.

Movioke's origins as a low-cost title for Apple's abandoned Pippin game-playing console are especially apparent in the CD's programming problems. You can't open one of the prerecorded examples without first opening the corresponding movie scene—sort of like saying you can't open a ClarisWorks spreadsheet unless you first open a new spreadsheet. You can't begin an overdubbing session in the middle; if you make a mistake, you must start over from the beginning. And the small QuickTime movies are blown up to full-screen size during playback, making them disappointingly grainy.

Macworld's Buying Advice: On one hand, Movioke could benefit from more polish, more clips, and less Dennis Miller. On the other hand, it costs less than $30 and provides a hilarious experience you can't get any other way. Come to think of it, Movioke is like a low-budget movie: sure, it's cheap and unpolished, but you're laughing too hard to notice.—DAVID POGUE

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

Sooner or later, you’ll need to connect your Mac to a PC-printer. Afterall, your clients use them. Your favorite hotels use them. Even your co-workers use them. The good news is that it’s easy to connect to a PC-printer. You just need PowerPrint.

For only $99, PowerPrint has the software and smart cable that makes it all possible. You’ll be able to print from your Mac to over a thousand different printers from companies like Canon, Epson, HP, Okidata, Panasonic and more.

So get PowerPrint if you think you’ll be using a PC-printer anytime soon. Or just keep us on file until you do need us. Because you will need us.

Call us: 800-564-0644
Or visit: www.infowave.net

PowerPrint®

Circle 32 on reader service card
Deadlock
A SIM WITHOUT THE WORK

PLAYING A STATE-OF-THE-ART simulation game often boils down to a grueling test of your brain’s capacity for minutiae: staying on top of your empire can be tough. Enter Deadlock, a fun resource-management sim that gives your brain a breather.

Deadlock’s story unfolds in a crowded galaxy where spacefaring species jockey to gain the upper hand, racing to colonize the few viable planets left. When a tense standoff develops over fertile Gallius V, each species agrees to send a single team of colonists with a set amount of resources. The first species whose colony achieves a predetermined strength (or eliminates other colonies) wins the contest, and the planet.

As colony commander, you direct colonists in building and operating various enterprises: farms to grow food, mines to obtain natural resources, factories to process the resources (and build weapons), and laboratories to research new technologies. Along the way, you can also negotiate with other colony leaders and purchase items on the black market—but don’t get caught doing the latter!

Deadlock makes building and maintaining your colony easy and fun, with clear, colorful graphics and an approachable, informative interface. A status panel tells you how many resources you have and how fast you’re amassing new wealth or burning your reserves—a joyous addition if you’re used to digging through dialog boxes to unearth essential information. It’s also easy to manage your colonists: each group of 100 citizens is represented by a tiny animated figure. If they’re happy, you can drag them to a project that needs more labor. If they’re upset, each red figure retreats to its housing unit, where it refuses to work and waves its arms in indignation.

Deadlock offers multiple conditions that allow you to win, and its cornucopia of variables keep the game interesting. You can choose to play as one of seven species, each with its strengths and weaknesses. You also decide whether you want to crush your enemies with shock troops and laser fire or build a mighty economic empire and out-develop them—it’s possible to succeed on either path. However, the array of choices never becomes a burden and the game’s cause-and-effect relationships are simple, direct, and easily intuited—a relief for gamers who enjoy the idea of running an empire but are intimidated by the sprawling complexity of mega-sims like Civilization II or the sophistication of battle sims like Command and Conquer. Although networkable, Deadlock offers no “hot seat” capability for multiple players on a single computer.

Macworld’s Buying Advice
Hard-core gamers will tire of Deadlock quickly, but if you’d rather play a game than work at keeping up with it, Deadlock promises many an evening’s entertainment.—Cameron Crotty


---

Effortlessly Convert Your Mac Disks

PlusMaker quickly converts the disks of your choice to HFS Plus so you can immediately enjoy the maximum space saving benefits of the new disk format. “I used PlusMaker on all three of my disks, and it worked flawlessly. Best of all, none of the disks took longer than 15 minutes to process. Compare that to the time it would take you to back up, reformat and restore each of your hard disks and I’m sure you’ll agree, PlusMaker is way cool.” Bob LeVitus “Dr. Mac”, Houston Chronicle, 2/14/98

www.AlsoftInc.com
800-ALSOFT1

PlusMaker

Manual Conversion

Effortlessly makes current Mac disks into HFS Plus disks without erasing and restoring from backups

Existing aliases and backup storage sets continue to work

Maximizes space savings with smallest possible allocation block size

Optimizes directory performance

<table>
<thead>
<tr>
<th>Effortlessly makes current Mac disks into HFS Plus disks without erasing and restoring from backups</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing aliases and backup storage sets continue to work</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Maximizes space savings with smallest possible allocation block size</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Optimizes directory performance</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

Envisage Mac OS 8 or later; Alsoft & PlusMaker are registered trademarks of Alsoft, Inc. All other trademarks acknowledged. © 1998-1999 Alsoft, Inc. All rights reserved.

Circle 140 on reader service card

---

Effortlessly Convert Your Mac Disks

PlusMaker quickly converts the disks of your choice to HFS Plus so you can immediately enjoy the maximum space saving benefits of the new disk format. “I used PlusMaker on all three of my disks, and it worked flawlessly. Best of all, none of the disks took longer than 15 minutes to process. Compare that to the time it would take you to back up, reformat and restore each of your hard disks and I’m sure you’ll agree, PlusMaker is way cool.” Bob LeVitus “Dr. Mac”, Houston Chronicle, 2/14/98

www.AlsoftInc.com
800-ALSOFT1

PlusMaker

Manual Conversion

Effortlessly makes current Mac disks into HFS Plus disks without erasing and restoring from backups

Existing aliases and backup storage sets continue to work

Maximizes space savings with smallest possible allocation block size

Optimizes directory performance

<table>
<thead>
<tr>
<th>Effortlessly makes current Mac disks into HFS Plus disks without erasing and restoring from backups</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing aliases and backup storage sets continue to work</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Maximizes space savings with smallest possible allocation block size</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Optimizes directory performance</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

Envisage Mac OS 8 or later; Alsoft & PlusMaker are registered trademarks of Alsoft, Inc. All other trademarks acknowledged. © 1998-1999 Alsoft, Inc. All rights reserved.

Circle 140 on reader service card
The more time you spend at your computer, the more you'll appreciate Hitachi's revolutionary, new, PrecisionFocus™ 19 and 21-inch monitors. Because no other monitor is easier on your eyes.

With their multi-step dynamic focus and auto-astigmatism correction, they are 10% sharper than the previous state-of-the-art. Plus they deliver improved brightness, image accuracy, and color purity at the same time.

So give your eyes a break. Call for the full story on the new Hitachi's.

800 441-4832.
Choosing a quality color system

1

CLC 320

2

CLC 900

for your network is as easy as

you to high-quality, network-compatible color for your office. And you’ll see how simple and productive network-compatible color can be with a Canon Color Laser Copier/Printer.

With the CLC 320 and a ColorPASS 320 Controller, for example, network users can easily produce continuous-tone images up to 11" x 17" at 5 pages per minute. The CLC 900 Series offers added productivity and the industry’s benchmark in quality. When connected to a ColorPASS Controller, the 900 Series offers professional-quality prints at 7 ppm.

And with its Automatic Duplexing capabilities, the CLC 950 makes even the most complex network jobs quick and effortless. In fact, whatever the network, whatever the source, however your volume demands change, we can make the reality of Canon laser color a reality for your business. After all, we’ve been number one in laser color in the U.S. for ten years.*

To find out more, call 1-800-OK-CANON anytime. Or visit us on the Web at www.usa.canon.com. You can have high-quality color. Count on it.

Canon Laser Color. Its only competition is reality.
New OmniPage Pro 8.0.
Over 99% accurate—guaranteed!

Don’t retype another letter, report, fax or article into your computer ever again. New OmniPage Pro 8.0 for Macintosh easily converts your scanned pages into editable text and graphics in seconds. Which means you can quickly input text into your favorite applications like Word, WordPerfect, Excel and others.

OmniPage Pro 8.0 is a quantum leap forward in OCR accuracy, even when compared to version 7.0. What’s more, it offers dramatic accuracy improvements even when you OCR poor-quality documents—faxes, small text, skewed pages, reversed-out type, bad copies and more.

Don’t settle for anything less than the most accurate OCR in the world. Call now to order, or visit your local reseller today. Who knows, they may even let you trade in your old keyboard.

"OmniPage Pro is as good as it gets."
MacWeek January 27, 1997

- Easy-to-use, one-click OCR
- Maintains original page layout
- Now saves color images in color—not black and white
- Proofreads OCR results
- Seamlessly integrates with Microsoft Word
- OmniPage Guide provides comprehensive online help
- Outputs to HTML 3.0, and more!

UNIVERSAL UPGRADE
$129**
SPECIAL UNIVERSAL UPGRADE FOR ALL SCANNER OWNERS

800-736-5735 x.80

www.caere.com

Circle 69 on reader service card
LIFE IS FULL OF CHOICES. YOU MAY HOLD UP
the drive-thru line at the local fast-food joint
because you ordered your burger without
ketchup. But the sign does say, “We do it
your way.” And remember when you bought
your family’s new station wagon? That
AM/FM stereo and wood paneling were fea­
tures you selected.

But buying a Mac­
intosh from Apple
Computer hasn’t been
that easy. In fact, with
regards to purchasing a
Mac, Apple has always
told you what to buy. It
offered a limited selec­
tion of configurations
(sometimes only one)
for the taking. There
were only a few choices
to select from—choices
Apple made for you.

Thankfully, that’s
not the case anymore. The day of building
your own Mac is finally here. With Apple’s
online ordering service, the Apple Store
(www.apple.com/store/), you pick the com­
ponents you need and substitute or subtract
the ones you don’t. And with the new
300MHz Power Macintosh G3 added to the
selection (see the sidebar “New Mac Is Fast
but Limited”), a variety of speeds and a slew
of features are only a mouse-click away.

But there are key issues to consider
before ordering a Mac from Apple’s store.
Custom-configuring a computer sounds sim­
ple: you pick the features you want, and the

BY ALLYSON BATES

WWW.MACWORLD.COM  MAY 1998  63
NOW THAT APPLE HAS EXPANDED ITS OFFERINGS AND DOES THE
installation for you, does it make sense to buy a Mac elsewhere
and add peripherals? Surprisingly, it does not—even though the
Apple Store initially charged high prices for peripherals, it now
charges competitive prices for most upgrades. To see how the
Apple Store compared with other direct outlets, Macworld
selected a moderately equipped Power Mac G3/266 system—
what Apple labels Better in its online store—and a similarly con-
figured system from resellers and then added components that
most users would want.

The Apple Better Power Mac G3/266 costs $4,123 and in-
cludes a 266MHz PowerPC 750 CPU, a 512K cache, 2MB of
video RAM, 64MB of RAM, a 4GB IDE hard drive, a 24x CD-
ROM drive, a Zip drive, 10BaseT Ethernet, an audio/video
card, 6MB of VRAM, and a 17-inch display. Apple lets its
resellers offer a similarly configured Power Mac G3/266 for
$2,999 that features only 32MB of RAM, an audio-only card,
and no monitor, but that comes with a 6GB hard drive. (Apple
charges $2,824 for this configuration.) Note that Apple does not
permit resellers to substitute or remove components, only add
them. Therefore, changes to the configuration for Macs not
bought from Apple directly could limit slot availability and may
duplicate features. But Apple expects to let resellers custom-
configure their systems later this year, which should reduce the
price difference.

While Apple has done well with its online store, the company
still can’t compete with PC makers, as our survey shows,
using Dell Computer’s popular system as an example.

How Direct Outlets Compare

<table>
<thead>
<tr>
<th></th>
<th>Apple Computer</th>
<th>Cyberian Outpost</th>
<th>MacConnection</th>
<th>MacWarehouse</th>
<th>Mac Zone</th>
<th>Dell Computer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information phone (toll)</td>
<td>408/996-1010</td>
<td>800/927-2050</td>
<td>603/446-3383</td>
<td>732/370-3801</td>
<td>425/430-3570</td>
<td>none</td>
</tr>
<tr>
<td>Sales phone (toll-free)</td>
<td>800/795-1000</td>
<td>800/856-9800</td>
<td>800/800-0009</td>
<td>800/255-6227</td>
<td>888/211-5032</td>
<td>800/472-2355</td>
</tr>
<tr>
<td>Power Macintosh G3/266</td>
<td>$4,123</td>
<td>$2,849</td>
<td>$2,999</td>
<td>$2,999</td>
<td>$2,999</td>
<td>$2,467 (300MHz Pentium II PC)</td>
</tr>
<tr>
<td>Upgrade Components</td>
<td>128MB 512MB DRAM</td>
<td>$400</td>
<td>$479</td>
<td>$650</td>
<td>$1,300</td>
<td>$710</td>
</tr>
<tr>
<td></td>
<td>6GB IDE hard drive</td>
<td>$175</td>
<td>include</td>
<td>included</td>
<td>included</td>
<td>included</td>
</tr>
<tr>
<td></td>
<td>Zip drive</td>
<td>included</td>
<td>included</td>
<td>included</td>
<td>included</td>
<td>included</td>
</tr>
<tr>
<td></td>
<td>6MB video RAM</td>
<td>included</td>
<td>$69</td>
<td>$120</td>
<td>$250</td>
<td>$125</td>
</tr>
<tr>
<td></td>
<td>Accelerated video card</td>
<td>$325</td>
<td>$579</td>
<td>$429</td>
<td>$599</td>
<td>$420</td>
</tr>
<tr>
<td></td>
<td>10BaseT Ethernet</td>
<td>$100</td>
<td>NA</td>
<td>$70</td>
<td>$70</td>
<td>$140</td>
</tr>
<tr>
<td>Installation</td>
<td>free</td>
<td>free</td>
<td>free</td>
<td>$30</td>
<td>$35</td>
<td>free</td>
</tr>
<tr>
<td>Additional Components</td>
<td>17-inch display</td>
<td>included (Apple ColorSync Display)</td>
<td>$949</td>
<td>$949</td>
<td>$649</td>
<td>$850</td>
</tr>
<tr>
<td></td>
<td>(AppleVision 750AV)</td>
<td>$949</td>
<td>(AppleVision 750AV)</td>
<td>(Apple MultiScan 720)</td>
<td>$850</td>
<td>(Apple ColorSync Display)</td>
</tr>
<tr>
<td></td>
<td>Speakers</td>
<td>$110</td>
<td>included with monitor</td>
<td>included with monitor</td>
<td>$90</td>
<td>$110</td>
</tr>
<tr>
<td></td>
<td>Internal 6/6-Kbps modem</td>
<td>included</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>$5,233</td>
<td>$4,925</td>
<td>$5,217</td>
<td>$5,687</td>
<td>$5,389</td>
</tr>
<tr>
<td>Sales tax added</td>
<td>all states</td>
<td>CT, OH</td>
<td>OH</td>
<td>CT, IL, NJ, OH, WA</td>
<td>NV, OH, WA</td>
<td>KY, NV, TX</td>
</tr>
</tbody>
</table>

NA = not applicable.
• For total of 160MB (adding two 64MB DIMMs to the existing 32MB DIMM).
• Adding both features will occupy the only two free PCI slots.
• Reseller cannot install card; user must add it.
• Apple does not sell speakers, so they must be purchased separately.
• Internal modems not offered; external modems cost about $150.  

64 May 1998 MACWORLD
But don’t let this new process intimidate you. Even if you’re new to buying a Mac, Apple offers standard configurations to build on. On its Web site, you can choose from what Apple labels as Good, Better, and Best models, which come with various components and with a 233MHz, 266MHz, or even 300MHz CPU.

Creating your own computer is nothing new to the computing industry. In fact, PC manufacturers such as Dell have offered flexible configurations with incredible price cuts for years. In the Mac market, Power Computing did this as well, until Apple ended Mac OS licensing.

Where to Begin
Whether you start your hunt for a new Mac at Apple’s Web site or through one of Apple’s resellers, the process is fairly similar. When you log on to the Apple Store, you are faced with a few core configurations. At press time, Apple offered only three primary configurations:

- The Good model features a 233MHz CPU, a 512KB cache, 32MB of RAM, a 4GB IDE hard drive, a 24X CD-ROM drive, an audio card, and 6MB of video RAM.
- The Better and Best models include faster, 266MHz CPUs and have more RAM, a Zip drive, a 56-Kbps modem, and a monitor. The Best model has more RAM than the Better model, a SCSI hard drive and card, an 8MB video card, a larger monitor, and 100BaseT Ethernet, but no modem.

When you order from Apple, you’re not tied down to these configurations, because once you find the model most suited to your needs, you can adjust features to your liking and drop those you don’t want. Within each core configuration, you can change the CPU speed, increase (or decrease) the amount of RAM and video RAM, change the hard drive’s speed and capacity, and alter the peripherals.

The Web site quickly calculates your new total, and Apple can process your order immediately, depending on availability. More typically, orders are shipped within two weeks. And if Apple cannot process your custom-made Mac within 30 days of payment, you will be notified and given the option of canceling your order. All products carry a limited one-year warranty, and advisers are on call 24 hours a day at 800/795-1000.

However, if you take those same component requests to a reseller, you’ll find that the procedure is not so simple. Apple limits the configurations sold through resellers, so chances are that you’ll be starting with a different base model. You won’t be able to substitute or remove features; you’ll merely be able to add to the existing system.

Price Wars: Do the Numbers Add Up?
Apple’s online build-to-order program may seem flawless to devoted Mac users, but take a closer look at the numbers. Apple continues to sell custom-made systems at list price. You don’t get a price break, like PC users do when they buy direct. The reason is that Apple must legally charge the same price that it tells resellers to use as a list price. (In the multivendor PC market, some vendors sell only direct and others only in stores.) Therefore, Apple makes a lot more money per unit when selling directly than when selling through a reseller. Here’s why:

For a $7,000 system, Apple might pay $3,750 to make it. A reseller might buy it for $4,500 and sell it to you for $5,500. The reseller makes $500 on the sale, and Apple makes $750. But if Apple sells the system directly to you for $5,000, Apple makes $1,250.

In the sidebar “Make Your Own Mac: What’s in Store for You,” Macworld used Apple’s Web site, the catalogs of several direct-mail resellers, and Dell Computer’s Web site to show pricing differences for a professional-level configuration. As you can see, when compared with companies in the PC industry, Apple is by no means offering great deals through selling direct.

Apple versus the Resellers
Apple’s no-substitution rule puts the resellers at a clear disadvantage. No matter how you cut it, you’ll save money when you purchase from Apple rather than from a reseller. Even though Apple charges list price for components, the company lets you swap out features and doesn’t charge you for installation.

The disadvantage to buying from a reseller, such as Mac Zone or MacConnection, is that you’re forced to buy an existing configuration (usually not comparable to the ones offered by Apple) and you can only upgrade features. Since you can’t substitute or swap pre-installed components to get better ones, you’ll have duplicates of several of those features you upgraded. And that costs extra money.

An obvious example involves upgrading to 100BaseT Ethernet. Since all personality cards in G3 Macs include 10BaseT Ethernet, you’ll need to buy a new 100BaseT Ethernet card. This adds approximately $100 to the cost of your computer (plus installation fees) and takes up one of your three PCI slots.

Further limitations prohibit resellers from installing particular components. Adding an internal modem to the 266MHz tower seems like a logical upgrade no matter where you buy your Mac, since all systems come equipped with a modem slot (or a Comm slot, as it is called in the now defunct Performa line and in some Power Mac 5000 and 6000 models), but resellers such as MacWarehouse are not authorized to install the modem for you and often don’t even sell them for you to install.

The result is that, if you don’t buy directly from Apple, prices increase, expandability is limited, and installation fees add up.

However, more-competitive prices and product flexibility may be available this year if Apple goes ahead with its plan to extend the build-to-order program and base configurations to resellers. This would let resellers configure the systems in order to substitute and remove components if necessary, which in turn should let resellers’ prices match or beat Apple’s.

Apple versus PC Vendors
Despite Apple’s new, lower prices, Mac users still won’t reap the low-cost savings from build-to-order programs that PC buyers have enjoyed for several years.

Sure, Apple has made some big strides in the past year by streamlining its products, offering low-cost yet high-performance Macs, including monitors with some configurations, and introducing a build-to-order system.

But Apple’s offerings are limited, because the company can’t take advantage of the plethora of manufacturers making computer components. Since Apple’s resources are limited and its Macs cost as much when bought directly as when purchased through a reseller, you won’t see bargain prices as low as that of Dell’s Dimension XPS D300 300MHz Pentium II PC, a product that—while slower than a Power Mac G3—is substantially cheaper.

No Room to Grow
Even in this early stage, the build-to-order program has outgrown the Power Mac...
G3’s chassis. Just imagine, all these options...and nowhere to put them.

Picture this: You’re a publishing professional, and the speed of the 300MHz is ideal for your workflow. Apple’s suggested configuration is its “300MHz Dream Machine,” which includes an Ultra Wide SCSI card and a 100BaseT Ethernet card. Great. But now you’re left with only one free PCI slot. Do you opt for a 128-bit iXMicro UltimateRes graphics card or do you install a FireWire card that lets you connect to a digital camera or other media-input device? Whichever you decide, your slots are now full.

And say you got a DVD-ROM drive in that new Mac. So what do you do with it? Sure, it’s backward-compatible, so you can use it to play your CD-ROMs, but if you ever consider using it for movie play-back you’ll need to buy an MPEG-2 decoder card, such as the $279 E4 CoolDVD card. The only way you can add such a card is by removing one of your previously installed cards and freeing up a PCI slot. As you can see, to have the features in this example, you’d need five PCI slots—and it’s easy to come up with other similar configuration examples where you’d need more than three PCI slots.

You face a similar barrier when upgrading RAM: having only three DIMM slots means you’re limited to 384MB of memory on a tower model that uses three 128MB DIMMs—and to fit that much, you’ll have to toss out the 32MB or 64MB DIMM that your system originally came with, unless you bought all the RAM you needed when you ordered the Mac.

Because all G3 Macs are built with the same motherboard design, these are problems that many users will face if they choose to add on to their system. So if you’re a publishing professional or plan to add multiple functions to your Mac, the G3 series is not designed for you. Unfortunately, you have almost no alternatives other than the Umax SuperMac S900 models (see Reviews, March 1998, and “Powerhouse Production Macs,” December 1997), and it’s unlikely that these systems will be available past July, when Umax’s Mac OS license is set to expire.

Perhaps Apple should resurrect the old Power Macintosh 9600 case with its six PCI slots or use the six-slot PowerTower Pro G3 design the company acquired when it bought out Power Computing last fall (see “Upstart Macs,” October 1997). As Macworld Lab tests at the time showed, Power Computing’s G3 systems are fast and expandable, they use the PowerPC 750 CPU, and they’re ready to be manufactured. No engineering required, just a new case sporting the Apple logo.

Macworld’s Buying Advice
This is an exciting time for Mac users. No longer is Apple deciding what features to include in your Mac. With affordable, fast Power Macintosh G3’s available for all levels of computing, you can configure a Mac to fit your needs—at least those options that fit in the case. So choose your components carefully. And remember, life is full of choices. 

Associate editor ALLYSON BATES has evaluated Macs and PCs for several years.
How do you top one of the most successful color scanners ever made? Well if you're Microtek you start with proven technology that delivers stunning image quality, like the ScanMaker® E3, winner of numerous awards including a prestigious consumer magazine's highest rating, and make it even more powerful by making it 30-bit and including some great new software bundles like the full application of Kai's Photo Soap™.

Introducing the ScanMaker® E3 Plus, a 30-bit color flatbed scanner capable of capturing even more image data than its award-winning predecessor to deliver beautiful images to your computer. This dream machine scans originals up to 8½" x 13½". Now you can restore fading family photos, capture images for your home page, help your kids get artwork into their homework.

For more information about the ScanMaker E3 Plus or any of Microtek's products visit our Web site at www.microtekusa.com or call 1-800-654-4160 for the reseller nearest you.
A professional designer who's creating an attractive home page for a large corporate client. A Webmaster who's been given the duty of updating his small company's online documentation. Sure, you can call them both Web authors—but that is about as informative as saying that a 400-pound sumo wrestler and a 90-pound gymnast are both athletes.

The fact is, different Web authors can have radically different needs, and there's really no such thing as a one-size-fits-all Web authoring tool. The best Web authoring tool for you depends a lot on what kind of Web pages you're creating.

That's why Macworld has graded 11 Web authoring programs in areas vital to Web authors, from dealing with frames to providing site-management capabilities. In addition to giving each program a mouse rating and doing our best to pick a few best-of-category programs, we also give you the nitty-gritty information you need, namely: Can this tool help you do the tasks you do every day?


We also looked at three text-based programs: Bare Bones Software's (www.barebones.com) $119 BBEdit 4.5.1a, Peter Keleher's $30 shareware Alpha 7.0 (www.cs.umd.edu/~keleher/alpha.html), and Optima System's (www.algonet.se/~optima/) $25 shareware PageSpinner.

The final two products we reviewed are in a category all their own, letting you create freeform Web designs that are converted into HTML when you're finished: NetObjects' (www.netobjects.com) $295 Fusion 2.0.2, and SoftPress Systems' (www.softpress.com) $299 Freeway 1.0.1.

The result is a comprehensive guide to the best Web tools available for the Mac, with an eye toward finding the best tools for one particular job—yours.
**Visual Table Creation**

Webmasters depend on tables to create attractive page designs that have elements spread out all over a page. Creating a Web page without using tables would be a success, most HTML editors offer tools that enable you to quickly create tables. But the very best programs improve your productivity when it comes time to fine-tune those tables. A tool that forces you to set any property of a table one cell at a time is going to drive you crazy as soon as you discover you’ve got to make one tiny change to two dozen individual cells.

**Top Pupils** Not only does Visual Page support just about every obscure HTML table feature in existence—which makes it sure to please even the pickiest HTML expert—but it’s also extremely easy to use. You can grab whole rows or columns with your cursor and see how expanding or contracting them will affect the rest of the table.

Visual Page also lets you apply changes to cell formats (and the format of text within cells) without having to move repeatedly through menus and dialog boxes. If you spend a lot of time editing tables, that feature alone will be a big time-saver.

Although we prefer Visual Page, both Dreamweaver and Claris Home Page (see Reviews, in this issue) also offer solid table-creation features—they’re just not as easy to use as Visual Page’s. Dreamweaver lets you try different types of formatting via an Apply button, without opening and closing dialog boxes. Claris Home Page goes even further in this direction by providing a mode-less formatting palette that makes modifying table settings quick and easy.

**Passing Grades** Three other tools—CyberStudio, FrontPage, and PageMill—all cover the basics of table creation and editing admirably. Their drawback is that their interfaces will slow you down, making your table-editing sessions less productive than they could be.

**Drag-and-Drop Page Design**

Some Web authoring programs shield you from using tables to design your Web pages. Instead, these programs let you lay out a page by positioning its elements where you want them—as you would in a page-layout program such as QuarkXPress.

**Automatic Tables** Right now, most of these programs generate HTML tables just like the ones you can make by hand—but they do it automatically, based on the location of the objects you place on the page. You never have to count columns and rows and set cell alignment in order to fit the design in your head into an HTML table.

**Absolute Positioning** While tables used to be the only way to precisely lay out elements on a Web page, version 4.0 of both Microsoft Internet Explorer and
Netscape Navigator/Communicator support absolute positioning, which lets you place objects on a page in floating layers instead of within table cells.

Because only the 4.0 browsers can view such pages, it'll be a while before this method of Web design becomes commonplace. Right now the only product that supports absolute positioning is Dreamweaver, which supports only absolute positioning—it does not automatically generate tables. Dreamweaver's approach to page layout is also awkward, forcing you to click on a layer's icon in order to grab and move it. Since the icons aren't labeled, it can be difficult to find the appropriate one if your page contains many different layers.

Top Pupils Since Freeway is descended from a desktop publishing program, UniQorn, it's no surprise that it creates pixel-perfect layouts with grace and ease. Freeway's approach should be particularly easy for QuarkXPress users to learn. But there's a downside: while Freeway is fantastic for layout, it lacks good support for many other important features, including frame editing.

NetObjects Fusion also uses the drag-and-drop approach to page design, but its interface and layout tools are much more basic than Freeway's. For example, Fusion lacks rulers and grouping, two features that designers coming from a desktop publishing background will expect.

Designing with Frames

Frame sets—Web pages that display different HTML documents in separate panes within one browser window—are a common way to display static navigation tools or banner ads while a user browses through a site. Since a frame set is made up of a frame document and several HTML files, it can be difficult for HTML-editing tools to provide powerful frame-authoring support.

Many authoring tools fall down when it comes to editing frames because they fail to give authors enough control over the appearance of the frame set and don’t take into account navigational issues that arise when you’re creating hyperlinks between frames.

Top Pupils When it comes to designing frame sets, you can’t beat either CyberStudio or Dreamweaver. Both programs support most common frame features and let you set a frame's size numerically and specify a frame's border color and thickness. Both also offer features that speed up the frame-editing process, including easy pop-up menus that allow you to choose which frame you’re targeting with a hyperlink.

Passing Grades Fusion doesn’t let you specify many of the nitty-gritty features of a frame set, but it does offer a unique approach to creating frames. Using Fusion’s Master Borders feature,
A Web Graphics Primer

by Lynda Weinman

Your site can have the hottest-looking graphics on the Web, but if those graphics take forever to download, your audience won’t wait around long enough to see them. Even if you’re not a graphics expert, it’s your job as a Web designer to make sure your site’s artwork looks good and downloads quickly. To do that, you’ve got to know how to treat your Web graphics right.

GIF or JPEG? The two most popular file formats for Web graphics are GIF and JPEG. Each has its own strengths and weaknesses, but here’s a quick rule of thumb about how to choose the correct format to make your images look good and download quickly.

GIF is an acronym for “Graphics Image Format,” and therein lies a key as to when to use GIFs: for graphics. By graphics I mean any image that has a lot of solid color in it, such as line art, logos, and many illustrations.

The GIF file format shrinks an image by looking for patterns within it. An image that contains large contiguous areas of single colors can be highly compressed, offering file-size savings better than any other Web image format (see “GIF Items”). But when an image has a mix of many different colors—as do photographs, for instance—a GIF file won’t be able to compress the data very well.

The other major Web graphics format is JPEG, which stands for “Joint Photographic Experts Group.” Like GIFs, JPEG’s name offers a clue about what you should use the format for—photographs! More generally, you should use JPEG for any image containing continuous-tone artwork, such as photographs, gradients, glow, drop shadows, and blurry images.

The JPEG file format looks for subtle variations in color and intensity, and when it encounters that type of data it does a great job of compressing (see “Joyful JPEG”). But when the image contains large areas of a solid color—the sort of thing that can be highly compressed in a GIF file—JPEG can’t compress it very well at all.

The fact that GIF files can contain only 256 colors (as opposed to 16.7 million colors in a JPEG file) also suggests why JPEG is a stronger format for photographs—by their very nature, photos include subtle gradations of color, which are difficult for GIF to handle.

In general, use GIF for graphics and JPEG for photographs. Unfortunately, there are times when you may have to break this rule, because GIF is a more versatile format than JPEG. Unlike in JPEG files, regions of GIF images can be set as transparent, letting you mask irregularly shaped images. GIF images can also contain multiple frames, letting you create animations without using Java or a browser plug-in. If a photographic image requires one of those features, choose GIF over JPEG.

Browser-Safe Colors Beyond the GIF versus JPEG debate, the other vital issue when it comes to Web graphics is color. If you’re using a monitor that can display thousands or millions of colors, you may not consider that a lot of Web users are viewing your pages on computers that can only display 256 colors.

When a Web browser discovers there’s an image that contains more colors than its monitor can display, it converts that image into colors it can display through dithering. Dithering is a process where different-colored pixels are placed next to each other to simulate a color that can’t be displayed. Dithered images appear to be filled with lots of dots, which can seriously detract from image quality.

When it comes to graphics that are supposed to contain solid colors, dithering is a major blemish (see “Dither Danger”). Particularly at risk of dithering are GIF images and the background and text colors in an HTML page. By all means, make sure that everything destined for the Web won’t be dithered when it gets there.

There’s a simple way to do this: use what’s often called the Web palette, a group of 216 colors that are consistent across all platforms. If the graphics you create use these 216 colors, you can be sure they’ll never be dithered and the colors won’t shift.

Many software programs for creating Web graphics and HTML pages include the Web palette, making it easier than ever to use these colors in your files and graphics. In Mac OS 8, one of Apple’s default color pickers is an HTML picker, which uses the 216-color Web palette and can be accessed from almost any software program. (In Photoshop, be sure to set your preference to use Apple’s color picker instead of Photoshop’s.)

LYNDA WEINMAN is the author of Designing Web Graphics (New Riders, 1996) and several other Web-graphics–oriented books.
you can place master elements in a page’s margins and set those elements to also appear on other pages on your site. You can turn Master Borders into frames simply by checking the Generate HTML Frame Borders check box. Fusion also automatically generates graphical navigation bars if you so desire. These features make it easy to set up navigational elements for large sites.

Because Claris Home Page 3.0 was released recently, it supports more frame features than most programs, including letting you change the color and thickness of frame borders. PageMill’s frame support doesn’t do that, but it does let you edit different frames within their frame, so you can see immediately how your frame set will look in a browser. Visual Page’s strength in the area of frames is in its easy-to-learn interface, which makes it a particularly good tool if you don’t work with frame sets very often and aren’t familiar with all the nuances of frame-based design.

**Editing Raw HTML**

Despite all the visual Web-page tools out there, there’s no replacement for the control you get when you take HTML code into your own hands. Even if you love your visual page-creation program, a text editor can be valuable for adding to your pages features that your visual program doesn’t support.

A good text-based HTML editor is more than just a text editor. The program should offer timesaving utilities that automate many of the aspects of HTML coding, so you can spend your brainpower designing pages.

**Top Pups** BBEdit is in many ways the king of HTML tools. In fact, it’s hard to find any hard-core Webmaster who won’t extol the virtues of this text editor. BBEdit offers a large set of built-in HTML shortcuts, including a configurable tool bar of HTML commands. BBEdit’s pattern-matching search-and-replace feature lets you reformat lots of HTML tags quickly once you’ve picked up the complicated GREP command jargon.

BBEdit may get lots of good press, but the shareware text editor Alpha beats it in the area of HTML features. When you add Johan Lindes’s free plug-in, HTML mode 2.0.3 (www.theophys.kth.se/~jl/Alpha.html), Alpha becomes a remarkably flexible and customizable HTML editing tool. Alpha gives you a huge amount of control over how the HTML tags it generates appear on screen, and it speeds up productivity by mapping just about every HTML feature to a keyboard shortcut.

Alpha’s level of detail even goes down to the place-
The Internet fog has finally lifted. The InterJet* from Whistle Communications® is a revolutionary hardware and software solution created for small offices. Capable of handling speeds of 33.6 through T1, it's everything you need to give email and Internet access to the people who need it. Whether it's 5, 10, 50, even 100 employees. And it starts for as little as $1,995. Find out why the InterJet keeps racking up awards, including the prestigious PC Computing 1997Networking Product of the Year.

Call 1-888-4WHISTLE or visit www.whistle.com/98e.

Call 1-888-4WHISTLE

www.whistle.com/98e

©1998 Whistle Communications. All rights reserved. Whistle, InterJet, Whistle Communications and the Whistle logo are trademarks of Whistle Communications Corp. All other trademarks and registered trademarks are the property of their respective owners.
9 Great Web Authoring Utilities

by Jason Snell

These days there are so many commercial Web authoring programs out there that it's become a huge effort just to remember who the players are. But in the old days, there weren't any commercial Web authoring tools. Instead, the only tools Web masters could rely on—besides their wits—were homegrown shareware tools written by other Webmasters.

Just because the early days of the Web are gone doesn't mean that the world of Web publishing shareware is dead. Hidden in the vast reaches of the Web are some amazing utilities that can save you lots of time.

PhotoGIF 2.1 and ProJPEG 2.0 Slimming down Web graphics to downloadable sizes without making them look awful in the process can be tricky. And Adobe Photoshop's built-in GIF and JPEG features aren't exactly powerful. BoxTop Software's (601/324-1800, www.boxtopsoft.com) PhotoGIF ($35; $$$) and ProJPEG ($35; $$$) are two Photoshop filters that help make your Web graphics small and attractive (see the sidebar "A Web Graphics Primer"). PhotoGIF lets you create GIF images with good 256-color palettes, and ProJPEG lets you preview different levels of image quality and see how big your final JPEG file will be.

GammaToggleFKey You perfect your Web graphics, post them on your home page with pride, and then walk over to your coworker's Windows PC. There they are—dark, muddy, and butt-ugly. Roland Gustafsson's (http://www.acts.org/roland/thanks/) GammaToggleFKey (freeware; $$$) can help. Using a simple key combination, GammaToggleFKey lets you quickly toggle between your Mac's standard gamma (the default brightness and color tone of your monitor) and that of a typical PC, so you can make sure your graphics look good on both.

GifBuilder 0.5 Creating animations for the Web doesn't require using Java or plug-ins; you can embed animations in simple GIF files. But getting animation cells into a GIF file is easier said than done. While there are a slew of tools out there that let you build animated GIF files, none is a better deal than Yves Piguet's (http://iwww.epfl.ch/Staff/Yves.Piguet/clip2gif-home/GifBuilder.html) GifBuilder (freeware; $$$). After you create your animations in a paint program, drag them into GifBuilder, choose a few animation options, and you're set. It's simple, powerful, and totally free.

HTML Grinder 3.34 Ready to cry because you've got to manually alter scores of pages in your Web site? Matterform Media's (505/747-1220, www.matterform.com) HTML Grinder ($89; $$$) utility can eliminate repetitive HTML tasks. If you need to quickly generate Next and Previous buttons on your site, create linked tables of contents, or quickly search and replace boilerplate text, HTML Grinder can do it. The program is extremely modular; it comes with one free plug-in and 18 others that add different features.

BBEdit Lite 4.1 Even if you prefer to work in a visual HTML editor most of the time, there's often some work that requires a text editor. Bare Bones Software's (781/687-0700, www.barebones.com) BBEdit Lite (freeware; $$$) doesn't offer all the great HTML features of the full BBEdit text editor, but it's still powerful. Among BBEdit Lite's top features is a pattern-matching, multilisted feature, which lets you quickly make global changes to your entire Web site or quickly transform plain-text documents into HTML.

IconToGIF 1.0.3 If you ever need to transfer the icons on your Mac to a Web page, Dan Crevier's (http://www.boingo.com/dan/software/IconToGIF.html) simple utility IconToGIF (freeware; $$$) can solve your problem. Once you drag a file onto it, IconToGIF places that icon in a GIF file.

NetClone 1.0 Most people create Web sites on their Macs and then upload them to a remote Web server. But keeping track of what files you've changed and need to update on your server can be time-consuming. Pragmatic's (www.pragmatic.com.au/netclone/) NetClone ($20, free for nonprofit educational use; $$$), formerly called Mirror, automates the process. It scans folders on your hard drive and automatically uploads via FTP any files that have been created or changed since the last time it synchronized your files with the server. You can even use NetClone to sync one remote Web server with another. One drawback: NetClone doesn't do two-way syncing, so you can't download changed files from your Web site and replace older files in your local folder.

HTML Rename 1.2.1 If you've got to transfer the contents of a Web site from one server platform to another, you may be forced to rename all your files and update all the hyperlinks—a task that could take ages. Parker & Associates' (www.visiontec.com/ rename/) HTML Rename ($20; $$$) can do it in a few quick steps, renaming your files to conform to a new platform's name specifications (Mac, DOS, and Unix are all supported) and updating all the hyperlinks. Unfortunately, HTML Rename's interface isn't very friendly, and it doesn't seem to locate and change hyperlinks in frame sets reliably.

Macworld senior associate editor JASON SNELL has been creating Web sites since 1992.
you perform global changes update links globally. It Site Management
THE site's pages, verifying that your hyperlinks should also be able to upload
site's hyperlinks, it lets you upload and still work and allowing you to
download files via FTP, and you can change the contents of the main include
search and replace text on all the pages of file, that change is automatically made on
your site's structure and automatically generate your page in a few easy
repeating elements appear on subpages.
steps. And it should be able to understand your site's structure and automatically generate
understand interface. Although it's no spring chicken, PageMill and its bundled SiteMill utility still
offer FrontPage's to-do list, but it does provide a much more appealing and useful
upload and download features are similar­
interface. One of CyberStudio's strongest site­management features is the ability to see all the pages that
are linked to or from your page in a fast, easy­to­understand interface.
Although it's no spring chicken, PageMill and its bundled SiteMill utility still offer
both Freeway and Fusion offer strong site­creation features. Freeway's master­
documents feature lets you specify where repeating elements appear on subpages.
In Fusion, you can quickly map out site hierarchies in a view that looks like a flow­
chart. Fusion also supports uploading pages via FTP, including the ability to upload only the pages in your site that
have changed since your last upload.
Finally, we should mention two products that aren't really HTML­editing tools as much as they're programs with
strong site­management features. User­Land's free Frontier 5 (www.scripting.com/frontier5/) and ProVue Development's (www.provue.com, 714/841­7779) $499 SiteWarrior 1.1.1 (see Reviews, in this issue) are scriptable, database­related programs that build HTML files according to templates you create using HTML and special codes that trigger automation. However, the power of both programs is somewhat muted by their steep learning curves.

Advanced HTML Features

Among the biggest stories in Web authoring circles is the emergence of Cascading Style Sheets, Dynamic HTML, and JavaScript. These innovations will radically change how Web pages are designed—as soon as enough Web users upgrade their browsers to the latest versions, which take advantage of these new HTML features.

First in its Class Just as Dreamweaver offers support for the absolute positioning of elements on a page, it's well out in front when it comes to support for Dynamic HTML, JavaScript, and style sheets. Until other tools (such as forthcoming versions of CyberStudio, Fusion, and Alpha) are rejiggered to take advantage of these innovations, Dreamweaver is your only real choice if you want to be out on the edge of Web features.

Dreamweaver's style­sheet interface is clean and easy to use. However, its Director­style timeline interface for creating Dynamic HTML animation is confusing. In Dreamweaver you can create behaviors for objects on your page (for example,
making a GIF image that changes when the cursor passes over it), and the program automatically adds the appropriate JavaScript code to make them work in a browser. However, adding behaviors to Dreamweaver is still a bit more time-consuming than it should be.

**Macworld’s Buying Advice**

So many of the tools we looked at for this article are remarkably similar in terms of features and overall quality that the best program for you will be whichever one excels at the aspect of Web authoring that’s most important to the work you do.

For example, if you maintain a small company’s Web site and don’t really want to wrestle with HTML tags, consider one of the Claris Home Page, Visual Page, and PageMill trio. These three products are very similar. PageMill’s customizable color palette is impressive, and the program offers some good site-management features via the bundled SiteMill software. Visual Page is tops among the three at creating and formatting tables. And Claris Home Page’s unique support for FileMaker’s FDML custom Web publishing language makes it a good bet if you plan to put your FileMaker databases on the Web.

If you’re a professional Web-site designer who wants a program that does everything well, GoLive CyberStudio should be at the top of your shopping list. It excels at creating frame sets, lets you switch between table-based and pixel-perfect layout modes, and offers strong site-management features.

If your job is to create beautiful Web-site designs and then hand them off to someone else who will do the nitty-gritty HTML coding, Freeway’s powerful layout tools may be just what you’ve been looking for.

If being on the cutting edge is vital to you, Dreamweaver is probably your best bet. It’s great with tables and frames and was the first program to support Cascading Style Sheets, Dynamic HTML, and absolute positioning of objects on a page. Its integration with BBEdit makes it a very attractive package for those who plan to spend most of their time coding in BBEdit.

With NetObjects Fusion, it’s seductively simple to create rigidly hierarchical sites, an attribute that makes the program perfect for Web publishing newcomers or those who must create sites with a lot of similarly formatted pages. But if you’re a Web veteran, you’ll feel trapped by Fusion’s lack of flexibility.

People who are used to working in a visual program but want to try their hand at HTML coding should consider taking the friendly and instructive PageSpinner out for a test drive—that’s what shareware’s all about, after all.

Among text editors, we recommend Alpha and its free HTML mode 2.0.3 plug-in. Alpha’s many subtle, easy-to-use features let you create HTML quickly and with a minimum of mouse and keyboard use. And although Alpha is only shareware and BBEdit is a commercial product, Alpha’s HTMIL mode is far better documented than BBEdit’s HTML features, making it easier to learn and to master. However, it’s fair to say that many of BBEdit’s features are more polished and more accessible to nonprogrammers than Alpha’s.

If you’re looking for the single best overall Web design program, we recommend GoLive CyberStudio. It’s a little too expensive for intermediate Web designers, but its features run broad and deep, and its interface is attractive and easy to use.

Another reason why CyberStudio is a good buy is the track record of its publisher, GoLive Systems. GoLive has always excelled at updating its products when new Web features arrive on the scene, something that’s vitally important when it comes to the ever-changing world of the Web.
The most advanced visual effects in the galaxy are created by artists using Silicon Graphics® Computers.

Imagine what you could do with that kind of blockbuster computing power.

Silicon Graphics.
The Leaders in Visual Computing.

If you're a visual computing professional, this is your year.
"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 MAXpower 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 MAXpower G3 card, you'll have a faster processor with a much faster cache. In fact, the MAXpower 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

Circle 55 on reader service card
Java Finally DELIVERS

No subject in the computer world has been hyped more in recent years than Java. The creator of the Java programming language, Sun Microsystems (http://java.sun.com), promotes Java as computing's universal language, with the potential to change the way high-tech devices work. In the great and glorious Java Future, it won't matter if the program you've gotta have was written by someone using Windows 95, because if it was written in Java, it'll also work on your Mac—and your phone, and your TV, and your toaster. That's all well and good as a vision, but what can Java do for Macintosh users today? Developers who have tried to write complex applications in Java have discovered that the write-once, run-everywhere promise of Java hasn't yet been fulfilled. So far, no one has run out and reprogrammed a Java version of the Windows accounting program you've longed to have on your Mac. In fact, the one developer who announced plans to reprogram its suite of office programs in Java—Corel—has since scuttled those efforts.

Today's Java may not be revolutionary, but with some knowledge, you can see through the hype and squeeze some real benefits out of it, particularly on the Web. Many Web sites use small Java programs (called applets) for some of their coolest features, such as ESPN SportsZone's live score ticker (http://espn.sportszone.com) and The Trip.com's graphical flight tracker (see the screen shot, "Java Takes Off"), which lets you see exactly where your
JAVA FINALLY DELIVERS

Java, with tools such as SoftPress's Uni­
Java applet on
Mac, Unix computer, or Windows PC.

There are many virtual machines available
for the Mac. Which should you choose? A critical concern is how fast each
one performs, so Macworld Lab tested six
Mac OS-based virtual machines and a
comparable set of virtual machines on
Windows 95, using the industry-standard
CaffeineMark 3.0 benchmark developed by
Pendragon Software (www.webfayre.com).
You can see highlights of our results in the
benchmark, “Faster Java, Just in Time.”

Speed Matters

One of our main discoveries was the
importance of a speed-enhancing feature
called a just-in-time (JIT) compiler. While
normal virtual machines interpret
Java code one instruction at a time, a JIT
compiler translates each Java instruction
into the native language of your comput­
er’s CPU, runs that code, and then keeps
the translated code around for awhile in

lot like the emulator software that lets
your Power Mac run programs written for
a completely different CPU type, the
680X0 CPUs found on non-Power Macs.

Most programs run a lot of the same
instructions over and over, which means
that a normal virtual machine interprets
that code over and over. But a JIT
compiler translates that code only once,
thereafter running the instructions as
native code—a big time-saver.

When the JIT compiler first gets hold
of Java code, there’s a brief lag while the
compiler does all the work of converting
Java code into native code. But when
the program does start to run, it’s much
faster—as much as four times as fast in
our lab tests—than if it were running with
a non-JIT virtual machine.

The JIT Factor We tested several vir­
tual machines for the Mac that didn’t
have a JIT compiler, namely Apple’s
Mac OS Runtime for Java (MRJ) 1.0.2
(www.apple.com/macos/java/), Netscape
Navigator 3.0’s virtual machine (http://
home.netscape.com/download/), and
Microsoft Internet Explorer 4.0 (www
Macworld Lab used Pendragon Software’s CaffeineMark 3.0 to test Java virtual
machines. Tests were run on a Power Macintosh 7230/200 running Mac OS 8 and on
a 166MHz Pentium PC with Windows 95 installed. Both systems were equipped with
32MB of RAM. (Tests were performed without independent verification by Pendragon
Software, and Pendragon Software makes no representations or warranties as to the
results of the tests.)—Macworld Lab testing supervised by Gil Leyola.

Mac Java Sizes Up …

<table>
<thead>
<tr>
<th>virtual machines</th>
<th>CaffeineMark 3.0 Scores</th>
<th>JIT Compiler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mac OS Runtime for Java 2.0 (running in Internet Explorer 4.0)</td>
<td>1,349</td>
<td>○</td>
</tr>
<tr>
<td>Netscape Navigator 4.04 VM</td>
<td>630</td>
<td>●</td>
</tr>
<tr>
<td>Mac OS Runtime for Java 1.0.2 (running in Internet Explorer 4.0)</td>
<td>550</td>
<td>○</td>
</tr>
<tr>
<td>Netscape Navigator 3.04 VM</td>
<td>312</td>
<td>○</td>
</tr>
<tr>
<td>Microsoft Internet Explorer 4.0 VM with JIT compiler enabled</td>
<td>181</td>
<td>●</td>
</tr>
<tr>
<td>Microsoft Internet Explorer 4.0 VM with JIT compiler disabled</td>
<td>154</td>
<td>○</td>
</tr>
</tbody>
</table>

... And Passes Windows by a Nose

<table>
<thead>
<tr>
<th>Windows 95 Virtual Machines</th>
<th>CaffeineMark 3.0 Scores</th>
<th>JIT Compiler</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Internet Explorer 4.0 VM with JIT compiler enabled</td>
<td>1,173</td>
<td>●</td>
</tr>
<tr>
<td>Netscape Navigator 4.04 VM</td>
<td>899</td>
<td>○</td>
</tr>
<tr>
<td>Microsoft Internet Explorer 4.0 VM with JIT compiler disabled</td>
<td>494</td>
<td>○</td>
</tr>
<tr>
<td>Netscape Navigator 3.04 VM</td>
<td>218</td>
<td>○</td>
</tr>
</tbody>
</table>

* ○ = yes; ● = no.

Behind Our Tests

Mac Java is more than just a programming
language—it’s a computing platform all its
own. When programmers work with
other computer languages, they have to
write their programs to work with specific
parts of an operating system, whether
it’s the Mac OS or Windows 95. Java
doesn’t work this way.

The trick is that unlike other pro­
grams, Java applets aren’t created for a
specific type of computer, such as a Power
Mac, Unix computer, or Windows PC.
Instead, they’re written for a generic Java
compiler. This means that you can run a
Java applet on any computer as long as
you have the means to translate instruc­
tions for the Java compiler into your com­
puter’s native language. As we mentioned
before, to do this your computer needs a
virtual machine. This program works a

loved one(s) are in the air (http://flight
.thetrip.com/flightstatus/).

Web designers are also able to create
complex pages designed completely in
Java, with tools such as SoftPress’s Uni­
Qorn 1.2 ($499; 415/331-4820, www
.softpress.com/unicorn/). These designs
are displayed via a Java applet in your
browser rather than through the use of
old-fashioned HTML code. And since
the pages aren’t limited by the strict rules
of HTML, they can offer more richness
of design.

To take advantage of Java’s interactive
and design boons, however, you must
have particular OS software known as a
virtual machine, which lets Java applets
run on your Mac, usually within a brows­
er window. To enjoy Java without aging
significantly in the process, you’ll want
the fastest Java virtual machine around.

The Soul of the Virtual Machine

Macworld Lab used Pendragon Software’s CaffeineMark 3.0 to test Java virtual
machines. Tests were run on a Power Macintosh 7230/200 running Mac OS 8 and on
a 166MHz Pentium PC with Windows 95 installed. Both systems were equipped with
32MB of RAM. (Tests were performed without independent verification by Pendragon
Software, and Pendragon Software makes no representations or warranties as to the
results of the tests.)—Macworld Lab testing supervised by Gil Leyola.

82 May 1998 MACWORLD
It's likely that you're using one of them if you're running Mac OS 8: Apple's MRJ 1.0.2. This MRJ kicks in when you're using Apple's browser Cyberdog (http://cyberdog.apple.com), if you've selected the MRJ in Internet Explorer's Java preferences, and in the rare cases when you might use Apple's stand-alone Applet Runner to look at applets that aren't Web-based. Without the benefit of a JIT compiler, this virtual machine is extremely slow—the slowest of all the virtual machines we tested.

If you've been using Navigator 3.0, you've also been without the JIT advantage in your Java dealings, as the virtual machine in this version of Navigator also doesn't offer a JIT compiler. However, slow as it is, it's still slightly faster than Apple's MRJ 1.0.2.

Your Java experience will be similarly poky if you forget to enable the Microsoft Virtual Machine's JIT compiler in Internet Explorer 4.0. (The compiler is turned off by default. To turn it on, click on the Java pane in Explorer's Preferences window, make sure Microsoft Virtual Machine is selected, check the Enable Just-in-time Compiler box, and quit and relaunch Internet Explorer.) But even with the JIT compiler turned off, Explorer 4.0's virtual machine is twice as fast as MRJ 1.0.2.

Despite speed variations, the basic fact is that virtual machines without JIT compilers are extremely slow. Avoid them.

**Speedier Options** To optimize your Java experience, make sure your virtual machine is fully equipped with a JIT compiler. Apple's newest version of the MRJ offers just that. Mac OS Runtime for Java 2.0 runs roughly four times as fast as its predecessor. To take advantage of this, make sure to install MRJ 2.0 when you upgrade to Mac OS 8.1 from the CD-ROM, or download the MRJ 2.0 update free from Macworld Online (www.macworld.com/more/).

If you'd like to run Apple's MRJ from within a browser other than Cyberdog, you're in luck. Unlike Netscape Navigator, Internet Explorer lets you choose whether to use Apple's MRJ or Microsoft's own Java virtual machine. (Click on the Java pane in Internet Explorer's Preferences window, and choose either Microsoft Virtual Machine or Apple MRJ. Then quit and restart Explorer.)

Netscape Navigator 4.0 also sports a JIT-based virtual machine (developed in cooperation with Symantec) that shows a clear speed improvement over the non-JIT virtual machine that shipped with Navigator 3.0. Java runs three times as fast on the newer version. However, this time Netscape's implementation lags way behind Apple's. Apple's MRJ 2.0 was 10 to 15 percent as fast as Navigator 4.0 in our tests.

By a huge margin, Internet Explorer 4.0 with the JIT compiler enabled was the fastest Mac virtual machine we tested. It scored more than twice as fast on the CaffeineMark tests as did either Navigator 4.0 or Apple's MRJ 2.0. The lesson is that if you're going to be using Java a lot, you're best off using Internet Explorer 4.0 and its JIT-based virtual machine. But be aware that Internet Explorer 4.0 isn't without its problems in other areas (see Reviews, in this issue).

**Mac Java Catches Up to Windows** Once you've got a speedier virtual machine on your Mac, you may wonder just how fast it runs Java when compared with Windows PCs. Java is a cross-platform language after all, so we also ran the CaffeineMark tests on a PC running Windows 95 to see what you get in comparison.

The results are encouraging: the fastest results we got from a 200MHz Power Mac posted slightly higher than those of a fairly comparable 166MHz Pentium PC—an entry-level Windows system by today's standards. This is good news for the Mac, traditionally a major Java laggard.

Only a few months ago, before the release of Internet Explorer 4.0's lightning-fast JIT compiler, the Mac wasn't even on the same playing field as Windows PCs, but now the race has narrowed significantly. The pace of improvement is also promising.

The Mac still has a lot of catching up to do to meet Java's speed on the Windows platform, but for the first time, the Mac is actually in the game.

**The Last Word** The Java virtual machines available to Mac users are getting faster and faster—so much so that you no longer have to look at your shoes and shake your head when a Windows PC user suggests you check out the latest cool Java applet on the Web. We owe part of this improvement to Microsoft itself, whose Internet Explorer 4.0, with its own virtual machine, runs Java faster than any other option for the Mac. (In March, Microsoft and Apple announced that they will merge their two Javas into one unified Mac virtual machine.)

Internet Explorer is clearly the best choice if you want to run Java applets at the highest speed possible. But if other factors persuade you to go with another browser or virtual machine, the bottom line is that you want one with a JIT compiler. With this knowledge in hand, you'll be able to make the most out of Java today.

**Bookmarks**

| The Java Boutique | All you need to know to add basic Java applets to your Web site | http://javaboutique.internet.com |
| Java FAQ Archives | A comprehensive source for technical Java info | www-www-net.com/java/faq/ |

**Stephan Somogyi** is an all-around Internet guru and freelance writer. Senior associate editor Jason Snell covers all things Internet for Macworld.
Not Concerned about your brand of memory? It's time to "think different."
The fact is, the new high-performance Macs require high-performance memory such as SDRAM (synchronous DRAM). Consequently, timing errors as small as a nanosecond can lead to data corruption. That's why Kingston® imposes stringent design controls to regulate timing, such as matching trace lengths to ensure proper synchronization of data. And since we're an authorized Apple® RAM developer, our memory will always be 100 percent compatible with your Mac®. To find out more, call your preferred reseller or Kingston at (800) 259-8965. Or visit our Web site. We promise not to tell people that you're playing it safe.
BIGGER ISN'T ALWAYS BETTER—EXCEPT PERHAPS when it comes to monitors. The more time you spend at your computer, the more you suffer the problems of a smaller screen: spreadsheets you can't spread out, text documents you squint at, shrink-to-fit page layouts.

But even as you outgrow the visual confines of your 17-inch or smaller monitor, the prohibitive prices of 20- and 21-inch monitors may inspire you to suffer on. Finally some relief is at hand: enter the new class of 19-inch monitors, full-size workspace without the full-size price.

These monitors bridge the gap between the two top monitor classes. The step up from a 17-inch monitor will cost you only about $250 more—and the 19-inch offers about 25 percent more room for your eyes to roam. In addition, 19-inch monitors are about 20 to 50 percent cheaper than 20-inch monitors; most of the 19-inch monitors we looked at cost about $900, compared with prices ranging from $1,100 to $2,000 for 20-inch displays.

Macworld Lab assembled an expert panel of graphic designers, lab analysts, and editors to judge ten of these new 19-inch monitors. Our jury examined each monitor's image quality when displaying a series of images in Microsoft Word and Excel, QuarkXPress, and Adobe Photoshop files, noting color saturation, text legibility, sharpness, detail, and contrast; you'll find their averaged scores in the benchmark, "A Tube with a View." We then compared prices, warranties, specifications, and the monitor controls' ease of use to determine which monitors offer the best quality for the best deal.

Looks Do Count
A bigger screen with poor image quality is not a step up. Problems with brightness, color saturation, or sharpness not only make your screen image look crummy, they can give you headaches and make your eyes water.

Tube Type
Image quality depends on a number of factors. Monitors use a cathode-ray tube (CRT) to produce the image you see on the screen, in conjunction with shadow mask, or tridot, technology. The electron beams shoot through a wafer of metal riddled with a honeycomb of holes. Depending on the angle at which the beams pass through the holes, they hit a red,
green, or blue phosphor painted on the inside of the screen. Pricier Sony Trinitron and Mitsubishi Diamond'Tron CRTs use aperture-grille technology. With this type of CRT, the electron beams pass through an array of thin vertical wires to strike red, green, and blue phosphors.

Aperture-grille CRTs are known for creating a brighter, sharper image with less glare. In our testing, however, we discovered that tube type is not as important as it once was. Of our top two monitors, the $1,200 Sony GDM-400PS (www.sony.com/newdisplays/) has a Trinitron CRT, but the $899 Princeton Graphic Systems EO 90 (www.pgrr.com), our Editors’ Choice, has a shadow-mask CRT.

One thing to note, however, is that 19-inch monitors don’t always offer as much sharpness as smaller 17-inch monitors. Due to the limitations of tube technology, it’s difficult for larger monitors to match the focus, brightness, and color of smaller monitors because the beams must cover a larger area. If your work demands precision, consider only 19-inch monitors that scored high in our sharpness tests.

A Tube with a View

The new class of 19-inch monitors proves that you don’t have to go for broke to get a good-quality large-screen monitor. Mature cathode-ray technology, advanced controls, and good warranties make these sound purchases. You’ll get more screen space for about $250 more than a 17-inch display costs, and you’ll spend up to 50 percent less than for a 20-inch display. Overall, these ten monitors’ scores were very close, and all our top-rated picks offer decent quality and support packages. Almost any of these displays would be a fine addition to your desktop.

Macworld Laboratory

Behind Our Tests  
Macworld Lab conducted a series of subjective tests, using a jury of 11 people. Each juror was asked to rate each monitor on a scale of 1 to 7 (4 being “acceptable”) according to how well the monitor displayed our test images. The test images were a selection of Microsoft Word and Excel, QuarkXPress, Netscape Navigator, and Adobe Photoshop files. Results for each juror were normalized and then averaged. Brightness was measured with a Minolta CA-100 color meter.—Macworld Lab testing supervised by Jeffy Milstead
**Sharp Details**  A sharp image is crucial if you do lots of word processing, number crunching, or any work that requires focusing on small details or characters. Our jury examined the test screens for illegible text, out-of-focus areas, and muddying of fine details in complex images.

The Princeton EO 90 excelled at displaying distinct details and crisp, legible characters, thanks in part to a dark-tinted screen that significantly increases image contrast; it scored the highest in our sharpness tests. Sony's GDM-400PS also drew top marks, reflecting the advantages of its Trinitron tube technology. Deemed acceptably sharp were CTX's $899 VL950 (www.ctxintl.com) and La Cie's $849 Electron 19i (www.lacie.com). The only monitors with an unacceptable sharpness level were the $629 Philips Brilliance 109 (www.philipsmonitors.com) and Mag Innovation's $899 DJ800 (www.maginnovation.com).

**A Bright Picture**  A bright monitor is better at displaying rich detail and clear text, and can compete more easily with light from a window or overhead fluorescent bulbs. Many factors can affect brightness, from the tube type to general differences in manufacturing. Macworld Lab measured the brightness of these monitors with a Minolta CA-100 color meter. A score of 25 footlamberts or more is ideal for a monitor in a well-lit office.

The Princeton EO 90 and Sony GDM-400PS proved to be the brightest of the bunch, and Iiyama's ($899 VisionMaster 450) followed closely. Most of the other monitors had acceptable levels of brightness, except for the Mag Innovation DJ800.

**Pleasing Color**  Although these monitors are not intended for color proofing or similar high-end color processes, they need to provide color quality that satisfies for everyday graphics and general use. Our judges looked for rich, life-like color in our test Photoshop images, which displayed a range of primary colors and flesh tones.

The Princeton EO 90 surpassed all the other monitors on the color tests, due in part to its dark-tinted glass, which added depth and definition to the images. The Sony GDM-400PS drew the next-highest score.

The judges gave the lowest scores to the $949 Hitachi NSA RasterOps Mc 7515 (www.nsa-hitachi.com), the $949 ViewSonic G790 (www.viewsonic.com), and the Mag Innovation DJ800, complaining of "flat, dull colors." Surprisingly, the G790 received a slightly lower color score than its economy-line cousin, the $849 ViewSonic Optiquest V95 (www.optiquest.com).

**Taking Control**  The ease of your monitor's controls can tip the balance between efficiency and frustration. All the monitors we looked at combine on-screen menus with buttons or wheels. Our panel judged the clarity of on-screen menu interfaces, ease of learning the various adjustment methods, and how many levels of searching were required to complete basic adjustments (see the table, "19-Inch Monitors Compared").

The judges discovered two standouts. They gave high marks to the CTX VL950 for teeming elegant, clearly labeled buttons with descriptive on-screen menus, and for displaying settings with numeric values you can adjust with greater accuracy. The Mag Innovation DJ800 offers a twist on run-of-the-mill monitor controls with the Jag wheel, a round dial on the bottom of the monitor case that you spin and press to access on-screen menus.

In general, all the monitors' controls passed our panel's tests for ease of use, except one: the ViewSonic G790's on-screen menus and four button controls were judged to be vague and confusing.

**Macworld's Buying Advice**

We had a hard time choosing between our two favorites, the Sony GDM-400PS and the Princeton EO 90.

The GDM-400PS offers exceptionally bright, crisp detail and great overall color. The EO 90's outstanding color and sharpness topped all others' we tested. Both come with the best warranty policy available: three years for parts, CRT, and labor, as well as a 48-hour "swap" policy for the first year. But in the end, price tipped the scale; the GDM-400PS costs a whopping $300 more than the otherwise-similar EO 90.

Overall, the differences among these ten monitors aren't as striking as in other monitor classes; in many cases, the scores were very close. Essentially, all of our top-rated picks offer good quality and support packages, and any would be a great, reasonably priced addition to your desk.

Associate editor SCHOLLE SAWYER covers monitors and graphics for Macworld.
With the right tools and the right team, you can create what you can dream. Collaborate in ways never before possible. Communicate with anyone, anywhere, anytime. The doors are wide-open, new high-tech tools emerge at astonishing speed—and everything is possible.

Come to MACWORLD Expo—the Creative World and join the community of creative pioneers using the technology to push the edge of innovation... turn creative concepts into real-world products... run companies more profitably... be better teachers... open children to the wonders of the world and help them succeed in school and in life... make better use of leisure time... and have more fun at home and at work.

You're invited to the premier event for:
- Creative, communications, & publishing professionals
- Educators
- Mac users
- Web developers
- Multimedia content authors
- New media professionals
- Advertising executives
- Gaming & Digital Entertainment consumers
- Video Production Professionals
- Animators, 3D, and Virtual Reality Designers
- Everyone who is in the business of creating, managing, & distributing creative content.
Creativity

From digital video, interactive applications, new software and new applications of existing software... to Windows/NT and Mac interoperability... convergence of technologies... and more... MACWORLD Expo—the Creative World spotlights what's new. You can try it all and see what works for you.

See it all in a new place—NEW YORK CITY!

MACWORLD Expo makes its debut in the Big Apple, the international hub for creative professionals, this summer. It's the showcase for the collaborative, creative efforts in publishing, broadcasting, recording, new media and entertainment. The Jacob K. Javits Convention Center offers plenty of room to spread out, and will accommodate all conference sessions and exhibits under one roof.

Spend your days at power-packed conference sessions and exhibits, then step out in style for evenings on the town. Come to the world's most exciting city to...

- Hear about the latest technology and techniques that can boost your productivity and super-charge your creativity
- Rub shoulders with industry experts, and glimpse the future with world-renowned visionaries
- Test new state-of-the-art tools at special interest areas, and make the best buying decisions
- Learn new ways to maximize your installed investment
- Meet new prospects and partners, and make deals on the spot
- Interact with your peers to advance your career or grow your business
- Do business with VARs, distributors and developers looking for new products and new talent

Discover new tools that let you make your unique creative signature

Hundreds of exhibitors come together in one place to offer you the chance to test drive their new tools. Come to MACWORLD Expo—the Creative World to try out the latest in:

- Illustration and art tools
- Graphics applications
- Educational applications
- Animation
- Workflow automation & management
- Printing
- Web site management
- CD-ROMs & DVDs
- Digital photography
- Java
- VRML & 3D
- Networking & communication tools
- Gaming and Entertainment
- Scanning
- Page construction (for print; Web)
- Content management
- Object databases
... and much more!

For a full exhibitor list, up-to-the-minute information, or to register, call 800.645.EXPO or visit: www.macworldexpo.com!

Register by June 8 and save up to $100!

Register early to ensure your spot at the coolest place on the creative planet. You can save on registration fees by signing up promptly:

Save $100
Package 1: Super Pass—All Macworld/Pro Conference, MACWORLD Users Conference and Pre-Conference Workshop

Package 2: Macworld/Pro Conference and Pre-Conference Workshop

Package 3: Macworld/Pro Conference

Save $50
Package 4: MACWORLD Users Conference and Pre-Conference Workshop

Save $24
Package 5: MACWORLD Users Conference

Save $50
Package 6: Pre-conference Workshops

Save $10
Package 7: MACWORLD Expo Exhibits only

(All packages include admission to the exhibit floor)

Please refer to the Registration page for package details.

To take advantage of these savings, complete and return the registration form—NOW.
Introducing...
MACWORLD Kickoff Reception and Sneak Peek Fair
Monday, July 6, 1998
5 p.m.-9 p.m.
(open only to conference and pre-conference workshop attendees)

To get your MACWORLD Expo week off to a great start, we've arranged some special events exclusively for Macworld/Pro and MACWORLD User Conference attendees. The festivities begin with a pre-registration welcome reception and exhibit sneak preview. This is a great opportunity to pick up your badge early, meet other attendees and get a sneak peek at some of the hottest products that will be on display at the show. This special private showing will allow you to discover the latest solutions for content creation and asset management, Internet and networking tools, and utilities to get the most from your Mac. But it's open only to conference attendees—register for the conference program now.

News-making keynote presentations shape the industry—make sure you're there!
Tuesday, July 7, 9:00am - 11:30 am
The spotlight is on the superstars in the MACWORLD Expo—the Creative World keynote sessions. What keynoters say often hits the media immediately (from NBC News to USA Today, to cable and online, they're all there), so this is your chance to be there as the news is made. Be among the first to hear about technological advances... the hottest and coolest new products... the Internet... creativity... and more. All keynote sessions take place on Tuesday, July 7 at the Jacob K. Javits Center. They're open to all conference and pre-conference workshop attendees only and are available on a first-come, first-served basis.

Visit the special interest areas—where you can try new products, learn new skills, exchange ideas... and more

Digital Media Studio featuring QuickTime™
The Digital Media Studio featuring QuickTime™ brings the explosive growth and opportunities of digital media to the heart of MACWORLD Expo—the Creative World. By bringing together QuickTime developers and solutions providers with the latest hardware, software and networking technologies, the Digital Media Studio will be a must-see component for creative and corporate communication professionals involved in the synchronized creation, editing, management and delivery of video, audio, graphics, text, virtual reality and 3D content. Sponsored by Apple Computer, the Digital Media Studio is sure to be one of the show's top attractions.

Content@Home: The Delivery of Gaming, Entertainment and Mass-Market Media to the Home
Content@Home will be the premier showcase for digital entertainment and consumer applications in the world’s entertainment and media center—New York City. The convergence of computing, communications and consumer markets have created a tremendous opportunity for content creators, designers, developers, retailers, producers and broadcasters to deliver their properties to the home market. Supported by Apple Computer, Content@Home at MACWORLD Expo - the Creative World will deliver hands on demonstrations, solutions, and real-life business models for consumer applications, appliances and entertainment content.

Education District
The newly expanded education district will showcase software, Internet tools, curriculum building solutions and multimedia for schools, training and home learning. Sponsored by Apple Computer, the Education District highlights the educational marketplace’s support for the Mac platform, in the playground of the largest school system in the world—New York City. Bursting with new applications, hardware, and real-world solutions from leading developers and solutions providers, the Education District will bring you new ways to enhance classroom learning, stimulate young minds, and assist teachers and administrators in all aspects of today's educational environments.

Extensions Workshop for Creative Content
Sponsored by The World-Wide Power Company and XChange NA
Visit this showcase to find over a thousand extensions for the most popular desktop-publishing, multimedia and pre-press applications. Mac users of all skill levels will see live demonstrations and can take advantage of show specials on the most popular extensions designed to ease your production tasks and put your work on the cutting edge of creativity.

Apple Developer Central
Come see the latest applications, custom solutions, multimedia, scientific and engineering solutions for the Macintosh... and get a glimpse of what the future holds. Annually, the Apple Developer Central is one of the very best resource centers where software developers can find the tools and solutions they need to grow their companies and reduce development time and costs.

FREE gifts with your registration!
Get a free copy of MACWORLD Expo - the Creative World's Streetside Guide to New York City: A Mac Users Manual to Think Different About the Big AppleOS. The guide includes hundreds of dollars of exclusive savings to area restaurants, museums, destination, technical, creative and support services throughout the New York area.

AND
You get a FREE three-month basic trial membership in NYMUG, including monthly meetings, software classes and an award-winning monthly magazine, the Mac Street Journal.

www.macworldexpo.com
Make the most of your time. This is a unique opportunity to spend an entire day getting in-depth training before the conferences begin. Full session descriptions for these sessions are posted at www.macworldexpo.com.

(A) Practical Introduction to Mac Networking  
(B) Designing Web Pages with Dynamic HTML  
(C) Photoshop for Webmasters  
(D) Creation of High Quality Photographic Web Content  
(E) Essentials for Non-Webmasters: How Web Marketing Works  
(F) Essentials of Web Publishing  
(G) Managing your Digital Assets with Cinebase  
(H) The Digital Storytelling Workshop  
(I) Putting Internet Commerce to Work  
(J) Optimizing AppleShare in the Integrated Network Environment  
(K) Macintosh Network Administration with the Apple Network Administration Toolkit  
(L) Introduction to Content Asset Management  
(M) Windows NT for Mac Managers  

Macworld/Pro—The Technical Conference for Macintosh Professionals  
July 8-10, 1998  
Now you can get in-depth, advanced technical training at MACWORLD Expo, with Macworld/Pro. Improve your skills, meet other Mac professionals solving similar problems and stay on top of your profession. The new Macworld/Pro Conference is designed for:

- Webmasters, Content Creators, Web Entrepreneurs, Web Developers  
- Network Managers, Network Administrators  
- Support Professionals  
- Developers  
- Mac Platform Managers from Business, Government and Education  
- IS/IT/MIS Managers  
- Small Business Owners  
- Educators  

A faculty of world-class instructors and lecturers are ready to help you take your Mac computing efforts to the next level. You'll emerge from this conference with enhanced skills and a wealth of new information. Here's a preview of what you can expect...

**Track 1: Creating Digital Content**  
Use the latest Mac OS technology to produce stunning digital content. Leading experts reveal new ways to bring creative concepts to life.  
**Topics include:**

- Optimizing Your System for Creating Digital Content  
- Professional Digital Photography  
- What the &*% is Interactivity, Anyway?  
- Digital Storytelling  
- Clear Audio on the Web  

**Track 2: Content Asset Management**  
How to manage your media assets effectively—and shorten turnaround time, reuse vital assets and leverage content for multiple media and distribution channels.  
**Topics include:**

- Setting up Workflows for Publishing  
- Content Management: the Integration Challenge  
- Knowledge Management vs. Content Asset Management  
- Media Convergence and Content Management  

**Track 3: Macintosh Networking and Communications**  
Go inside the protocols and services for tactics to manage Mac LANS, WANs, Internet/intranets and remote access.  
**Topics include:**

- Tracking Network Problems  
- Common Internet Attacks: What They Look Like and What to Do  
- Networking in a Rhapsody World  
- Tuning Open Transport  
- Open Transport Update: Mac on TCP/IP  

**Track 4: CyberWorld**  
Learn more about how to connect and configure Macs for the Internet, deploy Internet applications... and get perspective on the evolution of cybersociety.  
**Topics include:**

- Building a Mac-centric Intranet  
- ECommerce and Mac OS Technology  
- Internet 2000  

**Track 5: Managing the Mac Platform**  
The Macintosh continues to be a platform in transition, making it even more critical to approach Mac systems management methodically. These sessions will help you do that.  
**Topics include:**

- How to Manage Hardware Assets  
- Track and Enforce Software Licenses  
- Planning a Rhapsody Migration  
- A Macintosh Reality Check  
- Innovations in eMail  

For more information or to register, visit www.macworldexpo.com or call 800.645.EXPO
MACWORLD Users Conference / Travel Made Easy

MACWORLD Users Conference
July 9–10, 1998
Here's your chance to learn everything you ever wanted to know about using your Macintosh at work, at school, at home and on the road.

Take your Mac to the Max
Put your Macintosh into full throttle and squeeze every bit of performance out of it—whether it's an old model or the newest "screamer." Topics include:
- "Soup Up Your Mac" SuperSession
- Mysteries of the System Folder—Revealed!
- Ten Fabulous PowerBook Speedups

Create! Tips and Techniques for Using the World's Most Dynamic Tool to . . . Create!
Acquire new skills for media/multimedia authoring, digital content creation, digital manipulation, presentation, preparation and delivery. Topics include:
- Get Started with Digital Photography
- Become a Macintosh Musician
- Preflighting: Perfection Before Output

Crash Courses
Get the scoop on the latest technology and get up to speed with the hottest tools. Crash courses bring you up to speed fast. Topics include:
- DVD Insights
- How the Internet Works
- How to Buy Your Next Mac
...and more

Tech Tips
Extend your mastery of a variety of Mac tools. These sessions unlock the secrets and turn you into a power user. Topics include:
- Put Office '98 to Work
- How to Put Filemaker Databases on the Internet
- Digital Wizartry with Photoshop
- Hot Quark Xpress Tips and Tricks
...and more

Inside Apple Technologies
Gain in-depth understanding of advanced and innovative system technologies, learn why they're special, and how you can use them to create really cool computing solutions. Topics include:
- Introduction to QuickTime
- How to Use QuickTime to Author Rich Media
- How to Get What You See With ColorSync
- Secrets of an AppleScript Wizard

The Consumer Mac
Get the most out of the Mac in your house. Topics include:
- Digital Family Memories: Home Photo Album Design
- Personal Banking on the Internet
- Parental Controls: Secure Your Home Internet Connection for Your Kids

For more detailed info, visit the web at www.macworldexpo.com or call 800.645.EXPO.

Small Office/Home Office
How your Mac can help you launch and operate a small company, home-based business or telecommute. Topics include:
- How to be a Mac Office—Even if your Clients are on Windows
- Telecommuting Essentials
...and more

For Educators Only
Innovative ways the Mac can enhance both teaching and learning. Topics include:
- Network Computing: Is Zero Administration for Real?
- How to Make your Network Mac Work All the Time
- Video Conferencing, Virtual Reality, the Web, and More: How Two School Districts Use the Mac
...and more

Macworld Magazine Presents . . .
Columnists and featured guest speakers talk about the hottest topics hitting the pages of the industry's premier publication. Topics include:
- Macworld Magazine's Best of Show
- Best of Macworld's MacSecrets
...and more

Goodies
These light-hearted sessions will amuse you and show you things that are cool just for cool's sake! Topics include:
- Scripting Your Stereo
- Better Living Through Home Electronics—Great Gadgets for Everyone
- Saving Your Mac from Obsolence—or 101 Things to Do with a Dead Mac
...and more

Travel to MACWORLD Expo—the Creative World Made Easy and Convenient!
Exclusive discounted midweek fares are available on United Airlines and US Airways into all New York airports from your home city. A MACWORLD Expo travel professional can assist you with access to these fares or you may contact the airlines directly utilizing the MACWORLD Expo discount numbers below. Additionaly your travel professional may utilize these discount numbers for you and receive the same low fares. Please note that NO SATURDAY stay is required to take advantage of these low fares.

United Airlines
800.521.4041
Discount number
5192W
US Airways
800.334.6644
Discount number
18100598

Hotel Accommodation:
Early booking is strongly advised to ensure best hotel selection. Reservations are processed on a first-come, first-served basis, based on availability. After June 1, 1998 convention rates may not apply.

MACWORLD Expo has designated the New York Hilton as headquarter host. Please call CHM for other hotel listings.

Rates shown are per night, per room and do not include applicable room tax, currently 13.25%, plus $2.00 New York occupancy tax.

A deposit of one- or two night's room rate plus applicable tax is required at the time of booking to hold a reservation (see hotel listing). Deposits are non-refundable on May 15, 1998. Payment may be made by company check or credit card. Do not send check deposit until you receive confirmation of hotel assignment.

Hotel Changes and Cancellations:
All changes or cancellations must be made through CHM. Reservation cancellation after May 15 will result in forfeiture of applicable deposit.

Special Accommodations:
If you require special accommodations, please contact a CHM customer service agent.

Responsibility and Liability:
Convention Housing Management (CHM) and IDG Expo Management Company, travel program sponsor, and/or their agents act only in the capacity of agents for customer in all matters pertaining to hotel accommodations and transportation whether railroad, motor car, airplane, or any other means, and as such are not responsible for any damage, expense or change in schedule or condition from any loss, injury or damage to any person or property from any cause whatsoever. Baggage handling throughout the program is entirely at the owner's risk. The customer agrees that IDG Expo Management Company/CHM shall not be held responsible in the event of any errors or omissions in any promotional material.

For further travel information, please contact:
Convention Housing Management
1700 The Alameda, 2nd Floor
San Jose, CA 95126
phone: 800.799.9814 or
outside the USA 408.518.4200
tax: 408.918.9250
email: macworld@chmrooms.com
MACWORLD Expo - the Creative World Advance Registration Form

Jacob K. Javits Center - New York City

1. REGISTRATION SELECTION AND FEES (SELECT ONE)

All Conference and Keynote Sessions are on a first-come, first-served basis with the exception of the Pre-Conference Workshop. Please choose your package and fill out the form completely. Incomplete forms will be returned. Please use one form per person; make photocopies for additional people.

☐ Package 1 - Super Pass (July 6-10)
   Includes: Pre-Conference Workshop • Lunch (Tuesday only) • ALL Keynotes
   Macworld/Pro Conference Sessions • MACWORLD Users Conference Sessions • Exhibits
   (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)
   $1095* $195*

☐ Package 2 - Macworld/Pro and Pre-Conference Workshop (July 6-10)
   Includes: Pre-Conference Workshop • Lunch (Tuesday only) • ALL Keynotes • Macworld/Pro Conference Sessions • Exhibits
   (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)
   $955* $1095*

☐ Package 3 - Macworld/Pro Conference ONLY (July 6-10)
   Includes: Macworld/Pro Conference Sessions • Lunch (Tuesday only) • ALL Keynotes • Exhibits
   (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)
   $795* $895*

☐ Package 4 - MACWORLD User Conference and Pre-Conference Workshop (July 6-10)
   Includes: Pre-Conference Workshop • Lunch (Tuesday only) • ALL Keynotes • Exhibits
   (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)
   $495* $545*

☐ Package 5 - MACWORLD User Conference (July 6-10)
   Includes: MACWORLD Users Conference Sessions • Lunch (Tuesday only) • ALL Keynotes • Exhibits
   (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)
   $175* $199*

☐ Package 6 - Pre-Conference Workshop (July 6-10)
   Includes: Pre-Conference Workshop • Lunch (Tuesday only) • ALL Keynotes • Exhibits
   (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)
   $95* $445*

☐ Package 7 - Exhibits ONLY (July 6-10)
   Includes: Admission to the Exhibits ONLY
   $20* $45*

2. CUSTOMER INFORMATION

First Name                 MI                      Last Name
Title
Company
Street Address
P.O. Box (If applicable)
City State/Province Zip Code/Postal Code
Country
Telephone
Fax
Internet/Email Address

3. ATTENDEE PROFILE

WHAT IS YOUR INDUSTRY? (Check One Only)
☐ 1. Accounting/Finance
☐ 2. Advertising
☐ 3. Architecture/Construction/Process Industries
☐ 4. Art/Design/Printing/Services
☐ 5. Arts & Entertainment
☐ 6. Computer/Video/Network/Software
☐ 7. Consulting
☐ 8. Education
☐ 9. Engineering
☐ 10. Entertainment/Stage/Media
☐ 11. Government/Military
☐ 12. Health/Medical Services
☐ 13. Legal Services
☐ 14. Manufacturing (Computer Industry)
☐ 15. Manufacturing (Non-Computer Industry)
☐ 16. Marketing/Sales/PR/Communications
☐ 17. Printing/Publishing
☐ 18. Transportation
☐ 19. Utilities
☐ 20. Other

WHAT IS YOUR JOB FUNCTION? (Check One Only)
☐ 21. Art Director/Graphic Designer
☐ 22. Consultant
☐ 23. Corporation
☐ 24. Corporate Executive
☐ 25. CRMA Management/CEO
☐ 26. Director/VP
☐ 27. Editor/Writer
☐ 28. Education
☐ 29. Engineering/Scientific/R&D
☐ 30. Human Resource
☐ 31. Management/Department Head
☐ 32. Marketing/Sales
☐ 33. Network Management
☐ 34. Professional (Accountant, Doctor, etc.)
☐ 35. Programming/Analysts
☐ 36. Purchasing
☐ 37. Software Developer
☐ 38. Training
☐ 39.UNIX
☐ 40. Visual Arts
☐ 41. Wills
☐ 42. Web
☐ 43. Win
☐ 44. Commodore
☐ 45. IBM PC or compatible desktop
☐ 46. IBM Lotus/Notes

WHAT IS THE SIZE OF YOUR ORGANIZATION?
☐ 47. Under 50
☐ 48. 50-100
☐ 49. 100-200
☐ 50. 200-1000
☐ 51. 1000 & Over

WHAT IS THE COMPETITOR AT YOUR ORGANIZATION NETWORK?
☐ 52. Yes
☐ 53. No

4. PAYMENT METHOD (YOU WILL BE CHARGED FOR ALL REGISTRATIONS RECEIVED INCLUDING DUPLICATES)

Payment must accompany form for registration to be complete. DON'T PAY TWICE FOR THIS EVENT!
You will be charged for all registrations received, and not refunded for duplicate registrations.

☐ Check enclosed (make payable to MACWORLD Expo). Enclose check and form in an envelope.
☐ Mastercard ☐ Visa ☐ American Express Amount $______
Account Number
Expiration Date
First Name MI
Last Name
Cardholder Signature

DEADLINE FOR SAVINGS IS JUNE 8!

Advanced Registration* (on or before 6/8) Regular Registration* (6/9-7/1 via phone, Web, or on-site)
$1095* $195*

MACWORLD Expo - the Creative World
1 Macworld Plaza, San Francisco, CA 94103
Phone: 800-626-7811 Fax: 415-863-9000
www.macworldexpo.com

Conditions and Policies:
Payment must accompany form for registration to be complete. Purchase orders not accepted. Fax and mail registrations received after June 8 will be returned unprocessed. This form cannot be used for on-site registration. All registration fees are non-refundable and credentials are non-transferable. A $20 fee will be charged for all returned checks.

• Prices include 8.25% New York Sales Tax on the applicable portion of package price.

Deadline

The deadline for all fax and mail registrations is June 8. All fax and mail registrations after this date will be returned. You may still register at regular prices via Web or phone from June 9 through July 1. If you register between June 9 and July 1, you MUST pick up your badge at the On-Site Badge Pick-Up Counter.

• All international (including Canada) attendees must pick up badges at the On-Site Badge Pick-Up Counter.

ON-SITE REGISTRATION HOURS:
Monday, July 6: 2PM - 6PM
Tuesday - Thursday, July 7-9: 8AM - 6PM
Friday, July 10: 8AM - 4PM

PRIORITY CODE

MWAB

REGISTER NOW!

Use ONE of the following methods to register with this form:
☐ Call 800-626-7811 or 781-541-9000 outside of the U.S. (TD Service fees apply)
☐ Through July 1, ONLY
☐ Visit www.macworldexpo.com

Mail to: MACWORLD Expo - the Creative World
P.O. Box 5810, Norwood, MA 02062-5810
THROUGH JULY 1, ONLY

Fax to: 781-440-0359
Fixed registration forms must include credit card information.
THROUGH JUNE 8, ONLY

(TTY) Service is available for hearing impaired. Dial 781-440-0366.
Tomorrow's success begins with today's planning. And FastTrack Schedule 5.02 is the ideal scheduling solution enabling you to create presentation quality schedules quickly and easily.

Why waste time struggling with complicated project management or spreadsheet programs? FastTrack Schedule 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 your activities' progress and costs as changes occur — even link activities to establish dependencies. Then 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.

Get on track!
For more info or to place an order call (800) 450-1982
Download a FREE DEMO today! www.aecsoft.com

Simple Scheduling. Impressive Power.

Here are just some of the new features you'll find in Version 5.02:
- Calculation Fields
- Legend Builder
- Time Period Summaries
- Column Summaries
- Pop-up Choice Lists
- Export to HTML, GIF, Tiff, or JPEG
- System 8.0 Savy
- Finish-to-Finish Linking

Upgrade to Version 5.02 Today!

Circle 75 on reader service card
Over the past year, there has been an outbreak of new and virulent strains of flashing question mark problems. A disk icon with a flashing question mark inside it at start-up is a familiar—and sometimes ominous—sign to veteran Macintosh users. It means your Mac can’t start up because it doesn’t recognize your start-up disk.

In the worst case, fixing the question mark problem requires that you reformat your drive. Fortunately, most of the time the situation is not that serious, and you can get quick recovery with one of the standard fixes (for a list, see “Cures for the Common Question Mark”). These fixes won’t work, though, if you fall victim to one of the new causes. Here’s what you need to prevent and recover from these new dangers.

**Danger: Updating the Mac OS**

**Diagnosis** If you have a Power Mac 54XX, 64XX, 65XX (or a similarly designed Power Computing, Motorola, or Umax clone), and you recently updated to Mac OS 8.0, you may be vulnerable to a particularly nasty version of the flashing question mark problem. It happens only occasionally, and only after a cold start (a start-up after having turned your Mac off, as opposed to a restart with the power on). Apple’s temporary advice has been to never turn off your Mac, although restarting (a warm start) is fine.

Just to make life more interesting, the symptom is sometimes reversed: the question mark appears only on warm starts. In this case, a temporary remedy is to turn the Mac off and start up cold.

**Cure** You can do better than either of these remedies. Although standard disk-repair utilities—such as Disk First Aid or Norton Utilities—won’t work, updating the right software will.

The software in question is Drive Setup 1.3, the version of Apple’s hard-drive–formatting utility that shipped with Mac OS 8.0. You’re at risk if you update your disk driver or reformat your drive with this version of Drive Setup and you have a desktop Mac with an IDE drive. (See “Dastardly Duo” to find out if you have an IDE drive.)

To prevent this problem, simply get Drive Setup 1.3.1 (or later). If Apple has not already mailed you a CD-ROM that contains Drive Setup 1.3.1, you can get the file from Apple’s FTP site ftp://ftp
Drive Setup 1.3 are just the latest in a series of similar problems that have plagued recent versions of Drive Setup. For example, using Drive Setup 1.2.2 (the version that shipped with Mac OS 7.6) could also lead to a flashing question mark at start-up. Again, updating Drive Setup should solve the problem.

Drive Setup is not the sole utility known to cause flashing question mark start-up problems. Hard Disk ToolKit, a disk utility from FWB, can also precipitate this symptom. However, it only happens if you use it to partition your drive and only if you have certain IDE drives (manufactured by Seagate and Western Digital) found primarily in Power Mac 4400's and StarMax clones.

At first, the problem was reported to be specific to Hard Disk ToolKit versions 1.3, and updating to version 2.5 was supposed to remedy the situation. More recently, a statement from FWB implies that even version 2.5 may not completely stamp out this bug.

Dastardly Duo If your drive's Get Info window (left) says you have an IDE drive, make sure you update your disk drivers with Drive Setup 1.3.1 or later (right). ATA in the highlighted line shown above means you have an IDE drive.


Danger: Password Protection Diagnosis If you use Apple's At Ease software, beware of updating your disk driver while At Ease's password protection is on. Ignore this advice, and guess what might happen?

Cure The workaround is simple enough: turn off At Ease's password protection before updating your disk driver. Apple does not have a fix for this yet. However, if you encounter this problem, Apple has advice on how to get your disk working again. For more details, check Apple's Tech Info Library File #22101, at http://til.info.apple.com/techinfo.nsf/artnum/N22101.

Stay on the Alert I suspect this is not the end of the flashing question mark saga. New causes and new solutions are likely to crop up in the months ahead. To stay up-to-date on the latest developments, check out Apple's Tech Exchange Web page, at http://support.info.apple.com/te/te.qry, or drop by my MacFixIt Web site, at www.macfixit.com.

Contributing editor TED LANDAU runs the MacFixIt Web site, which offers solutions to Macintosh problems.
Make Friends and Influence Aliens

Star Control 3

The fabric of the universe is crumbling. It's up to you to find the answer in the unexplored reaches of the Kessari Quadrant. You're in control of a star fleet searching hundreds of planets. Can you unravel the secret to the universe's oldest and deadliest mystery?

- Pilot 24 different alien starships, use 48 unique weapons
- Manage the resources of over 30 colonies and 24 races
- Discover more than 40 ancient artifacts from an advanced technology
- Deploy your star fleet strategically for victorious Hyper Melee Combat

Negotiate critical alliances with 24 alien races

Defend your new allies and your territory in Hyper Melee Combat against the computer, or take on a friend

Build your colonies on newly discovered planets and manage their resources

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

MacSoft®

ACCOLADE

Star Control® is a trademark of Accolade, Inc. ©1994, 1998 Accolade, Inc. All rights reserved. Created by Legend Entertainment and based upon characters created and used under license from Paul Bricke III and Fred Ford. 7540 Beverly Boulevard, Hollywood, CA 90046 - 800-905-2561

Circle 29 on reader service card
With Diamonds
This Perfect,
The Only Thing
We Cut
Are The Prices.

Mitsubishi's full line of award-winning DIAMONDTRON™ aperture grille monitors have a proven reputation for quality, reliability, and value. And now you can get all this at prices lower than ever before. Plus, you'll have added confidence knowing that all Mitsubishi Diamond Plus® and Diamond Pro® Series monitors are backed by a full 3-year warranty, combined with service and support programs that are already the best in the business. With the new lower pricing, everyone can experience the DIAMONDTRON™ difference. Get all the details by contacting Mitsubishi Electronics today.

USA: 1-800-843-2515 • Canada: 1-800-387-9630 • Qwikfax: 1-800-937-2094
World Wide Web: www.mitsubishidisplay.com
Tips, Tricks, and Shortcuts

by Lon Poole

Clicking Mac OS 8.1's handy Browse The Internet desktop icon automatically launches Microsoft Internet Explorer 3.01 (unless you upgraded to Mac OS 8.1 from 8.0 or designated a different browser preference, using the Internet Config program). But for those who prefer to use Netscape Navigator or Communicator, Chuck Goodman of Fremont, California, explains how to change the browser preference. First, open Internet Config (in the Internet Utilities folder inside the Internet folder on your start-up disk). In the Internet Preferences window, click the Helpers button. The Helpers window lists various file types and the helper application assigned to each type. For example, the file type for Web pages is http and the assigned helper application is a Web browser.

Select any helper with the Internet Explorer icon, and click the Change button. In the Add Helper dialog box, click Choose Helper and select the application (in this case, Navigator or Communicator) to handle the file type selected in the Helpers window. Repeat this process for every file type assigned to Internet Explorer—or at least for all the http and https (for secured Web pages) file types—to change the browser preference to Navigator or Communicator. The next time you click Browse The Internet on your desktop, Netscape Navigator or Communicator (whichever you selected) will open instead of Internet Explorer.

The browser preference you set with Internet Config also affects other Internet software, such as the Connect To applet in the Mac OS 8.0 and 8.1 Apple menu. Use Internet Config whenever you upgrade your Web browser or want to use a different default browser.

Customize Font Previews

Mac OS 8 lets you double-click a font icon to display a sample of the font in a window, but the sample doesn't show uppercase letters. Can I use ResEdit to modify the sample to include uppercase letters?

Richard Root
Kirkland, Washington

You don't have to read about "cozy hummocks" in their "job pens" (or, for those who use System 7.6.1 or earlier, "razorback-jumping frogs" and "piqued gymnastics") when you open a TrueType or bitmapped font file in the Finder. You can change the sample text with Apple's free resource-editing program ResEdit. First, open your System Folder and hold down the option key as you drag a copy of the Finder to the desktop. Use ResEdit to open the duplicate Finder file, and you'll see icons representing the Finder's resources. Double-click the STR# resource icon, and then open the STR# resource ID 5816 (in Mac OS 8 and later), 14516 (in System 7.1 through 7.6.1), or 14512 (in System 7.0 and 7.0.1). This brings up a window in which you can edit the sample text. Make your changes to the text, save them, and quit ResEdit. Drag the original Finder file out of your System Folder and drag the modified Finder file from the desktop to the System Folder. Restart your computer, and test the results of your changes.

The Finder can't display samples of PostScript fonts or print a list of font samples, but many shareware utilities can. Two of the best are Tim Bobo's $5 Font Image Library 3.5.1 and Ken Stahlman's $15 FontCat. Both let you specify one text sample for screen display and a different text sample for printing a list of your fonts. FontCat goes a step further and lets you specify multiple custom layouts for printed font samples.

Scrolling through LaserWriter Options

A. In the Print and Page Setup dialog boxes for the printer driver LaserWriter version 8.4 or later, you can switch among six or more groups of options by choosing from a pop-up menu. This method gets cumbersome if you can't remember which group contains a particular option, making you long for the simpler LaserWriter drivers of yore. A fast way to scroll through the groups of options is to press ⌘–up arrow and ⌘–down arrow.

Francis George
Chapel Hill, North Carolina
QUICK TIPS

The page up and page down keys also work for this, if your keyboard has them.—L.P.

ClarisWorks Keyboard Shortcuts

**TIP** While in Browse mode in a ClarisWorks database, typing the hyphen in the following field types enters the following information:

<table>
<thead>
<tr>
<th>Field Type</th>
<th>Displays</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number field</td>
<td>current record number</td>
</tr>
<tr>
<td>Date field</td>
<td>today’s date</td>
</tr>
<tr>
<td>Time field</td>
<td>current time</td>
</tr>
</tbody>
</table>

Also, typing the-tab in a text field inserts a tab character.—L.P.

Smallest Common Monitor

In their outstanding book _Non-Designer’s Web Book_ (Peachpit Press, 1998), Robin Williams and John Tollett stress the importance of designing your Web pages to fit the 640-by-480-pixel screen of a common 13- or 14-inch monitor: “If you design a site that looks good on a 17- or 20-inch monitor, you’ll be asking people to scroll more than you realize.”

The February 1998 _Quick Tips_ suggested an easy way to size browser windows for smaller monitors, using a Mac OS 8 desktop picture with a 640-by-480-pixel box drawn in the upper left corner. But Rob Bushman of Mesa, Arizona, finds it less distracting to put a small crosshair in his desktop picture to indicate the position of the bottom right corner of a smaller-size screen. The crosshair is white with a black edge, so it shows up on any desktop picture.

If you don’t have Mac OS 8 or don’t want a desktop picture, Leonard Murrell of Memphis suggests using Daniel Schauer’s freeware Small Screen 1.3, an application that superimposes boundaries of smaller screen sizes on your monitor.

Yet another approach: Mark Zieg of Kissimmee, Florida, created a Web page (www.zieg.com/util/resolution.html) with buttons that open a new Netscape Navigator browser window small enough to accommodate a 640-by-480-pixel screen. (This Web page contains a small JavaScript that doesn’t work with Microsoft Internet Explorer 3.01 or 4.0 or Cyberdog 2.0.) To see Web pages in the newly sized Navigator browser window, type URLs in the window’s Location box.

LON POOLE answers readers’ questions and selects reader-submitted tips for this monthly column. His latest book is _Macworld Mac OS 8 Bible_ (IDG Books Worldwide, 1997).

Shareware mentioned in _Quick Tips_ is available from Macworld Online (www.macworld.com) or America Online (keyword Macworld; use keyword Apple for Apple software).

We pay $25 to $100 for tips on how to use Macs, peripherals, or software. Please include your full name and address, so that we can send you your payment. Send questions or tips to quicktips@macworld.com or to Macworld Quick Tips, 301 Howard St., 16th Fl., San Francisco, CA 94105. All published submissions become the sole property of Macworld. Due to the high volume of mail received, we cannot provide personal responses.

Creating Custom Cross-Platform Icons

WHEN YOU MAKE MAC AND WINDOWS projector applications for a Macromedia Director movie, it’s a nice touch to give both projector files similar custom icons. Patrick McMahon of Glendora, California, found a quick way to create nearly identical icons for both platforms by using Apple’s ResEdit, SoftWindows 95’s cross-platform cut and paste, and the PC shareware suite Microangelo (www.winsite.com). Windows doesn’t let you customize file icons as easily as the Mac’s Get Info window does, but Microangelo lets you change the icon of a Director projector—or any PC application—in a couple of steps.

1. To create the custom icon, open a copy of the Mac projector application with ResEdit, double-click the icI8 resource in the application’s resources window, and then double-click the application icon in the icI8 resources window. This opens an editing window for the application icon. After editing the icon, save your changes, select all, and copy the selection.

2. Now switch to the SoftWindows 95 PC environment, launch Microangelo Librarian (part of the Microangelo suite; each Microangelo app is listed in a submenu of the Windows Start menu), and use this application to open the PC projector file. (At the bottom of the Open File dialog box, set the Files Of Type option to Program, or you won’t be able to open the projector file.)

3. In the Microangelo Librarian window, double-click the projector file’s icon to bring up an icon-editing window, and then paste the icon copied from the Mac. The pasted icon may show some color shifts, since the Windows color palette is different from the Mac’s. Close Microangelo’s icon-editing window, and click Yes in the next dialog box to update the icon. Then close the Microangelo Librarian window and click Yes when prompted to save changes to the projector file. The PC projector now has essentially the same icon as the Mac projector.

The same technique works with the cross-platform cut and paste of an Apple PC Compatibility Card. Also, you don’t need to mess with ResEdit if you don’t want a small custom icon on the Mac. Simply create the icon image with any paint or draw program (make the image 32 by 32 pixels for best results); copy it; and paste it into the upper left corner of the projector application’s Get Info window. Then switch to the PC environment and use Microangelo to paste the custom icon over the projector program’s standard 32 × 32 and 16 × 16 icons.
PLAY TO WIN CASINO

AUTHENTIC VEGAS GAMEPLAY. THE BEST STRATEGIES, TIPS & TRICKS.

LEARN AS YOU PLAY, NOT AS YOU PAY

- Fast, responsive, highly-realistic casino action
- Tips & tricks integrated into every game
- Optional step-by-step instructions for beginners and advanced strategies for experts
- On-the-fly expert advice. Ask the computer what to do
- Optional warning system alerts you to high-risk bets
- Game and Wager Summaries let you analyze your playing habits
- Complete glossaries and on-line help

Available at Retailers Everywhere!
800-229-2714

Call for a free catalog or visit our website at www.wizworks.com

System Requirements: Any Macintosh running system 7.0 or higher with at least 68040, CD-ROM drive and 256-color monitor (thousands of colors recommended)

©1997 Varcon Systems, Inc.

Circle 30 on reader service card
Thousands of images in multiple formats. Including that

Where do you go for a truly outstanding image? Try the new Adobe Image Library. You get access to thousands of truly royalty-free stock photos, illustrations, and videos. Available in the most popular formats—CMYK, High-Resolution and Low-Resolution RGB,
one perfect image you're looking for.

Web optimized, and QuickTime™ video. So you'll create a memorable presence in virtually any media. You can even purchase CD-ROM titles or single images online. Call us today for a free Browser CD™ 1-888-502-8393 ext. 8101. Or visit www.adobestudios.com.

Suddenly, you're unforgettable.
As a graphics professional, you are expected to create dynamic print ads, multimedia productions, and stunning visuals for the web. Faking it in a 2D package falls short of what you want to deliver. It's time to take the 3D plunge, but you've only found under-powered toys that fall short of getting the job done right.

Finally, you have a choice. NewTek, the company that took Hollywood by storm with LightWave 3D®, has just released Inspire 3D™. It's a powerful, yet easy to learn 3D program designed specifically for the needs of the professional graphic artist. It comes with an interactive tutorial that gets you up and running in no time. Before you know it, you'll be creating stunning graphics that satisfy even the most demanding clients.

NewTek designed Inspire 3D based on its experience with LightWave, the choice of Hollywood animation studios such as Dreamworks and Digital Domain. We have worked hand-in-hand with graphic artists to develop powerful, creative tools for more than a decade.

Best of all, you'll find Inspire 3D works well with Adobe Photoshop®, Quark XPress®, Macromedia FreeHand®, and Macromedia Director®, as well as dozens of other programs that professionals use every day. As your imagination and creative needs grow, you'll find that Inspire 3D has the power to make all your artistic creations come to life.

Call NewTek today at 1-800-862-7837 for more information
http://www.newtek.com
Circle 14 on reader service card

Outs ide the USA call 1-210-370-8000 • FAX: 1-210-370-8002
Anonymous FTP site: ftp.newtek.com

Windows NT or 95 • Power Macintosh
All trademarks and registered trademarks are the sole property of their respective owners. © NewTek 1998
10 Menacing Font Foibles

Some of the Most Frustrating Font Problems, Their Causes, and How to Foil Them

by Kathleen Tinkel

We have been using Macintoshes to set type for nearly 15 years—you'd think all the font problems would have been solved by now. Yet users still report that fonts don't print (or don't print correctly); that some—including Multiple Master fonts and fonts with supplemental "expert" sets—are inconvenient; and, increasingly, that it's almost impossible to exchange files with Windows users without font substitution and other errors. More surprising, service bureaus still report that fonts are responsible for half or more of the output errors they encounter.

Maybe it makes sense, given all the changes in fonts during the past decade. There are tens of thousands of fonts on the market today, with new ones being released every month, many of them with confusingly similar (or identical) names. We now cope with two scalable font formats, PostScript Type 1 and TrueType. Our fonts are more complex, with large families of six, eight, or more styles. We're more likely to pass files back and forth among Macs and across platforms. And the interworkings of the OS, software applications, fonts, and output devices grows steadily more complex.

But don't despair. This article recommends effective solutions or workarounds for ten of the most perplexing font-related problems. For the future, the OpenType font format Microsoft and Adobe proposed for release later this year may make most of our font problems obsolete (see the sidebar, "The Promise of OpenType"). In the meantime, here are some tips. (Note: Tips are aimed at Type 1 fonts, except where noted for TrueType.)

Cross-Platform Problems

**Unwanted Courier Text**

**PROBLEM** Bold and italic characters in a Mac file show up as plain Courier when you open the file in Windows even though you were careful to use the same font and version on both platforms. If you specify fonts by full name—Bodoni Bold-Italic, for example—the Windows software probably doesn't recognize the names of the styled fonts, because either the names are slightly different or they're not present in the font menu.

**SOLUTION** Instead of using named fonts (from font menus), apply bold and italic attributes from a styles menu (or with keyboard equivalents). If the font family contains more than the standard four styles, you'll need to know which styles are linked to each other to get predictable results. For Adobe fonts you can get such information from Adobe's Font Name Reference Table (Fntnames.pdf), which you can download from Adobe's FTP site (ftp://ftp.adobe.com/pub/adobe/type/all/fntnames.pdf) or get from Adobe's Type On Call CD. You can also set up a test printout to determine which styles are linked for any font.

**Unexpected Characters**

**PROBLEM** The "fi" and "fl" ligatures in your Mac file appear as other characters.

Continues...
ters when you send the file to a Windows computer. Or you find that fractions in a Windows file become other characters when you open the file on your Mac. These character changes arise because standard Mac and Windows fonts have different character sets. The most notorious examples are the “fl” and “fl” ligatures in Mac fonts and three fractions—\(\frac{1}{4}\), \(\frac{1}{2}\), and \(\frac{3}{4}\)—in Windows fonts.

**SOLUTION**  If you need only to read or print the file, either provide a Type 1 print file or use Adobe Acrobat Distiller to make a PDF file (both of which include the fonts as well as any graphics).

If the file must be editable and it contains ligatures but not fractions, try using a font that has an expert set. Or choose a typeface that doesn’t require ligatures—Sabon or Palatino, for example. (Tip: Look for a typeface whose \(f\) doesn’t project so far that it collides with the dot of the \(i\) or the top of the \(t\); see the example in “Prevent Collisions.”)

Fractions are more difficult, but you have a couple of choices. You can use one of the two sets of fraction fonts from Adobe that work identically across platforms: Helvetica and New Century Schoolbook. Otherwise, build fractions by hand using the superscript and subscript functions in your desktop publishing software. Hand-built fractions are likely to be lighter looking than surrounding text (see “Fraction Help”) and are tedious to make, but they travel with the file.

### Warning Messages

#### Crashes, Rough Characters, and Other Anomalies

**PROBLEM**  If you experience rough bit-maps on screen, a warning or other indication from a program that a font is unavailable, or font substitution in a printout—especially in conjunction with otherwise unexplained freezes and crashes while launching an application or opening a file—you may have a damaged font. Font corruption can be maddeningly hard to diagnose because these same symptoms could indicate an extension conflict, a damaged copy of Adobe Type Manager (ATM), an inadequate ATM font or character cache, a shortage of RAM, or a damaged document or software program.

**SOLUTION**  If you suspect a damaged screen font, the most pragmatic approach is simply to reinstall the fonts from the source floppy or CD.

If you’re still unsure whether your problem stems from a bad font, you might want to get Insider Software’s Font Box ($69.95; 760/804-9900, www.theinside.com), a font-maintenance utility that checks screen and printer fonts, identifies orphaned and duplicated fonts, and organizes your font library.

#### Deceiving Damage Reports

**PROBLEM**  You ran the Verify or Report function in ATM Deluxe 4.0 and it closed most of your fonts from Monotype Typography, reporting that they were damaged. Or Alssoft’s MasterJuggler flagged some TrueType printer fonts as missing. Yet you had been using the fonts with no problems before running the tests.

**SOLUTION**  Ignore the reports—there’s nothing wrong with the fonts; ATM is misreading some technical font data. Since ATM won’t let you use the fonts once it has disabled them, you must delete thesuitcases from ATM’s Known Fonts list and then re-add them. So long as you don’t try to run Verify or Report on them, they should work fine.

If the problem is with MasterJuggler, it’s because the program thinks that some TrueType fonts are Type 1 and reports a missing printer font. Ignore it—the fonts will work as they always did.

#### Unavailable Font

**PROBLEM**  Another user working at a different Mac sends you a file and you get an alert from the font-mapping utility in QuarkXPress or Adobe PageMaker that...
the font isn't available. This may happen even though you're sure you both used the same font.

It's likely that you and the other user have different versions of the font. Most foundries have revised their libraries over the years to improve the outlines, fix bugs or errors, or change the names. As a rule of thumb, any font created before the mid-1990s may have been revised. Adobe's Font Name Reference Table PDF on the Type On Call CD lists all the name changes to the Adobe library. That's good news, but the profusion of versions is confusing.

**SOLUTION** Tell the font-mapping dialog box to substitute the unknown font in the file with its counterpart on your system. It's also a good idea to contact the font companies—most offer an inexpensive or free upgrade.

**Problems in Print**

**Missing Bold or Italic**

**PROBLEM** Plain type prints out on a PostScript printer even though you applied bold or italic styles that showed up on screen. You probably specified styles that are not linked to the plain font, styles with no printer font, or styles for which the printer font is missing or corrupted.

**SOLUTION** Make sure there's a printer font for the style you're using. If there isn't, determine whether the font you're trying to embolden or italicize is actually linked to these styles (see the “Cross-Platform Problems” section for help with linked styles). If you need styles that don't exist, consider choosing a different font family.

**Altered Spacing**

**PROBLEM** Type in some printouts appears oddly spaced. You may have used a TrueType font that was output to a PostScript printer that had the Type 1 counterpart on its raster image processor. In that case, the Type 1 font would be automatically used instead of the TrueType version, and the two formats might have slightly different character widths and spacing.

**SOLUTION** Change the kerning, either manually in the file wherever you see a problem, or by using a kern-editing utility—for example, Agfa KernEdit (which comes free with PageMaker). Changing kerning is complicated in Multiple Master fonts. You must reduce the kerning value in all the master fonts. It's often easier just to fix any problems that occur in the file.

**EPS Turns to Courier**

**PROBLEM** You place an EPS file in a page-layout document, and the fonts print out in Courier.

**SOLUTION** Manually download the EPS font to the printer or imagesetter before outputting the file. For logos or other graphics that are used by many people outside your control, convert the fonts to paths in Adobe Illustrator or Macromedia FreeHand. These elements become vector graphics that will print correctly to any PostScript printing device. This works best with large type—small type looks bolder and can be hard to read (see “Big Picture”).

**PageMaker Symbol Mixup**

**PROBLEM** Occasionally you find the wrong symbol character in a PageMaker printout: characters such as ©, Ø, or ™ print in the wrong typeface, or you get a symbol character like this pi, π, when you had selected an ornament. The culprit is often the default option Use Symbol Font For Special Characters in PageMaker's Print Options dialog box. This setting determines whether the characters designed in a font will print or be replaced by a generic character from the Symbol font. The setting applies to an entire document (or all the pages printed as one job), not to a particular font.

**SOLUTION** Turn the option off (see “Hidden Problem”). If you want to use Symbol or another symbol font, you should apply those fonts explicitly to selected text. Then it should print correctly, regardless.

**KATHLEEN TINKEL** writes about design, typography, and computers. Her column “Print Clearly” appears monthly in *MacWeek* and *MacWeek Online*.
Tile Your Site
Use Tiles to Create the Layered Look on Your Web Pages

by Lynda Weinman

nyone who has used popular digital-design programs (such as QuarkXPress, Adobe PageMaker and Photoshop, or Deneba Software's Canvas) has likely utilized "layers." Such programs let you layer unlimited images in one piece of artwork. That's easy enough in print publishing, but not so easy when you leave that realm. Welcome to the strange world of Web graphics, where HTML limits you to two layers—a background layer and a foreground layer. You can get around HTML's two-layer limitation by using Cascading Style Sheets or plug-ins, but if you want your site to be accessible to end users who have older browsers or who don't have plug-ins, you're stuck with the two-layer limit.

The trick is to learn to do with two layers what would normally take many. The background layer of a Web page lets you tile (repeat indefinitely) a small source image. Creating a tile in a digital-design program and then exporting that tile for use on the Web minimizes the two-layer limitation by filling a browser screen with a repeated image instead of a single, solid color (which is all that raw HTML can offer).

Web tiles can be seamless or include seams; the type to use depends on the effect you want. I've created two examples in Photoshop 4 that demonstrate how to make both types. I also offer some tips about how to vary these effects and work creatively with color treatments.

Once you learn to tile, you can apply your knowledge to projects other than Web graphics, such as mapping textures onto 3-D models and creating patterns for fabric.

LYNDA WEINMAN is the author of a series of books on Web graphics, Web design, Web color, and HTML. Check out www.lynda.com for more information.

1 Create Tiles with Seams
The size of your source tile dictates how many repeats your tile will have. There is no wrong or right size for a tile; but larger dimensions will increase download time. I began with a 200-by-200-pixel source image set to 72 dpi. (Use 72 dpi as your setting for all Web graphics—your artwork will ultimately be published to computer monitors, which display artwork only at the 72-dpi screen resolution.)

To make the tile repeat, start by saving the source image either as a GIF or JPEG, with the appropriate three-letter extension at the end (.gif or .jpg). Then, in your HTML document, insert the name of the source image inside the <BODY> tag. (If you need the exact HTML code I'm referring to, go to www .macworld.com/more/.)

This example has obvious seams—it's easy to see that the tile repeats.

2 Make Seamless Tiles
To make a seamless tile, you need to start by "offsetting" your image—repositioning the graphic within its boundaries.

Begin with a centered image, such as the one in my source tile. Then, choose Filter: Other: Offset. Inside the Offset filter's settings window that appears, choose Wrap Around and enter the number of pixels by which you wish to offset the image. I chose a setting of 50 pixels in the horizontal and vertical axes. This value moved my artwork so that I could see empty areas that weren't visible in the image's original position.
3 Hide Seams

The next step is to disguise the seams that have been exposed by offsetting the image. The method I used to do this was to draw in the blank areas. Offset your image repeatedly (as in Step 2) to expose and fill in all of the blank areas in your tile.

If you want to preview your tile as a full background in Photoshop before finalizing the image for HTML, try the following: choose All under the Select menu, and then choose Define Pattern under the Edit menu. Create a new document with the approximate dimensions of a Web browser's window (such as 634 by 324 pixels, although there is no standard browser-window size). Select the entire document, and choose Edit: Fill: Fill with Pattern. This technique is helpful for experimenting with seamless tile ideas and getting them to look right before performing the extra steps to make the files Web ready.

4 Color the Tile

Choosing a color scheme for Web graphics can be even trickier than making the graphics. When choosing a color scheme, keep a few important things in mind. Think of your color palette in terms of "readability." It's easy to read something light against a dark background, or vice versa. Since your background tile will likely be behind text or images, choose to work with overall dark or overall light values. Once you've made that decision, then choose dark or light values that are close together so that the colors of the tile don't compete with the readability of your page.

TIP To make this task easier, use the pencil tool (which produces aliased graphics) to create your image—an aliased image not only takes up less disk space than an antialiased one but is also very easy to recolor.

With an aliased graphic, it's easy to select one color and change it. Change your magic-wand setting to a tolerance of 1 or 0, and click on a color (such as black, in my example) within the image to select that color. Next, choose Select: Select Similar so that all instances of that color will be selected. Then choose a color from the Color palette and fill the selection with that color. Your secondary color(s) should be close in value (darks or lights) to the first color choice.

5 Create Special Effects

It's possible to create all kinds of different effects with Web tiles. You can even insert a full-frame photograph or graphic, as long as you keep file size in mind. It's a good idea to limit the total file size for graphics and HTML on one page to 30K or less. That means background tiles need to be compact. You can add the effects below and still stay well below that limit.

The Border Effect

To get the look of a left-hand border down the side of your page, add white space to the right of your tile. To do so, use a finished tile (such as the one I created in Step 3), choose Image: Canvas Size, and enter the number of pixels you want for your white space. I used 800 pixels.

TIP If you want to have the right side fill with a color other than white, change Photoshop's background color. The Canvas resize feature always fills with the background color.

The "Wipe" Effect

This kind of tile also gives you the effect of an animated "wipe." If you make a wide and short tile, it will repeat in a downward direction as it renders inside the browser window. (A narrow and tall image will repeat to the right.) With slower modern connections, this can look like a vertical or horizontal wipe.

Finished Web Page

This finished Web page integrates a background tile with foreground images. I created a left-hand navigation-bar area with the tile above. To get continuity in my overall design, inside the foreground "Links" image I used the same tiled pattern that I used in the Web tile and screened it back. The links in the left of the image are legible over a complex background because of the contrasting values. The entire page is under 20K!
MORE QUARKXPRESS® POWER. LESS MONEY. THAT'S MATH EVEN DESIGNERS CAN UNDERSTAND.

SLASH DESIGN TIME, CREATE STUNNING EFFECTS AND PREFLIGHT RIGHT IN QUARKXPRESS®

Now you can get three award-winning Extensis productivity software packages for QuarkXPress for one incredibly low price.

The Extensis PowerSuite for QuarkXPress includes:

**Extensis OX-Tools™ 2.0** — 15 time-saving tools that slash through QuarkXPress projects. With OX-Tools you can scale multiple objects, use layers, fine tune paragraph rules, use a powerful search and replace engine and much more.

**Extensis OX-Effects™ 3.0** — Quickly create professional cast and drop shadows, bevels and glows right in QuarkXPress. Interactively preview and custom design each effect. Effects feather seamlessly with background images. OX-Effects intelligently determines the optimal resolution and color mode so your designs print perfectly every time.

**Preflight Designer™ 1.0** — The easy-to-use, advanced preflight solution for designers. Intelligently inspect your QuarkXPress files and collect every file, font and image you need for perfect printing. Preflight Designer kills output problems before they cost you time and money.

The Extensis PowerSuite for QuarkXPress — Three award-winning products every Quark user needs for one low price.

DOWNLOAD A FREE TRIAL VERSION

http://www.extensis.com

Circle 14 on reader service card
The Black Art of Bluescreening

How to Combine Video Footage without Getting the Blues

by Jim Held

The recent Dustin Hoffman–Robert DeNiro political satire Wag the Dog shows not only the effect but also the process of keying, or bluescreening. You film a woman scurrying in front of a solid-blue background and then process that footage to create a mask that replaces all areas of blue with footage of Albania’s war-torn streets.

Those scenes make bluescreening look easy, and for the kind of big-budget Hollywood producer that Hoffman plays, it is. For the rest of us, bluescreening can be a one-way ticket to the blues. There are potential pitfalls in nearly every step of the process, any one of which can lead to an illusion-shattering halo of dancing pixels around your subject.

It is possible to do professional-level bluescreening with desktop digital-video gear. A successful bluescreening endeavor starts with proper production techniques and ends with the right software tools, according to Beth Corwin and Tom Wolfsky, formerly with ABC News and the proprietors of South Coast Productions (socoast1@aol.com), a Mac-based video-production house located on California’s rugged Mendocino coast. They shared their bluescreening expertise with me so that I can share it with you.

Set Up Your Set

The first phases in a bluescreening job are the most critical. One of the biggest favors you can do for your bluescreening software is to build and illuminate your set in the proper way and shoot your video with bluescreening’s critical requirements in mind. Get the Right Blue You can’t use any old shade of blue as your backdrop; you need a deep, rich blue designed for keying.

If you’re building a set, you can cover the background with keying paint; one source, Markertek Video Supply (914/246-3036, www.markertek.com), sells it for $38 a gallon. Another solution is keying fabric. It works well outdoors, and it’s great for head-to-toe shoots (hang it from a wall and drape it onto the floor). Markertek sells 102-inch widths for $29.99 per yard. Professional video-supply houses also sell bluescreen paper (a 9-foot-wide, 12-foot-long roll usually goes for around $38). A third option is Elite Video’s (501/321-0440, www.elitevideo.com) $210.95 Portable Chroma-Key Background, a 5½-by-7½-foot blue background that folds into a pouch.

Light It Right—the Background

Bluescreening has critical lighting requirements. To get good results, it’s essential to light the colored background separately from the subject and as evenly as possible.

If part of the background is brighter than the rest, the range of colors your keying software must address grows dramatically—and with it your chances for poor results. Many video professionals swear by Chimera’s (303/444-8000, www.chimeralighting.com) Lightbanks. These

Bluescreen Basics

Bluescreening software examines a video clip to locate all the pixels whose color matches the background against which you shot the subject, and then replaces those pixels with pixels from another piece of footage. Lighting the screen and subject properly helps ensure good results in the compositing process.

DIFFUSE LIGHTING

To reduce the variation in color range, set up several lights to illuminate the background. Diffuse lights help to keep the illumination levels even.

SUBJECT LIGHTS

Light the rest of your subject as you see fit, but pay attention to where shadows fall.
The Keys to Bluescreen Keying

All of the video editors available today provide at least some degree of support for compositing with bluescreen footage. The key point that differentiates products is their ability to deal with the most-difficult compositing jobs: unevenly lit backgrounds and tricky subject matter, such as smoke, glass, and wisps of hair.

Keying in Adobe Premiere

Premiere's built-in keying features are rudimentary but work well with properly shot footage.

1 Configure the Clips
After digitizing your clips, import them and then drag them to the Construction window as noted here.

(A) Put the footage containing the replacement background in Track A or Track B.

(B) Put the bluescreen footage in one of Premiere's superimpose tracks.

2 Adjust Keying Settings
With the clips in place, you're ready to create the composite. With the bluescreen footage selected, choose Transparency from the Clip menu.

(A) For video shot in front of a blue background, choose Blue Screen. Use Green Screen for green backgrounds. For problematic backgrounds, you can also use the Chroma key type, which provides more control over color range than these two.

(B) The Sample area displays a preview of the effect.

(C) Adjust the Threshold and Cutoff sliders until the blue background becomes transparent, thus revealing the new background.

(D) Drag this slider to view different sections of the bluescreen clip. Whenever you make an adjustment to the keying settings, it's a good idea to drag through the movie to see how the adjustment affects the entire clip.

(E) You can change the way the background appears in the Sample box (or Preview window), which is useful for fine-tuning keying settings. Click on [ ] to change the background to black or white, click on [ ] to display a checkered background, and click on [ ] to display the actual composite.

To display the preview in Premiere's Preview window instead of the Sample box, click on [ ]. To zoom in on the preview in the Sample box, use [ ], and to reposition the preview, use [ ].

(F) To display only the mask through which the background will show, check this box. This is a good way to double-check your keying settings.

(G) Smoothing can help clean up edge artifacts. The Low setting smooths edges slightly, while the High setting blurs them more.

High-end keying applications such as Adobe After Effects' $1,995 Production Bundle (408/536-6000, www.adobe.com) and Ultimatte's Ultimatte plug-in are much better able to handle these challenges than are the more basic keying features that are built into Adobe Premiere and the base version of After Effects.

Performance Tip
When creating the preview in the Transparency Settings dialog box, Premiere first applies any filters that you've assigned to the clips. This can slow preview performance. If the filters you plan to use don't involve changing the brightness or color balance of the clips, you can avoid this slowdown. Just apply your transparency settings before you assign any filters.
SUBSCRIBER SAVINGS CARD

62% OFF

PLUS A FREE CD-ROM

As a new subscriber you are entitled to a reduced rate on Macworld – 62% off the cover price. BONUS: Maximize your computing power with the Multimedia MegaPac CD-ROM – FREE with your paid subscription.

☐ 1 year (12 issues) just $30.00. YOU SAVE 50%.
☐ 2 years (24 issues) just $45.00. YOU SAVE 62%.

Name (please print)
Company
Address
City State Zip

☐ Payment enclosed. ☐ Bill me later.

Annual newsstand price $59.88. Mexico & Canada add US$18 postage; Canadian GST included. All other countries add US$70 postage.
Keying in After Effects

The keying features in Adobe After Effects' base version didn't do as good a job with my sample footage as Premiere did. The pricier Production Bundle, however, offers industrial-strength keying.

**BASE VERSION**

1. **Configure the Clips**
   With the bluescreen footage and background imported and in a Composition, select the bluescreen footage and choose Color Key from the Effect menu's Keying submenu.

2. **Adjust Keying Settings**
   (A) Click on the eyedropper, and then click on the blue background in the Comp window (not shown).
   (B) Adjust until the background turns transparent while the subject remains opaque.
   (C) Edge thinning increases the transparent area and helps to get rid of blue artifacts.
   (D) Edge feathering softens the edges of the mask through which the background shows.

The Color Key effect has trouble with the model's wispy hair—note the blue artifacts at the edges. For better After Effects keying, you'll want the Production Bundle.

**PRODUCTION BUNDLE**

1. **Configure the Clips**
   With the bluescreen footage and background in a Composition, select the bluescreen footage and choose Linear Color Key from the Effect menu's Keying submenu.

2. **Adjust Keying Settings**
   (A) To specify the color to be made transparent, click on the Key Color eyedropper tool and then click on the color in the left-hand preview.
   (B) The right-hand preview shows the results of your adjustments. Use the View pop-up menu to choose what you want to see: the final output, the source footage only, or the matte only.
   (C) Drag the Matching Tolerance slider to establish the color range to be made transparent. (The middle eyedropper between the preview windows broadens the range; the bottom one narrows it.)

   **Tip** To have the preview update dynamically, press the option key while dragging.

   (D) Fine-tune the key's edge sharpness and transparency. (You'll fix any blue edges in step 3.)

3. **Apply Spill Suppression**
   Spill Suppressor cleans up the edges of the key, which may have some blue-colored light, called spill, on them. Make sure the bluescreen-footage clip is selected, and then choose Spill Suppressor from the Effect menu's Keying submenu.

   (A) Click on the eyedropper and then on the spill color. (Generally, click on a color close to the subject's edges.)
   (B) Start with a value of 100; reduce it if necessary until the spill is gone.

   **Tip** Regardless of which After Effects version you use, always make keying adjustments with After Effects' resolution and effects-quality settings at their highest values. Lower-resolution settings yield faster previews but aren't accurate enough for fine-tuning keying settings.

Color spill (top) creates a blue halo, but Spill Suppressor eliminates the spill and the halo effect it causes (bottom).
Crop for Cleaner Keying

If you're shooting a full-figure shot, don't worry about filling the entire frame with blue. Just make sure the area immediately surrounding your subject is blue and evenly lit, and then shoot away. Afterwards, create a mask or a "garbage matte" that crops out the rest of the frame.

Adobe Premiere To create a rectangular mask, drag the handles in the Transparency dialog box's preview window.

Adobe After Effects First, double-click on the bluescreen footage in the Time Layout window. A Layer window opens, containing the footage. To create a rectangular mask, drag the mask handles in the Layer window. To create an irregularly shaped mask, use the pen tool in After Effects' Tools palette.

Adobe After Effects, Adobe Premiere, and Media 100 systems, for both the Mac OS and Windows. "The Keys to Bluescreen Keying" shows how the two most popular effects programs all offer keying features, and one third-party plug-in—Ultimatte Corporation's (818/993-8007, www.ultimatte.com) $1,495 Ultimatte—provides the kind of industrial-strength keying that used to be found only on high-end dedicated video workstations. "The Keys to Bluescreen Keying" shows how the two most popular programs approach keying. Remember, the most important bluescreening techniques are applied when you're behind the camera—not behind the mouse.

Adobe Premiere

Adobe After Effects

Adobe After Effects, Adobe Premiere, and Media 100 systems, for both the Mac OS and Windows. "The Keys to Bluescreen Keying" shows how the two most popular effects programs all offer keying features, and one third-party plug-in—Ultimatte Corporation's (818/993-8007, www.ultimatte.com) $1,495 Ultimatte—provides the kind of industrial-strength keying that used to be found only on high-end dedicated video workstations. "The Keys to Bluescreen Keying" shows how the two most popular programs approach keying. Remember, the most important bluescreening techniques are applied when you're behind the camera—not behind the mouse.

Blue is by far the most common color for keying backgrounds, so try to avoid blue clothing for your subject. But green screens are also popular. If you must use your camera's white-balance feature, which adjusts the camera's circuitry for proper color balance given the lighting you're using. Most midrange and high-end camcorders have a manual white-balance feature. Use it instead of automatic white balance. First configure your camera, lights, and set as they will be when you shoot the subject. Next, focus on a sheet of white paper; zoom in so that it fills the frame. Now press the white-balance button.

Stop Down a Bit If your camera offers manual f-stop control, stop down the aperture a bit. Shooting with the lens wide open can cause the edges of the frame to darken, complicating your keying software's job. But don't increase your depth of field too much. To reduce minor variations in lighting on the blue screen, you want the subject to be in tack-sharp focus but the background to be a bit blurry.

Keying Tools

1. Use your camera's white-balance feature, which adjusts the camera's circuitry for proper color balance given the lighting you're using. Most midrange and high-end camcorders have a manual white-balance feature. Use it instead of automatic white balance. First configure your camera, lights, and set as they will be when you shoot the subject. Next, focus on a sheet of white paper; zoom in so that it fills the frame. Now press the white-balance button.

2. For bluescreening, it's a good idea to backlight your subject, using straw-colored light. Doing so helps wash out any blue light that reflects off the blue screen, and that translates into poor composites.

3. The most important bluescreening techniques are applied when you're behind the camera—not behind the mouse.

4. "The Keys to Bluescreen Keying" shows how the two most popular programs approach keying. Remember, the most important bluescreening techniques are applied when you're behind the camera—not behind the mouse.

5. Adobe Premiere

6. Adobe After Effects

7. Adobe After Effects, Adobe Premiere, and Media 100 systems, for both the Mac OS and Windows. "The Keys to Bluescreen Keying" shows how the two most popular effects programs all offer keying features, and one third-party plug-in—Ultimatte Corporation's (818/993-8007, www.ultimatte.com) $1,495 Ultimatte—provides the kind of industrial-strength keying that used to be found only on high-end dedicated video workstations. "The Keys to Bluescreen Keying" shows how the two most popular programs approach keying. Remember, the most important bluescreening techniques are applied when you're behind the camera—not behind the mouse.

Say you saw it in Macworld. To purchase products advertised in this issue call the phone numbers below or use the reader service number for our Product Information Card located after the product index.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20,21</td>
<td>3COM</td>
<td>27-29</td>
<td>GCC</td>
<td>97</td>
<td>MacSoft</td>
</tr>
<tr>
<td>102,103</td>
<td>Adobe</td>
<td>73</td>
<td>GoLive Systems Inc.</td>
<td>126,127</td>
<td>MacWarehouse</td>
</tr>
<tr>
<td>94</td>
<td>AEC Software</td>
<td>58</td>
<td>Hitachi NSA</td>
<td>88-93</td>
<td>Macworld Expo</td>
</tr>
<tr>
<td>10</td>
<td>Agio Designs</td>
<td>74</td>
<td>800/441-4832</td>
<td>134</td>
<td>MegaHaus</td>
</tr>
<tr>
<td>136</td>
<td>Alliance Peripheral Systems</td>
<td>39</td>
<td>800/313-4335</td>
<td>14</td>
<td>MetaCreations Corp.</td>
</tr>
<tr>
<td>58</td>
<td>ALSOFT</td>
<td>57</td>
<td>Inforwave</td>
<td>4,5,7</td>
<td>Microsoft Corporation</td>
</tr>
<tr>
<td>49</td>
<td>American Power Conversion</td>
<td>40</td>
<td>Intergraph Computer Systems</td>
<td>67</td>
<td>Microtek Lab, Inc.</td>
</tr>
<tr>
<td>42</td>
<td>All Technologies, Inc.</td>
<td>56</td>
<td>Interland</td>
<td>98</td>
<td>Mitsubishi Electronics America, Inc.</td>
</tr>
<tr>
<td>41</td>
<td>Avery Dennison</td>
<td>12,13</td>
<td>Iomega - JAZ</td>
<td>110</td>
<td>New Technology</td>
</tr>
<tr>
<td>43</td>
<td>Avery Dennison</td>
<td>39</td>
<td>Iomega - Zip</td>
<td>104</td>
<td>NovTek Incorporated</td>
</tr>
<tr>
<td>45</td>
<td>Avery Dennison</td>
<td>37</td>
<td>Iomega - ZIP</td>
<td>111</td>
<td>ProDirect</td>
</tr>
<tr>
<td>124</td>
<td>Bottom Line Distribution</td>
<td>9</td>
<td>IOMICRO</td>
<td>75</td>
<td>Orange Micro</td>
</tr>
<tr>
<td>62</td>
<td>Caere Corporation</td>
<td>133</td>
<td>JeR Computerworld</td>
<td>119</td>
<td>135</td>
</tr>
<tr>
<td>60,61</td>
<td>Canon USA - Graphic Systems</td>
<td>25</td>
<td>BC Kensington</td>
<td>115</td>
<td>Ricoh</td>
</tr>
<tr>
<td>55</td>
<td>Canon USA Video</td>
<td>84</td>
<td>Kingston</td>
<td>116</td>
<td>Silicon Graphics</td>
</tr>
<tr>
<td>130,131</td>
<td>ClubMac</td>
<td>132</td>
<td>L.A. Trade</td>
<td>125</td>
<td>The LLB Company</td>
</tr>
<tr>
<td>137</td>
<td>Computer Discount Warehouse</td>
<td>128,129</td>
<td>The Mac Zone</td>
<td>128,129</td>
<td>The Mac Zone</td>
</tr>
<tr>
<td>6</td>
<td>Dantz Development</td>
<td>122,123</td>
<td>MacConnection</td>
<td>33</td>
<td>Umax Computer</td>
</tr>
<tr>
<td>17</td>
<td>Denver Software</td>
<td>120,121</td>
<td>MacMill / Creative Computers</td>
<td>35</td>
<td>Umax Computer</td>
</tr>
<tr>
<td>18</td>
<td>Diah Graphsoft</td>
<td>47</td>
<td>Matromedia</td>
<td>134</td>
<td>ViewSonic</td>
</tr>
<tr>
<td>135</td>
<td>Digital Graphix</td>
<td>101</td>
<td>MacSoft</td>
<td>110</td>
<td>Whistle Communications</td>
</tr>
<tr>
<td>110</td>
<td>Extensis</td>
<td>51</td>
<td>MacSoft</td>
<td>111</td>
<td>888/whistle</td>
</tr>
</tbody>
</table>

MACWORLD  May 1998  115
# Macworld Product Index

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, use the reader service number for our FastFacts Product Information Card located on the following page.

## SOFTWARE

### BUSINESS

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,5,7</td>
<td>Microsoft Corporation</td>
<td></td>
</tr>
</tbody>
</table>

### CAD/CAM

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Diehl Graphsoft</td>
<td>45</td>
</tr>
</tbody>
</table>

### ENTERTAINMENT

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>MacSoft</td>
<td>25</td>
</tr>
<tr>
<td>51</td>
<td>MacSoft</td>
<td>30</td>
</tr>
<tr>
<td>53</td>
<td>MacSoft</td>
<td>23</td>
</tr>
<tr>
<td>97</td>
<td>MacSoft</td>
<td>29</td>
</tr>
</tbody>
</table>

### GRAPHICS/DTP

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>102,103</td>
<td>Adobe</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Deneba Software</td>
<td>57</td>
</tr>
<tr>
<td>110</td>
<td>Extensis</td>
<td>14</td>
</tr>
<tr>
<td>57</td>
<td>Inflowave</td>
<td>32</td>
</tr>
<tr>
<td>47</td>
<td>Macromedia</td>
<td>37</td>
</tr>
<tr>
<td>14</td>
<td>MetaCreations Corp.</td>
<td>5</td>
</tr>
</tbody>
</table>

### HARDWARE

#### BOARDS

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>ATI Technologies, Inc.</td>
<td>256</td>
</tr>
<tr>
<td>9</td>
<td>IXMICRO</td>
<td>53</td>
</tr>
<tr>
<td>84</td>
<td>Kingston</td>
<td>201</td>
</tr>
<tr>
<td>56</td>
<td>Newer Technology</td>
<td>55</td>
</tr>
<tr>
<td>11</td>
<td>Orange Micro</td>
<td>33</td>
</tr>
</tbody>
</table>

#### COMPUTER SYSTEMS

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>136</td>
<td>Alliance Peripheral Systems</td>
<td>62</td>
</tr>
<tr>
<td>135</td>
<td>Digital Graphix</td>
<td>36</td>
</tr>
<tr>
<td>120,121</td>
<td>MacMall / Creative Computers</td>
<td>131</td>
</tr>
<tr>
<td>33</td>
<td>Umax Computer</td>
<td>99</td>
</tr>
<tr>
<td>35</td>
<td>Umax Computer</td>
<td>98</td>
</tr>
</tbody>
</table>

#### DIGITIZERS/SCANNERS

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>Microtek Lab, Inc.</td>
<td></td>
</tr>
</tbody>
</table>

#### DISPLAY

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>59</td>
<td>Hitachi USA</td>
<td>74</td>
</tr>
<tr>
<td>IBC</td>
<td>Iiyama North America</td>
<td>39</td>
</tr>
<tr>
<td>IFC,1</td>
<td>La Cie</td>
<td>52</td>
</tr>
<tr>
<td>58</td>
<td>Mitsubishi Electronic Inc.</td>
<td>261</td>
</tr>
<tr>
<td>44</td>
<td>ViewSonic</td>
<td>59</td>
</tr>
</tbody>
</table>

#### EXPANSIONS/UPGRADES

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>84</td>
<td>Kingston</td>
<td>201</td>
</tr>
</tbody>
</table>

### UTILITIES

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>ALSOFT</td>
<td>140</td>
</tr>
<tr>
<td>6</td>
<td>Dantz Development</td>
<td>26</td>
</tr>
<tr>
<td>57</td>
<td>Inflowave</td>
<td>32</td>
</tr>
<tr>
<td>94</td>
<td>AEC Software</td>
<td>283</td>
</tr>
</tbody>
</table>

### HARD DISKS/STORAGE

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>130,131</td>
<td>ClayMac</td>
<td>96</td>
</tr>
<tr>
<td>12,13</td>
<td>Iomega - JAZ</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Iomega - Zip</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Iomega - ZIP</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>La Cie</td>
<td></td>
</tr>
</tbody>
</table>

### INPUT DEVICES

#### MODEMS

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>20,21</td>
<td>3COM</td>
<td></td>
</tr>
</tbody>
</table>

### MISCELLANEOUS

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>American Power Conversion</td>
<td>72</td>
</tr>
<tr>
<td>25</td>
<td>RICOH</td>
<td>4</td>
</tr>
<tr>
<td>75</td>
<td>Whistle Communications</td>
<td>84</td>
</tr>
</tbody>
</table>

### NETWORKING

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>Intergraph Computer Systems</td>
<td>9</td>
</tr>
<tr>
<td>75</td>
<td>Whistle Communications</td>
<td>84</td>
</tr>
</tbody>
</table>

### OCR

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>Caere Corporation</td>
<td>69</td>
</tr>
</tbody>
</table>

### ONLINE

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>73</td>
<td>GoLive Systems Inc.</td>
<td>38</td>
</tr>
</tbody>
</table>

### SYSTEMS

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>79</td>
<td>Silicon Graphics</td>
<td>8</td>
</tr>
</tbody>
</table>

### ACCESSORIES

#### FURNITURE

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Agio Designs</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Avery Dennison</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Avery Dennison</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Avery Dennison</td>
<td></td>
</tr>
</tbody>
</table>

### MAIL ORDER

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>124</td>
<td>Bottom Line Distribution</td>
<td>221</td>
</tr>
<tr>
<td>130,131</td>
<td>ClayMac</td>
<td>96</td>
</tr>
<tr>
<td>137</td>
<td>Computer Discount Warehouse</td>
<td>2</td>
</tr>
<tr>
<td>135</td>
<td>Digital Graphix</td>
<td>36</td>
</tr>
<tr>
<td>133</td>
<td>JFA Computerworld</td>
<td>282</td>
</tr>
<tr>
<td>132</td>
<td>L.A. Trade</td>
<td></td>
</tr>
<tr>
<td>122,123</td>
<td>MacConnection</td>
<td>145</td>
</tr>
<tr>
<td>120,121</td>
<td>MacMall / Creative Computers</td>
<td>131</td>
</tr>
<tr>
<td>126,127</td>
<td>MacWarehouse</td>
<td>150</td>
</tr>
<tr>
<td>119</td>
<td>ProDirect</td>
<td>135</td>
</tr>
<tr>
<td>125</td>
<td>The LLB Company</td>
<td>220</td>
</tr>
<tr>
<td>128,129</td>
<td>The Mac Zone</td>
<td>70</td>
</tr>
</tbody>
</table>

### SERVICES

#### TRADESHOWS/CONFERENCES

<table>
<thead>
<tr>
<th>Page No</th>
<th>Advertiser</th>
<th>Reader Src. No</th>
</tr>
</thead>
<tbody>
<tr>
<td>88-93</td>
<td>Macworld Expo</td>
<td></td>
</tr>
<tr>
<td>166</td>
<td>Directory</td>
<td></td>
</tr>
</tbody>
</table>

---

Page 116 May 1998 MACWORLD
Macworld puts you in touch with the information you need most with three easy options:

1. www.macworld.com/getinfo
   Go Online
   Direct your browser to the URL above, then select the products, product categories or advertisers for whom you want to receive FREE information. You can then choose to have the information delivered to you by e-mail, postal mail or even telephonic.

2. dial 503.684.5370
   Fax In Card
   Simply fill in the questionnaire, circle the reader service numbers that correspond to the vendors you would like information from, then fax your form to us at 503.684.5370. FREE product information will be sent to you directly from vendors.

3. postage pre-paid
   Mail In Card
   After filling in the questionnaire, circle the reader service numbers that correspond to the vendors you would like information from, then just drop the postcard in the mail. Vendors will send FREE product information directly to you.

ATTENTION MACWORLD READERS:

Beginning with the June 1998 issue, Macworld's reader service program will be completely electronic and available at www.macworld.com/getinfo. Macworld makes it fast and easy to get all the information you need to buy the best Mac products and brands from the convenience of your desktop! Check out GetInfo today!

READER SERVICE NUMBERS FOR ADVERTISED PRODUCTS CAN BE FOUND IN THE PRODUCT'S AD AND IN BOTH THE ADVERTISER INDEX AND PRODUCT INDEX.

<table>
<thead>
<tr>
<th>Name</th>
<th>E-mail</th>
<th>Address</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
<th>Title</th>
<th>Company</th>
<th>Phone</th>
<th>Fax</th>
</tr>
</thead>
</table>

3 Simple Ways to Get FREE Product Information

Macworld puts you in touch with the information you need most with two easy options — fax back or mail in the reader service card.

Fax back. Mail in. Just don't miss out.

Fold here and close with tape. Do not staple.

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 677 PORTLAND OR
POSTAGE WILL BE PAID BY ADDRESSEE

READER SERVICE DEPARTMENT
12950 SW PACIFIC HWY STE 7
TIGARD OR 97223-9747
As Much As $300 IN REBATES

Power Macintosh® G3!

- 6.7MB/sec transfer rate
- Includes FREE Cartridge
- New! $1,999

20th Anniversary Power Macintosh

- 250MHz PowerPC® G3/32MB RAM
- 2GB Hard Drive/2X CD-ROM/33.3 Modem
- Built-in 12.1” Active Matrix Color Display
- Was $3,999 Now $1,999

Memory

Starting as low as $259 per MB

#27872

MacMall EXCLUSIVE!

Mac OS® 8 Just ‘99! When You Purchase with Any Version of the Microsoft Office 98 Macintosh Edition!

$24170

Take Advantage of this Special Offer: Mac OS 8 and a Teleport 56K Modem Both Only ’97! Ask for #15027

We ship FedEx

$1.8 Billion in Available Inventory!

Over 45,000 Products!

Custom Configuration!

Fastest Overnight Delivery!
with your CPU purchase! of $1000 or more.

**MacMall Exclusive Instant Rebates!**

**Apple Price Drops up to $2,000!**

PLUS Save up to $300!

with MacMall Exclusive Instant Rebates on Apple and Umax Systems!

No Mail-in Hassles! No Quantity Limits!

Call your account representative for details.

---

**PuRCHASE EITHER THE C600 OR THE J700 AND GET THE ASTRA 610S SCANNER...**

FREE!

PURCHASE EITHER THE C600 OR THE J700 AND GET THE ASTRA 610S SCANNER.

Purchase valid 3/1/98 thru 5/31/98.

No coupons to fill out... Scanner will ship at the same time as your CPU.

Also Available from MacMall

- **#27854** UMAX SuperMac C600 vPC/266MHz 663x/32MB RAM
- **#27855** UMAX SuperMac J700 C326MHz 664x/42MB RAM

3.0GB Hard Drive/24X CD ROM

Includes Neatnys Virtual PC

All monitors on UMAX systems are sold separately.

Virtual PC shipped in promotional packaging.

---

**Great Deals from MacMall!**

**Save 99!**

- RealPC & Stuffit Deluxe 4.5
- Both for only $99.99

**PalmPilot Professional Edition w/1MB RAM**

- Includes: Date Book, Address Book, To Do List, Memo Pad, Security, Games and Hot Sync
- for only $299.99

**Microsoft Office 98**

- Mac Upgrade only
- $268.99

- #26165 Call regarding Special Offers upon request

**HP LaserJet 5000N Printer**

- Full-bleed 11" x 17" capability
- Up to 16ppm, at 1200dpi
- PostScript Level 2 emulation
- for only $2,059.99

**56K Data/Fax Modem**

- PnP installation
- Caller ID
- FREE Data/Fax software
- for only $99.99

**Quickem Deluxe 98 & MacThin Deluxe**

- Together For Only $59.99

**Adobe Photoshop 4.0**

- Order now and receive a FREE MacMall exclusive Delta Vision 3D. 4.0. Ask for #44624.
- And, when you order the full version of Photoshop you can get a FREE Adobe Photoshop Classroom in a Book!

**$139!**

- #27424 (upgrade to PowerMac)

---

**Addison Wesley)**

**New Macromedia FreeHand!**

- Now with Transparency effects, animation key, Fireworks and path reshape tools

Order Any Time! 1-800-217-9492

Order Today by 10 pm EST—Get It Tomorrow by 10:30 am. Check out our Web site www.macmall.com
PowerMac G3/233 - ONLY $1999
- 233MHz G3 Processor
- 4GB Hard Drive
- 2MB Video RAM
- 15v Monitor
- 24X CD-ROM
- 66MHz System Bus
48156 Power Mac G3/233 $1699
48159 Power Mac G3/266 $1999
(266MHz G3/32MB/4GB/24X/100MB Zip) Monitor sold separately

Prices Slashed on Super Fast G3s! FREE 16MB with G3 Desktop and 15v Monitor

Power Mac G3/266 - ALL FOR ONLY $2299
- 266MHz G3
- 32MB + 16MB RAM
- 15v Monitor
- 4GB Hard Drive
- 24X CD-ROM
- 100MB Zip Drive
47688 Power Mac G3/266 $2299

PERIPHERALS!
Expressions G36 Executive Scanner
- Up to 4800 dpi
- Auto 36-bit color
- 6 second color preview
- Only $799

Add Zip to Your PowerBook!
Zip 100 Drive for PowerBook 3400
- 100MB internal drive
- Fits into the PowerBook's expansion bay
- Uses the same 100MB disks as Lomega's desktop version
- Plug-and-play simplicity
- Only $319

ORDER TODAY!

High-Performance Mobile Multimedia! PowerBook 1400c
- ONLY $1999
- 166MHz 603e Processor
- 2GB Hard Drive
- 11.3" Active Matrix
- 8X CD-ROM
49417 Apple PowerBook 1400cs $1749
(166MHz/603e/1.3GB/128MB)

Affordable wide-format printing!
EPSON Stylus 1520 Inkjet Printer
- Handles paper sizes from 4" x 4" to 17" x 22"
- Print speeds up to 5ppm color,
- 6ppm b&w
- Ideal for spreadsheets, presentations
- Only $799

FREE 16MB with G3 Desktop and 15v Monitor
275MHz G3! Exclusive Bundle! &

S900 with MAXpowr G3!

• G3 Speeds up to 300MHz!
• RAM Upgradable to 1GB!
• 6 PCI Expansion Slots!
• 7 Drive Bays • 2 Yr Warranty

"If you want speed and expansion, you aren’t going to get it from Apple. But you will get it from UMAX Computer."
—March 1998, MacWorld Mag.

54202S900 with G3/300MHz/32MB/21MB SCXI HD/4MB VRAM/8X CD 2499

Best Deals on Hardware & Software!

Utilities

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>43831</td>
<td>Act 2.8 for Mac</td>
<td>$195.95</td>
</tr>
<tr>
<td>37633</td>
<td>Conflict Catcher</td>
<td>$49.95</td>
</tr>
<tr>
<td>90037</td>
<td>Connectix Surf Express</td>
<td>$49.95</td>
</tr>
<tr>
<td>52083</td>
<td>FlashBack</td>
<td>$49.95</td>
</tr>
<tr>
<td>40642</td>
<td>Norton Utilities Mac</td>
<td>$97.95</td>
</tr>
<tr>
<td>47769</td>
<td>Retrospsect 4.0</td>
<td>$199.95</td>
</tr>
</tbody>
</table>

Games

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>51082</td>
<td>Deadlock</td>
<td>$49.95</td>
</tr>
<tr>
<td>42144</td>
<td>Diablo</td>
<td>$49.95</td>
</tr>
<tr>
<td>45082</td>
<td>Robin (Turned to Myth)</td>
<td>$49.95</td>
</tr>
<tr>
<td>51084</td>
<td>Top Gun</td>
<td>$49.95</td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>39536</td>
<td>Kensington Orbit</td>
<td>$99.95</td>
</tr>
<tr>
<td>42472</td>
<td>Hard Disk Toolkit</td>
<td>$25.95</td>
</tr>
</tbody>
</table>

CD-ROM

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>46415</td>
<td>Be-Val Soundtrack 24X CD-ROM</td>
<td>$189.95</td>
</tr>
<tr>
<td>43565</td>
<td>La Cie E2 24X CD-R Drive w/Toast</td>
<td>$199.95</td>
</tr>
<tr>
<td>43547</td>
<td>MDS 12X External SCSI CD-ROM</td>
<td>$139.95</td>
</tr>
<tr>
<td>44642</td>
<td>MDS 24X External SCSI CD-ROM</td>
<td>$169.95</td>
</tr>
</tbody>
</table>

Digital Cameras

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>47740</td>
<td>AGFA ePhoto 1200</td>
<td>$699</td>
</tr>
<tr>
<td>48233</td>
<td>Canon PowerShot 600</td>
<td>$699</td>
</tr>
<tr>
<td>52680</td>
<td>Kodak DC200</td>
<td>$699</td>
</tr>
<tr>
<td>47234</td>
<td>Olympus E-200L</td>
<td>$1299</td>
</tr>
<tr>
<td>44655</td>
<td>Sony Mavica MVC-FD7</td>
<td>$699</td>
</tr>
</tbody>
</table>

Printers

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>77800</td>
<td>Epson Stylus color</td>
<td>$29.95</td>
</tr>
<tr>
<td>37807</td>
<td>Epson Stylus Color 800</td>
<td>$29.95</td>
</tr>
<tr>
<td>43270</td>
<td>Epson Stylus Color 3000</td>
<td>$1099</td>
</tr>
<tr>
<td>43279</td>
<td>GCC Elite 1292</td>
<td>$1399</td>
</tr>
<tr>
<td>40618</td>
<td>HP DeskJet 870c</td>
<td>$299</td>
</tr>
<tr>
<td>53412</td>
<td>HP LaserJet 6MP</td>
<td>$899</td>
</tr>
<tr>
<td>47733</td>
<td>Minita la Color PageWorks</td>
<td>$379.95</td>
</tr>
</tbody>
</table>

Scanners

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>48104</td>
<td>Epson Expression 636XL</td>
<td>$249</td>
</tr>
<tr>
<td>48110</td>
<td>Mitsubishi 13 Plus</td>
<td>$1499</td>
</tr>
<tr>
<td>53153</td>
<td>Polaroid SpinScan 35 Plus</td>
<td>$199</td>
</tr>
<tr>
<td>40683</td>
<td>UMAX Astra 1200</td>
<td>$249</td>
</tr>
<tr>
<td>48456</td>
<td>Visioneer PagePort Strobe</td>
<td>$349.95</td>
</tr>
</tbody>
</table>

Video Cards & Accelerators

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>49733</td>
<td>ATI M1100 Enhanced VR</td>
<td>$319.95</td>
</tr>
<tr>
<td>52181</td>
<td>ATI IClamp 3D-4MB-PCI</td>
<td>$179.95</td>
</tr>
<tr>
<td>48111</td>
<td>Avery 1 Plus</td>
<td>$299.95</td>
</tr>
<tr>
<td>47783</td>
<td>IBM Micro Ultimate Re RMB</td>
<td>$599</td>
</tr>
<tr>
<td>43831</td>
<td>IBM Micro Twin Turbo RMB-PCI</td>
<td>$449</td>
</tr>
<tr>
<td>52389</td>
<td>Matrox Millennium I-4MB-PCI</td>
<td>$109.95</td>
</tr>
<tr>
<td>53346</td>
<td>Matrox Millennium II-8MB-PCI</td>
<td>$199.95</td>
</tr>
</tbody>
</table>

Monitors

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>43384</td>
<td>Hitachi 7415 19&quot;</td>
<td>$999</td>
</tr>
<tr>
<td>53187</td>
<td>Mitsubishi Diamond Pro 17&quot;</td>
<td>$1299</td>
</tr>
<tr>
<td>54997</td>
<td>NEC M700 Multimedia 17&quot;</td>
<td>$699</td>
</tr>
</tbody>
</table>

Storage

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>23649</td>
<td>Seagate 4GB Ultra SCSI Cheetah</td>
<td>$499</td>
</tr>
<tr>
<td>30140</td>
<td>La Cie I24Q External CD-ROM</td>
<td>$199</td>
</tr>
<tr>
<td>50940</td>
<td>Jazz 128 MB</td>
<td>$999</td>
</tr>
</tbody>
</table>

NEW!

- Supplements the manufacturer’s warranty for a full 4 years from date of purchase
- Ask about leasing options for BUSINESS
- Call 800-800-0014

Only $1999
Call Today!

30,000 hot products 24 hrs a day!

www.macconnection.com
Secure Online Shopping!

598MW

Circle 145 on reader service card


Microsoft Office 98 For Macintosh

$289

PowerLogix
PowerForce G3
250MHz/250MHz
1:1 Ratio

$1,299

UMAX Astra
1200s 600dpi Scanner

$195

Kodak Digital DC-120...$799
Kodak Digital DC-210...$799
 Agfa ePhoto 307...$299
Sony Mavica 385/520...$697
Olympus D22L...$487
Olympus D500L...$869
Olympus D600L...$1,259

Agfa ScanSnap 310
AGFA ScanSnap 600...$385
AGFA ScanSnap 600 Kit...$429
Agfa StudioScan 100 PSG...$692
Agfa StudioScan 100 PSR...$749
Agfa Arcus II MacOS...$1,599
Agfa Arcus II PS/2...$1,279
Agfa DeskScan...$329

Omegamark
Omegamark Zip...$143
Zip Drive External...$143
Zip Drive Internal (Tan)...$149
Zip 5.25 External...$185
Zip/Jaz External Kits...$23
Jaz External Kits...$23
Jaz Drive Internal Kit...$199
Jaz Drive 1GB Cartridges...$166
Jaz Drive External 2GB...$619

PowerBook 1400c/166

$1,499

ATI VR PCI

$250

UMAX PowerLook II Scanner

$119

Magic Yamaha
4x2/6x6 Speed CD-R

Red/Recordable

Incl. CD-RW compatible 4x/6x

$399

Video Cards

2D/3D Accelerators

http://www.bbol.com/

Network-sc: Bottom Line Distribution Home Page

Email: Sales@bbol.com

Don’t Trash That Mac!

Check Out These Upgrades!

Everyone Needs RAM

All memory purchased from Bottom Line comes with a hassle free lifetime warranty!

DIMMs 168-Pin 5.0/5.5 volt

PCI PowerLogix, UMAX, Power

8MB 168-Pin DIMM 60ns...$24
16MB 168-Pin DIMM 60ns...$49
32MB 168-Pin DIMM 60ns...$99
64MB 168-Pin DIMM 60ns...$249
128MB 168-Pin DIMM 60ns...$699

SIMMS 72-Pin

PowerLogix 1MB Cache...$152
1MB VRAM DIMM...$26
6MB 168-Pin DIMM 3.3 volt

Maxim power 250/512...$759
Maxim power 266/133MHz...$999
Maxim power 275/133MHz...$1,299
Maxim power 275/200MHz...$1,299
Maxim power 300/200MHz...$1,299

High Performance Drives & Fast/Wide Cards

Do you subscribe to our eMail Specials?
If not, look what you missed!

UXL Mach Spd 233/512...$279
UXL Mach Spd 233/512...$399
UXL Mach Spd 233/512...$499
UXL Mach Spd 233/512...$629
UXL Mach Spd 233/512...$749
UXL Mach Spd 233/512...$899

Drives 7200rpm Or Faster:
Quantum Atlas II 9.1GB...$1,149
Quantum Atlas II 18.2GB...$1,299
Quantum Viking 2GB...$299
Quantum Viking 4GB...$599
Seagate Cheetah 4.5GB...$627
Seagate Cheetah 4.5GB...$999

Video Cards 2D/3D Accelerators

IX Micro ProRez 4MB...$299
IX Micro UltimateRez 8MB...$599
IX Micro MacRez 4MB...$399
Matrox Millennium II 4MB...$219
Matrox Millennium II 8MB...$399

Adding RAM, A Processor Card, A Video Accelerator, And/or Fast/Wide Hard Drives Can Greatly Increase The Performance Of Your Old Mac!

http://www.bbol.com/
### DESKTOP MEMORY UPGRADES

<table>
<thead>
<tr>
<th>Module</th>
<th>Item #</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>168-Pin SDRAM</td>
<td>PowerMac Series</td>
<td>EDO 3.3V 60ns DIMM</td>
</tr>
<tr>
<td>G3 Systems</td>
<td>PowerMac Series-60ns</td>
<td>PowerMac 6100/80</td>
</tr>
<tr>
<td>128MB</td>
<td>128664</td>
<td>$199</td>
</tr>
<tr>
<td>64MB</td>
<td>647664</td>
<td>$95</td>
</tr>
<tr>
<td>32MB</td>
<td>327664</td>
<td>$77</td>
</tr>
<tr>
<td>16MB</td>
<td>167664</td>
<td>$69</td>
</tr>
<tr>
<td>168-Pin SIMMs</td>
<td>PowerMac 6100/80</td>
<td>PowerMac 6100/160</td>
</tr>
<tr>
<td>128MB</td>
<td>128664</td>
<td>$164</td>
</tr>
<tr>
<td>64MB</td>
<td>647664</td>
<td>$125</td>
</tr>
<tr>
<td>32MB</td>
<td>327664</td>
<td>$82</td>
</tr>
<tr>
<td>16MB</td>
<td>167664</td>
<td>$45</td>
</tr>
</tbody>
</table>

### POWERBOOK MEMORY UPGRDES

<table>
<thead>
<tr>
<th>Module</th>
<th>Item #</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWERBOOK G3</td>
<td>PowerMac 6100/80</td>
<td>PowerMac 6100/160</td>
</tr>
<tr>
<td>4GB</td>
<td>PB1400-16</td>
<td>$45</td>
</tr>
<tr>
<td>2GB</td>
<td>PB1400-32</td>
<td>$39</td>
</tr>
<tr>
<td>1GB</td>
<td>PB1400-64</td>
<td>$29</td>
</tr>
</tbody>
</table>

### PRINTERS & SCANNERS

- **Astra 1200**
  - $248
- **Epson**
  - Stylus 600 Inkjet
    - $319
  - Stylus 800 Inkjet
    - $399
  - Stylus Color 1520
    - $807
  - Stylus Color 3000
    - $1922

### MODEMS

- **Teleport 56K Flex Ext**
  - $159
- **Teleport 56K X2 Ext**
  - $157
- **Powerport 56k PCMCIA/Enet**
  - $368

### MONITORS

- **NEC LCD 2000 20”**
  - $778
- **NEC M500 15” Multisync**
  - $389
- **NEC E500 15” Multisync**
  - $404

### DRIVES

- **LaCie**
  - 2.1 GB (Ext) 5400RPM
    - $332
  - 4.3 GB (Ext) 5400RPM
    - $418
  - 6.4 GB (Ext) 7200RPM
    - $588
  - 9.1 GB (Ext) 7200RPM
    - $919
  - LaCie 24x Ext CD-Rom Drive
    - $199

### V-RAM

- **2MB G3 SGRAM**
  - $48
- **4MB G3 SGRAM**
  - $60
- **1MB V-RAM(DIMM)**
  - $27
- **2MB V-RAM(DIMM)**
  - $72
- **2MB Motorola**
  - $25
- **4MB Motorola**
  - $55
- **256K 80NS**
  - $15
- **512K V-RAM**
  - $22

### GLOBAL VILLAGE COMMUNICATION

- **SUPRA Express 56e K56 Flex Sp**
  - $149
- **SUPRA Express 56e K56 Flex Ext**
  - $137
- **SUPRA Express v.34 Ext 14.4 S/R**
  - $89

### SUPERCAM SYSTEMS

- **SuperMac**
  - Processor/Speed
    - UCC 500L-200LT: 603E, 200MHz (LT): $997
    - UCC 600L-240LT: 603E, 240MHz (LT): $1397
    - UCC 700L-180LT: 603E, 180MHz: $1195
    - UCC 700L-233: 604E, 233MHz: $1945
    - UCC 900L-200: 604E, 200MHz: $2435
    - UCC 910L-250: 604E, 250MHz: $4246
    - UCC 910L-250D: 604E, 250MHz (DP): $6759

### NECESSARY INFORMATION

- Electronic Orders: E-Mail: sales@llb.com
- Website: www.llb.com
- PO's are accepted upon approval
- All major credit cards accepted and charged when order is shipped
- No surcharge on credit cards
- Prices subject to change
- Open 6am to 7pm M-F, 8am to 1 pm Sat.
- Returns subject to restocking fee
- Not responsible for errors
- We welcome International orders
- Orders received before 8:00pm EST weekdays shipped same day
Apple Power Mac G3

Apple PowerBooks

As Low As

$1749!

Prices Slashed Up To 1000!

Price for PowerBook 1400C/166MHz — Item #CPU0990
WHILE SUPPLIES LAST! Shown in PowerBook 3400C/240MHz.

PowerBook 1400C/166MHz/16MB RAM 1.3GB HD/12" CD-ROM/11.7" Dual-Scan display. While supplies last.
# CPU0990 was $1749

PowerBook 1400C/166MHz/16MB RAM 2.0GB HD/10X CD-ROM/11.7" Active-Matrix display.
# CPU72745 was $2599

PowerBook 2400C/180MHz/16MB RAM 1.3GB HD/10.4" Active-Matrix display.
# CPU72713 was $2949

PowerBook 3400C/240MHz/16MB RAM 2.0GB HD/2.5K modem/10Base-T Ethernet/12CD/CD-ROM
# CPU0510 was $4499

MacWAREHOUSE

Ordering Information
1. Our sales staff is ready to take your order 24 hours a day, 7 days a week.
2. We accept the following major credit cards: Visa, MasterCard, Discover Card, Amex. Your credit card will not be charged until each item is shipped (no surcharge).
3. CT, IL, NY, OH and WA residents add applicable sales tax.
4. Overnight delivery just $4.95 per order up to 3 pounds. For all orders over 3 pounds, shipping is $4.95 plus $1.25 per pound or fraction thereof. (Example: a 4 pound order is $6.20.) Please add an additional handling charge of $1.00 for all orders under $26.00.
5. Place your order for "in-stock" items to 12:00 midnight EST (next day), and we will ship same day for overnight delivery. (Barring system failure, etc.)

Power Book 4400 Special Edition

Only $1299!

WHILE SUPPLIES LAST! Ask for Item #CPU0011

The Special Edition PowerBook 4400 comes LOADED with software!

- 200Mhz PowerPC 603e processor
- 32MB RAM • 2.0GB hard drive
- 1MB EDO VRAM (4MB max)
- Built-in 20 graphics accelerators
- Office 8.1
- 35.6 modem
- 24X CD/HDMI RAM/Zip Drive:
- New 33.6K modem
- New 10Base-T Ethernet/12CD/CD-ROM

Apple Power Mac 6500

As Low As

$1299!

WHILE SUPPLIES LAST!

*Power Mac 6500/225MHz: 32MB RAM/3GB HD/24X CD
$1999

Power Mac 6500/275MHz: 32MB RAM/4GB HD/24X CD/56.6K Modem/Zip Drive: # CPU0892 was $1499

Power Mac 6500/300MHz: 40MB RAM/6GB HD/24X CD/56.6K Modem/Zip Drive: # CPU0893 was $1699

Power Mac 6500/300MHz: 64MB RAM/8GB HD/24X CD/56.6K Modem/Zip Drive: # CPU0895 was $2299

Power Mac 8600 and 266MHz G3 Upgrade Card

Buy them both together and
SAVE $500!

Power Mac 8600/250MHz 604e: 32MB/4.0GB/24X CD/Built-in 100MB iomega Zip Drive: # CPU0880 was $2499

With XL88 63 Processor Upgrade Card:

266MHz 512K backside cache @133MHz: # CPU02571 was $998

Power Mac 8600/300MHz 604e: 32MB/4.0GB/24X CD/Built-in 100MB iomega Zip Drive: # CPU0704 was $2999

With XL88 63 Processor Upgrade Card:

266MHz 512K backside cache @133MHz: # CPU02572 was $5349

G3 card also available with Power Mac 9600. Call for details.

With XL88 63 Processor Upgrade Card:

266MHz 512K backside cache @133MHz: # CPU02572 was $5349

G3 card also available with Power Mac 9600. Call for details.

3rd party card requires customer installation. Card does not come pre-installed. Savings based on regular product prices if purchased separately.

Epson Stylus Color

600 Printer

$249!

Epson Stylus Color 600 Printer (shown in # P016127)
- Up to 7ppm color
- Optional Lexmark Ethernet
- Only $249!

HP LaserJet

6MP Printer

$949!

HP LaserJet 6MP Printer (shown in # P016127)
- Up to 5ppm color
- 4800x1200 resolution
- Only $949!

Astra 600S Color Scanner

$149!

Astra 600S Color Scanner (shown in # P016145)
- 35-bit single-pass color
- 300 x 600dpi
- 4800dpi
- Only $149!

Color

Includes Your First Disk!

Up to 80% faster than previous Scanners
- Only $139!

ColorScan

Includes Your First Disk!

Up to 80% faster than previous Scanners
- Only $139!

Umax

Includes Your First Disk!

Up to 80% faster than previous Scanners
- Only $139!

Iomega 100MB Zip Drives

As Low As $99!

Iomega 100MB Zip Drives (shown in # P017100)
- 100MB Zip Drives for only $99!
- Only $99!

Upgrade your G3

With the latest
DIMMs!

10MB upgrade for G3 PowerBook.
Ask for Item # CPU0895 was $999.
**Power Mac G3**

**Mini-tower Systems Feature:**
- 233MHz or 266MHz PowerPC G3 processor
- 512K Level-2 backside cache
- 32MB-128MB RAM (expandable to 384MB)

**Power Mac G3 Mini-tower/233MHz/32MB RAM**
4.0GB HD/24X CD/56K Modem: Item # CPU0950 WAS: $4499
**Power Mac G3 Mini-tower/266MHz/32MB RAM**
6.0GB HD/24X CD/Zip Drive: Item # CPU0958 WAS: $2999
**Power Mac G3 Mini-tower/266MHz/128MB RAM/4.0GB HD/Ultra wide SCS HD/24X CD/10 Base-T Ethernet:** Item # CPU1104 WAS: $4499

**Prices Slashed up to $500 on G3s!**

**Power Mac G3 Desktop Systems Feature:**
- 233 or 266MHz PowerPC G3 Processor
- 512K Level-2 Backside Cache
- 32MB RAM (expandable to 192MB)
- Built-in 10Base-T Ethernet

**Power Mac G3 Desktop/233MHz/32MB RAM**
4.0GB HD/24X CD: Item # CPU0956 WAS: $4499
**Power Mac G3 Desktop/266MHz/32MB RAM**
4.0GB HD/24X CD/Zip Drive: Item # CPU0957 WAS: $2999

**Apple PowerBook G3**

**The FASTEST Notebook on the PLANET!**

- 250MHz PowerPC G3 Processor
- 512K Level-2 Backside Cache
- 32MB RAM
- 5.0GB Hard Drive
- 20X CD-ROM Drive
- 33.6K Modem
- 12.1" Active-matrix display

**Microsoft Office 98**

Upgrade as low as $239.95* when you buy Microsoft Office 98 and 16MB RAM at the same time!

**Mac WAREHOUSE**

To order, call toll-free 24 hours a day, 7 days a week

**1-800-434-3036**

Order Online @ www.warehouse.com

Circle 150 on reader service card
High-resolution scanning without the high prices

ScanMaker V600

MICROTEK

Incredible digital images from Eastman Kodak!

DC200 Digital Science Camera

Kodak digital science solutions

Lowest price ever on the classic portable storage solution!

Jaz 1.0GB External SCSI Drive

ONLY $299.95

#25659

Create and distribute electronic documents!

Adobe Acrobat 3.01 Upgrade from Pro 2.X

ONLY $59.98

#30924

Adobe Acrobat 3.01 Full Version

#77473

*All sales are final on this product.

FreeHand 8 Upgrade with Nova ArtMania

10,000 ClipArt and 2 FREE CDR's

ONLY $148.95

#77473

FreeHand 8

Virtual PC 2.0 Upgrade

ONLy $32.98

#56394

Web savvy, auto effects, publishing ease & more!

SPECIALIZED SERVICE

Corporate Sales 1-800-258-0882

Government Sales 1-800-372-9663

Education Sales 1-800-381-9663

THE MAC ZONE • TRUSTED INTERNATIONALLY

Austria • Chile • Colombia • Denmark • France • Germany • Holland • India

Israel • Italy • Japan • Kenya • Mexico • New Zealand • Norway • Poland

Portugal • Singapore • Spain • Sweden • Switzerland

United Arab Emirates • United Kingdom • Venezuela

International Sales 1-425-430-3570

Copyright © 1998

The Mac Zone® is a registered trademark of Multiple Zones International, Inc. All rights reserved.

128 May 1998 MACWORLD
We Carry the Full Line of Apple® Macintosh® Computers

- Over 6000 Products to Choose From!
- Cool Bundles and Hot Specials!
- Low Prices Everyday!
- Overnight Delivery only $3 (up to 2 lbs)

we're open 24 hours a day

CALL FOR YOUR FREE CATALOG!

A Mac Zone exclusive!

Conflict Catcher 4 with Connectix DoublerPak and FREE FlashBack

A $162 VALUE!

Mac OS 8.1

Upgrade from 7.6

ONLY $68.98

#60602

*After $30.00 mail-in rebate. Low Zone price: $99.98. For 7.6 upgraders only, call for previous version upgrades.

State-of-the-art technology for an unbelievable price!

Apple® Power Macintosh® G3

233MHz PowerPC™ G3 processor

32MB RAM, expandable to 192MB

4.0GB hard drive

24X CD-ROM drive

66MHz system bus speed

512KB 117MHz backside cache

2MB Video SGRAM

Built-in 10Base-T Ethernet

ONLY $1699

#77039

High-end performance at an entry-level price!

Apple® PowerBook® 1400cs/166

166MHz PowerPC™ 603e RISC processor

16MB RAM, expandable up to 64MB

1.3GB hard drive

12X CD-ROM drive

11.3" dual-scan color SVGA display

Flip-up keyboard - easy internal access for upgrades

16-bit stereo input/output

GREAT LOW PRICE!

ActionTec DataLink 33.6 PC Card

73556 Reg. Price: $109.98 ............. ONLY $89.98

Product shipped in promotional packaging.

CALL US TOLL-FREE!

or FAX your order to 425-430-3500

Shop online at www.maczone.com
OUTSTANDING DEAL!

HARD DRIVES

Quantum

Quantum Stratus drives carry a 3 Year Warranty. Quantum Atlas & Viking drives carry a 5 Year Warranty.

- **2.1GB Stratus SE**
  - OM32160SES
  - 10ms 5400
  - $159

Seagate

Seagate Barracuda drives carry a 5 Year Warranty.

- **4.5GB Barracuda 4XL**
  - 8.4ms 7200
  - $489

Tape Backup

- **ClubMac DDS-3 DAT Drive**
  - $1099

CD Readers & Recordables

- **ClubMac 4X/12X CD Recorder**
  - $479

Zip Drive Solutions

- **Zip Drive Solutions**
  - Zip Drive only
    - $39.95
  - Zip Drive plus 100MB Zip Plus
    - $199.95

Iomega Media

- **Iomega Zip Media**
  - as low as $12.95

THE CLUBMAC PACKAGE

- ClubMac drives are preformated and thoroughly tested. ClubMac drives include a 30-Day Money Back Guarantee, Chistmac Anti-Parasite. Utility software, user's guide, brackets (wide drives include internal ribbon cable), 25-pin female SCSI cable and power cord for external drives (wide drives include 68-pin SCSI cable).

CALL 1-800-260-8549 FOR A FREE CATALOG
## PowerMac G3
- **PowerMac G3 266MHz G3 Desktop**
  - 32MB RAM
  - 6GB HD
  - 24X CD ROM
  - $1895
- **PowerMac G3 233MHz G3 MiniTower**
  - 32MB RAM
  - 4GB HD, 24X CD ROM
  - $1895
- **PowerMac G3 Super 266 G3 MiniTower**
  - 32MB RAM
  - 4GB HD, 24X CD, Zip Drive, 24-48X Video
  - $3594

## PowerBook 1400cs
- **PowerBook 1400cs 166MHz 603e**
  - 16MB RAM, 1.3GHz HD, 12X CD Dual Scan
  - $1634
- **PowerBook 1400CC 166MHz 603e**
  - 16MB RAM, 2GB HD, 8X CD, 11.3" Active Matrix
  - $1885

## PowerMac 6500
- **PowerMac 6500 300MHz 604a**
  - 32MB RAM
  - 4GB HD, 24X, 56K Modem
  - $1399

## Macintosh PowerBook G4
- **Macintosh PowerBook G4 250MHz**
  - 32MB RAM, 6GB HD, 2X CD, 12.1" Active Matrix
  - $5425

## Accessories
- **ZIP Drive**
  - $3295
- **Zip Drive**
  - $3295
- **Zip Drive**
  - $3295
- **Zip Drive**
  - $3295

## Software
- **QuarkXPress 4.6**
  - $199.95
- **Adobe Photoshop 4.0.1**
  - $149.95
- **PageMaker 6.5**
  - $94.95
- **Microsoft Word 2000**
  - $249.95
- **Microsoft Excel 2000**
  - $249.95
- **Microsoft PowerPoint 2000**
  - $249.95

## Customer Service
- Sales & Customer Service: (800) 250-8549
- Technical Support: (714) 768-9354
- Front Desk: (800) 250-8549

## Contact Information
- ClubMac
  - 7 Hammond, Irvine, CA 92618
  - (800) 260-8549
  - E-mail: clubmac@club-mac.com
  - Website: http://www.club-mac.com
For latest prices and availability on our huge inventory of computer products, Shop J&R Online!

www.JandR.com

(AOL Keyword: J&R)

“Good deals on everything imaginable...”

Reprinted from PC Computing, February 1998
Copyright 1998 Ziff Davis
### SCSI HARD DRIVES

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>RPM</th>
<th>Cache</th>
<th>Manufacturer</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1B278</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$799</td>
</tr>
<tr>
<td>1B279</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$849</td>
</tr>
</tbody>
</table>

### SCSI TAPE BACKUP

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>RPM</th>
<th>Cache</th>
<th>Manufacturer</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1B27A</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$799</td>
</tr>
<tr>
<td>1B27B</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$849</td>
</tr>
</tbody>
</table>

### CD ROM DRIVES

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>RPM</th>
<th>Cache</th>
<th>Manufacturer</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1B27C</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$799</td>
</tr>
<tr>
<td>1B27D</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$849</td>
</tr>
</tbody>
</table>

### CD Recorder

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>RPM</th>
<th>Cache</th>
<th>Manufacturer</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1B27E</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$799</td>
</tr>
<tr>
<td>1B27F</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$849</td>
</tr>
</tbody>
</table>

### CDR MEDIA

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>RPM</th>
<th>Cache</th>
<th>Manufacturer</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1B27G</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$799</td>
</tr>
<tr>
<td>1B27H</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$849</td>
</tr>
</tbody>
</table>

### SATA HARD DRIVES

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>RPM</th>
<th>Cache</th>
<th>Manufacturer</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1B27I</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$799</td>
</tr>
<tr>
<td>1B27J</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$849</td>
</tr>
</tbody>
</table>

### CD Ricers

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>RPM</th>
<th>Cache</th>
<th>Manufacturer</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1B27K</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$799</td>
</tr>
<tr>
<td>1B27L</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$849</td>
</tr>
</tbody>
</table>

### ATA CONTROLLERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity</th>
<th>RPM</th>
<th>Cache</th>
<th>Manufacturer</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1B27M</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$799</td>
</tr>
<tr>
<td>1B27N</td>
<td>9100MB</td>
<td>7200</td>
<td>512K</td>
<td>Toshiba</td>
<td>$849</td>
</tr>
</tbody>
</table>
Mac Multimedia MegaPac

Send me Macworld at the Introductory Savings Rate I've checked below. Plus, rush me the Mac Multimedia MegaPac CD-ROM - FREE with my paid order.

Name ________________________________________________________________________________________________

please print 5SQW0

Company ____________________________________________________________________________________________

Address ____________________________________________________________________________________________

City/State/Zip _______________________________________________________________________________________

☐ 1 year (12 issues) - SAVE 50% - $30.00
☐ 2 years (24 issues) - SAVE 62% - $45.00
☐ Payment enclosed.  ☐ Bill me.

Macworld

Annual newsstand price $59.88. Mexico & Canada add US$18 postage. Canadian GST included. All other countries add US$70 postage.
### Lease from Digital Graphix

**$0 Down 100% Business Financing NO Payments for 90 days!**

#### PowerPC 9600/350 w/ 24xCD
- 320MB RAM, 4GB HD, 1MB Cache
- Apple keyboard
- Viewsonic 21" P1810 monitor
- IMS 8MB PCI video card
- Micreltek ScanMaker II/Trans/Photoshop
- GO 6800dpi 11x17 Printer & Enet
- Wacom 12x12 Graphics Tablet
- Sony SDH 5000 DAT Tape Backup

**ZER0 DOWN**

**$274** PER MONTH

**Zero Down Package Only $1078**

#### PowerPC G3 266 OT w/ 24xCD
- 160MB RAM, 4GB HD
- Apple keyboard
- IOmega Zip 100 w/1 cart
- Viewsonic 64117" AV monitor
- Scanner V310 color scanner
- 6MB Video RAM
- Epson Stylus Color: 1000 1440dpi Inkjet printer
- Wacom 6x8 Artz Graphics Tablet

**ZER0 DOWN**

**$94** PER MONTH

**Zero Down Package Only $2923**

#### PowerPC 8600/300 w/ 24xCD
- 960MB RAM, 4GB HD, 1MB Cache
- Apple keyboard
- Int Ome ga Zip 100 w/1 cart
- Viewsonic FA 771" AV monitor
- Scanner V310 color scanner
- ATI 8MB PCI 3-D video card
- GCG06B 11x17, 600 dpi printer w/ Ethernet connectors
- Wacom 12x12 Graphics Tablet

**ZER0 DOWN**

**$139** PER MONTH

**Zero Down Package Only $5166**

---

### System Description

<table>
<thead>
<tr>
<th>PowerBook 14000/661MB/256/CD</th>
<th>Price</th>
<th>Lease</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerBook 14000/661MB/256/CD</td>
<td>$1399</td>
<td>$49</td>
</tr>
<tr>
<td>PowerBook 14000/661MB/256/CD</td>
<td>$1339</td>
<td>$59</td>
</tr>
<tr>
<td>PowerBook 233/64MB/500/CD</td>
<td>$399</td>
<td>$129</td>
</tr>
<tr>
<td>PowerBook 360/66MB/500/Modern</td>
<td>$1499</td>
<td>$49</td>
</tr>
<tr>
<td>PowerMac 560/66MB/500/CD</td>
<td>$1799</td>
<td>$57</td>
</tr>
<tr>
<td>PowerMac 9600/66MB/500/CD</td>
<td>$2199</td>
<td>$71</td>
</tr>
<tr>
<td>PowerMac 9600/66MB/500/CD</td>
<td>$2399</td>
<td>$71</td>
</tr>
<tr>
<td>PowerMac 9600/80MB/500/CD</td>
<td>$2599</td>
<td>$54</td>
</tr>
<tr>
<td>PowerMac 9600/80MB/500/CD</td>
<td>$2699</td>
<td>$54</td>
</tr>
<tr>
<td>PowerMac 9600/80MB/500/CD</td>
<td>$2999</td>
<td>$54</td>
</tr>
<tr>
<td>PowerMac 9600/80MB/500/CD</td>
<td>$3299</td>
<td>$54</td>
</tr>
</tbody>
</table>

---

### Monitors

- **Sony 100SE 15", 1280x1024, 25mm**
- **ViewSonic 15 E655, 1280x1024, 25mm**
- **ViewSonic EA 771AV, 1280x1024, 25mm**
- **ViewSonic EA 771AV, 1280x1024, 25mm**
- **ViewSonic 17GA, 1280x1024, 30mm**
- **ViewSonic V9519, 1600x1280, 26mm**
- **ViewSonic V9519, 1600x1280, 26mm**
- **ViewSonic V9519, 1600x1280, 26mm**
- **ViewSonic V9519, 1600x1280, 26mm**
- **ViewSonic V9519, 1600x1280, 26mm**
- **ViewSonic V9519, 1600x1280, 26mm**

---

### Optical Drives

- **OEM 128MB**
- **OEM 230MB**
- **OEM 600MB/500MB**
- **OEM 12/1.3GB**

---

### Hard Drives

**F/W RAIDs AVAILABLE**

- **Quantum 4GB 7200 rpm 8mm**
- **Quantum 4GB 7200 rpm 8mm**
- **Quantum 4GB 7200 rpm 8mm**
- **Quantum 4GB 7200 rpm 8mm**
- **Quantum 4GB 7200 rpm 8mm**
- **Quantum 4GB 7200 rpm 8mm**
- **Quantum 4GB 7200 rpm 8mm**
- **Quantum 4GB 7200 rpm 8mm**

---

### Tape Drives

- **Sony 4GB – 5000**
- **Sony 6GB – 7000**
- **Sony 8GB – 8000**
- **Sony 24GB – 9000**
- **Sony AT 50GB**

### Scanners

- **LinColor Jato Scanner 333m**
- **Agfa ScanSnap 310 300mb/Color/It**
- **Agfa Arcus II/Transparencyp/Photoshop**
- **Agfa Desk/Scan/Transparencyp/Photoshop**
- **Epson Expression 639 Professional/Photoshop**
- **Micreltek ScanMaker II/Trans/Photoshop**
- **Micreltek ScanMaker X100/30/Color/It**
- **Micreltek Ep Pro Full/Photoshop**
- **Micreltek ScanMaker X680**

### Laser Printers

- **Epson Stylus Color 3000, 17x22, Serial, Int, 1440dpi**
- **Epson Stylus Color 800, 8.5x11, Serial, Int, 1440dpi**
- **GCC XL 66, 600dpi, 11x17, Ethernet, 8ppm**
- **GCC XL 66, 600dpi, 11x17, Ethernet, 16ppm**
- **GCC XL 120, 1200dpi, 11x17, Ethernet, 8ppm**
- **GCC XL 120, 1200dpi, 11x17, Ethernet, 16ppm**

### Scanners

- **Epson Stylus Color 3000, 17x22, Serial, Int, 1440dpi**
- **Epson Stylus Color 800, 8.5x11, Serial, Int, 1440dpi**
- **GCC XL 66, 600dpi, 11x17, Ethernet, 8ppm**
- **GCC XL 66, 600dpi, 11x17, Ethernet, 16ppm**
- **GCC XL 120, 1200dpi, 11x17, Ethernet, 8ppm**
- **GCC XL 120, 1200dpi, 11x17, Ethernet, 16ppm**

### Graphics Tablets

- **Wacom CS660S 11x17, 600 dpi printer w/ Ethernet connectors**
- **Wacom CS660S 11x17, 600 dpi printer w/ Ethernet connectors**

### Laser Printers

- **Epson Stylus Color 3000, 17x22, Serial, Int, 1440dpi**
- **Epson Stylus Color 800, 8.5x11, Serial, Int, 1440dpi**
- **GCC XL 66, 600dpi, 11x17, Ethernet, 8ppm**
- **GCC XL 66, 600dpi, 11x17, Ethernet, 16ppm**
- **GCC XL 120, 1200dpi, 11x17, Ethernet, 8ppm**
- **GCC XL 120, 1200dpi, 11x17, Ethernet, 16ppm**

### Laser Printers

- **Epson Stylus Color 3000, 17x22, Serial, Int, 1440dpi**
- **Epson Stylus Color 800, 8.5x11, Serial, Int, 1440dpi**
- **GCC XL 66, 600dpi, 11x17, Ethernet, 8ppm**
- **GCC XL 66, 600dpi, 11x17, Ethernet, 16ppm**
- **GCC XL 120, 1200dpi, 11x17, Ethernet, 8ppm**
- **GCC XL 120, 1200dpi, 11x17, Ethernet, 16ppm**
## APS HIGH-PERFORMANCE ULTRA SCSI DRIVES

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Int.</th>
<th>SR 2000</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS ST 22000</td>
<td>Quantum Fireball ST, 201MB, 5.4K</td>
<td></td>
<td></td>
<td>1,299</td>
<td>1,899</td>
</tr>
<tr>
<td>APS ST 22000 W</td>
<td>Quantum Fireball ST, 221MB, 5.4K</td>
<td></td>
<td></td>
<td>2,799</td>
<td>2,999</td>
</tr>
</tbody>
</table>

### APS ULTRA WIDE SCSI DRIVES

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Int.</th>
<th>SR 2000</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS 04000 W</td>
<td>Quantum Fireball ST, 412MB, 5.4K</td>
<td>479</td>
<td>549</td>
<td>599</td>
<td>629</td>
</tr>
<tr>
<td>APS 05000 W</td>
<td>Quantum Fireball ST, 514MB, 5.4K</td>
<td>549</td>
<td>629</td>
<td>739</td>
<td>769</td>
</tr>
<tr>
<td>APS 06000 W</td>
<td>Quantum Fireball ST, 614MB, 5.4K</td>
<td>629</td>
<td>739</td>
<td>849</td>
<td>889</td>
</tr>
<tr>
<td>APS 07000 W</td>
<td>Quantum Fireball ST, 714MB, 5.4K</td>
<td>739</td>
<td>849</td>
<td>879</td>
<td>939</td>
</tr>
</tbody>
</table>

### APS POWERBANK STORAGE

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Int.</th>
<th>SR 2000</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS ST 200</td>
<td>Toshiba M3V66A1, 4200 rpm IDE</td>
<td></td>
<td></td>
<td>1,299</td>
<td>1,899</td>
</tr>
</tbody>
</table>

### APS IDE DRIVES

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Int.</th>
<th>SR 2000</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS 02000</td>
<td>Quantum Fireball ST, 201MB, 5.4K</td>
<td>1,179</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS 03000</td>
<td>Quantum Fireball ST, 311MB, 5.4K</td>
<td>1,999</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS 04000</td>
<td>Quantum Fireball ST, 412MB, 5.4K</td>
<td>2,499</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS 05000</td>
<td>Quantum Fireball ST, 514MB, 5.4K</td>
<td>2,999</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### APS ECONOMY LINE (EL) DRIVES

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Int.</th>
<th>SR 2000</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS Q 3000 EL</td>
<td>Quantum Fireball ST, 311MB, 5.4K</td>
<td>229</td>
<td>279</td>
<td>299</td>
<td>329</td>
</tr>
<tr>
<td>APS Q 4000 EL</td>
<td>Quantum Fireball ST, 412MB, 5.4K</td>
<td>279</td>
<td>329</td>
<td>349</td>
<td>379</td>
</tr>
<tr>
<td>APS Q 5000 EL</td>
<td>Quantum Fireball ST, 514MB, 5.4K</td>
<td>349</td>
<td>379</td>
<td>399</td>
<td>429</td>
</tr>
</tbody>
</table>

### APS CD-ROM DRIVES

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Int.</th>
<th>SR 2000</th>
<th>Pro</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS C23</td>
<td>33X CD-ROM in SlimLine Case</td>
<td>1,159</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD Changer</td>
<td>Nakamichi 5150/1XK CD-ROM, Pro Case only</td>
<td>2,299</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-R Plus</td>
<td>1x record/2x read CD-R (Sata)</td>
<td>379</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-R Pro</td>
<td>4x record/4x read CD-R + Pro Enclosure</td>
<td>529</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-RW Pro</td>
<td>4x record/4x read CD-RW + Pre Enclosure</td>
<td>739</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-RW Pro</td>
<td>4x record/4x read CD-RW + Pre Enclosure</td>
<td>599</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-RW Pro System</td>
<td>2x record/6x read CD-R-R</td>
<td>749</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APS CD-RW Pro</td>
<td>2x record/6x read CD-R-W</td>
<td>749</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### APS TAPE BACKUP SYSTEMS

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>EL</th>
<th>Int.</th>
<th>External</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS HyperQIC</td>
<td>Toshio M7276A1</td>
<td>279</td>
<td>2,649</td>
<td>2,649</td>
<td>2,649</td>
</tr>
<tr>
<td>APS HyperDAT</td>
<td>DMR-630, 6GB</td>
<td>549</td>
<td>1,099</td>
<td>1,099</td>
<td>1,099</td>
</tr>
<tr>
<td>APS HyperDAT Pro</td>
<td>DMR-630, 6GB</td>
<td>799</td>
<td>1,679</td>
<td>1,679</td>
<td>1,679</td>
</tr>
<tr>
<td>APS HyperDAT III</td>
<td>Min-Disk 1MB, 1x read/2x record, 6GB</td>
<td>2,599</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>APS DLX7</td>
<td>XL-4000, 20GB</td>
<td>4,959</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>APS DLX7</td>
<td>XL-7000, 20GB</td>
<td>6,859</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>APS DLX7</td>
<td>XL-7000, 20GB</td>
<td>8,689</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>APS DLX7</td>
<td>XL-7000, 20GB</td>
<td>10,499</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### APS CD 32

- **32X for fluid multimedia**
- **Fastest CD-R drive ever from APS**
- **Sufficient data compression**

### APS CD-RW/Pro

- **$599.95**
- **Work faster with 4x record**
- **Includes Mac/PC/NT software**
- **Fastest rewritable CD technology available!**

### APS Q 4300

- **Ideal for high-performance corporate applications**
- **7200 rpm Ultra SCSI mechanism**

### Call 800-285-0638 Today

Mac OS 8.1 is now the latest version of the Apple operating system. To take advantage of the improved speed and functionality of Mac OS 8.1, you must upgrade your drive. The APS HyperQIC in the portable, stackable SR 2000 enclosure is the most economical way to do that.

**Upgrading to System 8.1?**

According to Apple, before you can take advantage of the improved hard disk management of Mac OS 8.1, you must back up the entire contents of your drive. The APS HyperQIC in the portable, stackable SR 2000 enclosure is the most economical way to do that.

### Save Big on the APS HyperDAT®

- **Up to 8GB on a single 120m DAT tape**
- **Includes Mac/PC/NT backup software**

### APS JAZ II

**Call for Special Pricing**

- **Huge 2GB capacity**
- **Reads and writes 1GB Jaz disks**
- **Includes cartridge**

### APS ECONOMY LINE (EL) DRIVES

- **Complete replacement drives**
- **No expensive extras that you don't need**

### APS Q 4300 W

- **$479.95**
- **Productivity boost for creatives**
- **Faster transfers with Ultra Wide SCSI**

### PCS ULTRA WIDE SCSI HOST ADAPTER

**ADAPTEC POWERBOARD® MEDIANOW FOR MAC**

With the purchase of any APS Ultra Wide SCSI drive, you will receive a free APS Host Adapter! (Up to $200 value.)
**Power Mac G3**

- 
- 266MHz PowerPC 604e processor
- 4MB L2 cache
- 333MHz or 266MHz PowerPC 603e (with 100MHz FPU) processor speed
- 32MB RAM
- standard: 4GB or 6GB
- 128MB Rambus (R) Memory
- 2x4 CD-ROM drive
- SuperDrive Zip drive
- (on select models)

**Monitors**

- DJ109 15.6" 0.28mm
- DJ109 21.3" 0.25mm
- DJ530 15.6" 0.28mm
- DJ700 17" 0.26mm
- DJ920 21" 0.28mm
- GN3 17"

**Handheld Computers**

- MessagePad 2100...
- eMate 200...

**Communications**

- Modems
  - 56K x2 external
  - 56K x2 internal
  - 33.6K internal

**Video Boards**

- Nexa GA 8MB PCI
- Xidax TX 20MB TV tuner
- Xidax TX 1MB PCI

**Scanners**

- Polaroid
- Microtek
- Nikon
- Polaroid

**Printers**

- EPSON
- HP LaserJet
- HP DeskJet
- HP PDC
- Canon

**Virtual PC V2.0**

- For Power Macintosh
- 25% to 40% faster performance
- Windows 95 ready
- Enhanced DirectX support

**License**

- C5009 240MHz PowerPC 603e
- 24MB 3GB 24X 10BT
- $1395.00

**Upgrade for Windows 95**

- $32.97 CDW 109338

**Data Storage**

- NEC Zip drive 100MB external
- ZIP100MB External
- ZIP100MB External
- $13.95

**Scanners**

- Polaroid
- Microtek
- Nikon
- Polaroid

**Printers**

- EPSON
- HP LaserJet
- HP DeskJet
- HP PDC
- Canon

**Digital Imaging**

- EPSON
- Kodak
- Nikon
- Polaroid

**CDW DIRECTORY**

- MacWorld May 1998 137

- $258.94 CDW 105497
- $447.97 CDW 105486
**PRODUCT INDEX**

<table>
<thead>
<tr>
<th>Category</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Operations</td>
<td>138-139</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>Video/Display</td>
<td></td>
</tr>
<tr>
<td>Communications/Networking</td>
<td>143</td>
</tr>
<tr>
<td>Cross Platform</td>
<td></td>
</tr>
<tr>
<td>Modems</td>
<td></td>
</tr>
<tr>
<td>Education/Entertainment</td>
<td>139-141</td>
</tr>
<tr>
<td>Discount Software</td>
<td></td>
</tr>
<tr>
<td>Graphics</td>
<td>139</td>
</tr>
<tr>
<td>Clip Art</td>
<td></td>
</tr>
<tr>
<td>Memory &amp; Upgrades</td>
<td>161-163</td>
</tr>
<tr>
<td>Memory Upgrade</td>
<td></td>
</tr>
<tr>
<td>Digital Advertising</td>
<td></td>
</tr>
<tr>
<td>Coordinator</td>
<td></td>
</tr>
<tr>
<td>Brian Mullin</td>
<td>415.243.3521</td>
</tr>
<tr>
<td><a href="mailto:brian_mullin@macworld.com">brian_mullin@macworld.com</a></td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Page No.</td>
</tr>
<tr>
<td>Peripheral Products</td>
<td>143-144</td>
</tr>
<tr>
<td>Magnetic Media</td>
<td></td>
</tr>
<tr>
<td>Cd ROM</td>
<td></td>
</tr>
<tr>
<td>Services</td>
<td>164-165</td>
</tr>
<tr>
<td>Color 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>Systems &amp; Peripherals</td>
<td>144-161</td>
</tr>
<tr>
<td>Account Managers</td>
<td>800.825.4237</td>
</tr>
<tr>
<td>Spencer Frasher</td>
<td>212.503.5864</td>
</tr>
<tr>
<td><a href="mailto:sfrasher@zd.com">sfrasher@zd.com</a></td>
<td></td>
</tr>
<tr>
<td>Michelle LeWinter</td>
<td>212.503.5122</td>
</tr>
<tr>
<td><a href="mailto:mlewinter@zd.com">mlewinter@zd.com</a></td>
<td></td>
</tr>
<tr>
<td>Kristin Newman</td>
<td>212.503.5862</td>
</tr>
<tr>
<td><a href="mailto:knewman@zd.com">knewman@zd.com</a></td>
<td></td>
</tr>
<tr>
<td>Jessica Turkow</td>
<td>212.503.5140</td>
</tr>
<tr>
<td><a href="mailto:jturko@zd.com">jturko@zd.com</a></td>
<td></td>
</tr>
<tr>
<td>Sales Manager</td>
<td>212.503.5155</td>
</tr>
<tr>
<td>Monifa Kelly</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:mkelly@zd.com">mkelly@zd.com</a></td>
<td></td>
</tr>
</tbody>
</table>

**PrintChef**—“It’s not printing magic, it's printing science…”

See why adding the "PrintChef" button to your print dialog will change the way you print forever!

- New paper sizes
- Tuner & inkjet control
- Color/or gray watermarks
- Any bar code model
- "Variable date" printing
- "Variable image" printing
- Preview any print
- Serialize any print
- Electronic signatures

Street priced at $60...so that everyone can make their printers sizzle right now!

To boost the printing performance of any application, call (800) 648-6840 or try our demo at www.mindgate.com

**CALL US ABOUT MACWORLD SPECIALS!**

If We Don’t Sell It, It’s Not Worth Looking At.

Panelight is your one stop shop for all leading brands of sales, rentals, & leases. Money back guarantee.

**TRUSTWORTHY TECHNICAL GUIDANCE AND SUPPORT**

Quick delivery

Money-back guarantee

Customer Service:

Epson

CTZ

/View

In Focus

**CALL PANELIGHT FOR OUR FREE CATALOG: 1-800-726-3599.**

Mon.-Fri., 8:30AM-5:30PM PST.

On E-Mail: sales@panelight.com

WWW.HOWTO.PANELIGHT.COM


TREMENDOUS SELECTION OF ALL LEADING PROJECTORS SALES, LEASES OR RENTALS DISCOUNT PRICES

**Panelight Call the Experts at Panelight Display Systems, Inc.**

**CIRCLE 420 ON READER SERVICE CARD**

**MONEY-BACK GUARANTEE**

**FREELIFETIME TECHNICAL SUPPORT**

**BEAR ROCK TECHNOLOGIES**

**LABELING SOFTWARE**

**MONEY-BACK GUARANTEE**

**BAR CODE FONTS**

**GRAPHIC UTILITIES**

**UPC/EAN, CODE 39, PDF 417 POSTNET 2-D**

**INTERNATIONAL BAR CODE EXPERTS 300,000 CUSTOMER WORLDWIDE**

**800-232-7625**

530-673-0644 FAX 530-673-1103
Bar Code Pro® v3.5 with Veribar™

Create perfect PostScript (EPS) bar code graphics for Quark, PageMaker, Illus., etc.

Bar Code Pro® features:
- All popular bar code symbologies
- Any printer resolution
- No fonts required
- No prior bar code experience necessary
- No more bar code film masters
- Veribar built-in verification (optional)
- Pays for itself in a single use
- "Takes sixty seconds to install, five minutes to master!" — MacWorld

CALL FOR FREE DEMO

SOFTWARE SALE 1-800-258-0297

Microsoft Office $299
Microsoft Word 5.0/6.0, 1 $85
MS Excel/Powerpoint (each) $155
Adobe Photoshop/Pagemaker CALL
Adobe Illustrator/Aftereffect CALL
MetaCreations Details $130
MetaCreations Expression $130
MetaCreations Painter 5.0 $235
MetaCreations Kai’s Power Tools $90
MetaCreations Bryce 3D $135
Infini-9 $290
Danebo Canvas 5.0 $225
Macromedia Freehand $210
Freehand Graphic Studio 7.0 $290
Filemaker $150

STUDENTS! Save up to 75% Off Popular Software!

Call for a FREE Student Software Guide:

(800) 874-9001

S.N.X. Catalog

Tel: (800) 619-0299 Fax: (718) 768-3997

www.sonx.com

CIRCLE 423 ON READER SERVICE CARD

Bar Code Headquarters

- Portable Batch Readers
- Cordless Interactive RF Bar Code Readers
- ADB Bar Code Readers
- Winda, Laser, CCD, Magstripe or Slot Badge
- PostScript Bar Code Fonts

1-800-345-4220 Or Call 408-458-9098
Website: www.barcodehq.com

We’ll Beat ANY Advertised Price!!

Adobe, Microsoft, Lotus, &バルク产品 available.

4th Dimension 6.0 $249
Authorware 4.0 $239
Capwiz 5.0 $129
ClearCase 4.0 $39
Claris HomePage 3.0 $59
Claris Works 3.0 $79
Clip Notes Studyware $99
CodeWarrior Pro 2.0 $199
Conflict Catcher 4.0 $99
CorelDraw Suite 6.0 $165
CyberStudio $199
Debabelizer ToolBox $219
Director 6 & E/Doc $339
Director MMS $675
Director MMS Upg $59
Dreamweaver $149
Electric Image Bridge $179
Encore 4.0 $279
EndNote Pro 2.x $99
Epson Photo Printers $189
Eye Candy 3.0 $75

315 00
Diehl Graphsoft
MiniCAD 7

AxizMath 2.5 ...179
Blueprint $ ...149

POINT OF SALE

Inventory Management • Bar Code Business Operations
Discount Software Education/Entertainment
Clip Art Graphics
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D HotText 1.0</td>
<td>$99</td>
</tr>
<tr>
<td>3D PopArt</td>
<td>$199</td>
</tr>
<tr>
<td>4D 6.0</td>
<td>$299</td>
</tr>
<tr>
<td>Adam Comprehensive Student Ed</td>
<td>$119</td>
</tr>
<tr>
<td>Allegro SnapScan 310</td>
<td>$39</td>
</tr>
<tr>
<td>Allegro SnapStar w/Photoshop LE</td>
<td>$79</td>
</tr>
<tr>
<td>Amapi Studio 3.0.3</td>
<td>$125</td>
</tr>
<tr>
<td>Andromeda Series 3.0 Ed</td>
<td>$89</td>
</tr>
<tr>
<td>Andromeda Shadow Filter</td>
<td>$75</td>
</tr>
<tr>
<td>Anubis Utility</td>
<td>$49</td>
</tr>
<tr>
<td>Art Dabbler 2.1</td>
<td>$39</td>
</tr>
<tr>
<td>Art of Architecture 2.1</td>
<td>$50</td>
</tr>
<tr>
<td>Art-Z 6x8 ADB Tablet</td>
<td>$285</td>
</tr>
<tr>
<td>AutoCAD R12 w/Amelie</td>
<td>$199</td>
</tr>
<tr>
<td>BBEdit 4.6.1</td>
<td>$79</td>
</tr>
<tr>
<td>Bento 4.0</td>
<td>$159</td>
</tr>
<tr>
<td>BeyondPress 3.0</td>
<td>$349</td>
</tr>
<tr>
<td>CADTools 1.1</td>
<td>$99</td>
</tr>
<tr>
<td>Canvas 5.0.3</td>
<td>$179</td>
</tr>
<tr>
<td>Chromatics 3.0</td>
<td>$79</td>
</tr>
<tr>
<td>Cinema 4D 4.0 Student</td>
<td>$529</td>
</tr>
<tr>
<td>ClearVideo 1.2</td>
<td>$229</td>
</tr>
<tr>
<td>Code 2.0</td>
<td>$89</td>
</tr>
<tr>
<td>Codis Finale 97</td>
<td>$269</td>
</tr>
<tr>
<td>Color B3.2</td>
<td>$39</td>
</tr>
<tr>
<td>ColorDriver 5.3</td>
<td>$65</td>
</tr>
<tr>
<td>ColorExchange 1.1</td>
<td>$399</td>
</tr>
<tr>
<td>Composer's Module 1.5</td>
<td>$259</td>
</tr>
<tr>
<td>Conflict Autotuner 4.0</td>
<td>$59</td>
</tr>
<tr>
<td>CorelDRAW Suite 6</td>
<td>$169</td>
</tr>
<tr>
<td>Cricket Graph III 1.5.3</td>
<td>$75</td>
</tr>
<tr>
<td>Cubase Audio VST 3.5</td>
<td>$399</td>
</tr>
<tr>
<td>Cubase VST 3.5</td>
<td>$199</td>
</tr>
<tr>
<td>Cyclotron 1.0</td>
<td>$199</td>
</tr>
<tr>
<td>Dlathink 8.0+</td>
<td>$499</td>
</tr>
<tr>
<td>Debabelizer 3.0</td>
<td>$259</td>
</tr>
<tr>
<td>DeltaGraph 4.0</td>
<td>$249</td>
</tr>
<tr>
<td>DesignBASICS 1.0.2</td>
<td>$259</td>
</tr>
<tr>
<td>DesignWorkshop 1.7</td>
<td>$199</td>
</tr>
<tr>
<td>Detabler 1.0</td>
<td>$129</td>
</tr>
<tr>
<td>Director E Mult Studio</td>
<td>$679</td>
</tr>
<tr>
<td>DiskFix Pro 1.1</td>
<td>$49</td>
</tr>
<tr>
<td>Dramatica Pro 3.0</td>
<td>$199</td>
</tr>
<tr>
<td>EPS invigorator 1.5</td>
<td>$259</td>
</tr>
<tr>
<td>Elastic Reality 3.0</td>
<td>$119</td>
</tr>
<tr>
<td>Encore 4.1.1</td>
<td>$279</td>
</tr>
<tr>
<td>Enhance 4.0</td>
<td>$129</td>
</tr>
<tr>
<td>Epson Expression M36XL</td>
<td>$2349</td>
</tr>
<tr>
<td>Epson Perfection 600 Scan</td>
<td>$229</td>
</tr>
<tr>
<td>Epson Stylus 120 Color Printer</td>
<td>$769</td>
</tr>
<tr>
<td>Epson Stylus 300 Color Printer</td>
<td>$189</td>
</tr>
<tr>
<td>Epson Stylus NS</td>
<td>$379</td>
</tr>
<tr>
<td>Eudora Pro 4.0</td>
<td>$35</td>
</tr>
<tr>
<td>Expression 1.0</td>
<td>$99</td>
</tr>
<tr>
<td>Eye Candy 3.0 After Effects</td>
<td>$349</td>
</tr>
<tr>
<td>FastTrack Schedule 5.0</td>
<td>$139</td>
</tr>
<tr>
<td>FileGuard 3.0.8</td>
<td>$119</td>
</tr>
<tr>
<td>Flash 2.0</td>
<td>$149</td>
</tr>
<tr>
<td>Flex 2.6.5</td>
<td>$65</td>
</tr>
<tr>
<td>Fontographer 4.1.3</td>
<td>$129</td>
</tr>
<tr>
<td>Form 2.1</td>
<td>$89</td>
</tr>
<tr>
<td>Hard Disk Toolkit 2.5</td>
<td>$125</td>
</tr>
<tr>
<td>HotMetal Pro 3.0</td>
<td>$85</td>
</tr>
<tr>
<td>Hollywood FX 3.0.6</td>
<td>$59</td>
</tr>
<tr>
<td>HomePage 3.0</td>
<td>$59</td>
</tr>
<tr>
<td>HyperStudio 3.1</td>
<td>$119</td>
</tr>
<tr>
<td>ImageMAX 5</td>
<td>$35</td>
</tr>
<tr>
<td>InfiniD 4.0</td>
<td>$329</td>
</tr>
<tr>
<td>Inspiration 5.0 Higher ED</td>
<td>$79</td>
</tr>
<tr>
<td>Intellihance 3.0</td>
<td>$69</td>
</tr>
<tr>
<td>Interactor 1.1</td>
<td>$149</td>
</tr>
<tr>
<td>Iomega Jazz 2GB Ext SCSI</td>
<td>$619</td>
</tr>
<tr>
<td>Iomega Zip Plus 100 Ext SCSI/parallel</td>
<td>$509</td>
</tr>
<tr>
<td>JUMP 3.2</td>
<td>$249</td>
</tr>
<tr>
<td>Judson Rosebud Washes Designs</td>
<td>$319</td>
</tr>
<tr>
<td>Kea's Photo Snap 1.0</td>
<td>$39</td>
</tr>
<tr>
<td>Kea's Power Tools 3.0.2</td>
<td>$85</td>
</tr>
<tr>
<td>KaleidaGraph 3.0</td>
<td>$109</td>
</tr>
<tr>
<td>Life Form 3.0</td>
<td>$199</td>
</tr>
<tr>
<td>Live Picture 2.0.1</td>
<td>$199</td>
</tr>
</tbody>
</table>

**Student - Teacher - School Discounts!**

**WE WILL BEAT ANY ADVERTISED PRICE • LATEST VERSION & FULL PACKAGES**

**FileMaker Pro 4.0**

#1 Relational Database

**Final Draft 4.1**

Professional Screenwriting

**Virex 5.8**

AntiVirus Program

**NetObjects Fusion 3.0**

Designing, Building & Updating Web Sites

**CyberStudio 2.0.1**

Website Building Software

**Creator2**

Desktop Publishing & Layout

**CodeWarrior Pro 2**

C/C++ Programming

**Test Strip 2.0**

Accurate way to Correct Color

**PhotoTools 2.0**

Photoshop Plug-In

**Dreamweaver 1.0**

Designing Professional Web Pages

**DAVE 2.0**

Shares files & Printers between your Mac & PC.

**Call for FREE Catalog!**

(800) 831-2295

Includes Complete Price List & Free Product Info.

**Visit our NEW Web Site!!**

http://www.swsonline.com
<table>
<thead>
<tr>
<th>Product Name</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic Audio 3.0</td>
<td>$449</td>
</tr>
<tr>
<td>Logomotion 2.1</td>
<td>$79</td>
</tr>
<tr>
<td>M.Y.O.B. 7.5 Plus w/Pay</td>
<td>$590</td>
</tr>
<tr>
<td>Mtrope's 1.1</td>
<td>$549</td>
</tr>
<tr>
<td>Mac Academy Tutorial Videos</td>
<td>$36</td>
</tr>
<tr>
<td>MacLink + Translator Pro 9.7</td>
<td>$375</td>
</tr>
<tr>
<td>MagicMask</td>
<td>$75</td>
</tr>
<tr>
<td>MarkTools 6.2</td>
<td>$65</td>
</tr>
<tr>
<td>Mask Pro 1.0</td>
<td>$199</td>
</tr>
<tr>
<td>Master Tracks 6.0</td>
<td>$69</td>
</tr>
<tr>
<td>MasterClips 150,000</td>
<td>$599</td>
</tr>
<tr>
<td>MathType 3.5</td>
<td>$599</td>
</tr>
<tr>
<td>Mathematica 3.0 Student</td>
<td>$149</td>
</tr>
<tr>
<td>MathTalk 5.0 Student</td>
<td>$999</td>
</tr>
<tr>
<td>Media Cleaner Pro 2.0</td>
<td>$2299</td>
</tr>
<tr>
<td>Megalo 3.5</td>
<td>$599</td>
</tr>
<tr>
<td>Movie Magic Budgeting</td>
<td>$529</td>
</tr>
<tr>
<td>MovieWorks Interactive 4.0</td>
<td>$79</td>
</tr>
<tr>
<td>MyDesignShop</td>
<td>$75</td>
</tr>
<tr>
<td>MyMix 2</td>
<td>$35</td>
</tr>
<tr>
<td>Netscape Communicator Pro 4.0</td>
<td>$599</td>
</tr>
<tr>
<td>Nzvize 5</td>
<td>$85</td>
</tr>
<tr>
<td>NowUpToDate &amp; Contact 3.6.5</td>
<td>$70</td>
</tr>
<tr>
<td>Overture 2.0.3</td>
<td>$249</td>
</tr>
<tr>
<td>PC MACLAN 6.2</td>
<td>$149</td>
</tr>
<tr>
<td>PMZQ 5.4</td>
<td>$409</td>
</tr>
<tr>
<td>Page/Edges 3.0</td>
<td>$158</td>
</tr>
<tr>
<td>PageMaker Framez PS Deluxe</td>
<td>$129</td>
</tr>
<tr>
<td>Painter 6.0</td>
<td>$219</td>
</tr>
<tr>
<td>Photo/Graphic Edges Vol 1,2 or 3</td>
<td>$159</td>
</tr>
<tr>
<td>PhotoFrame 1.0</td>
<td>$69</td>
</tr>
<tr>
<td>Photovista</td>
<td>$79</td>
</tr>
<tr>
<td>Power/part 1.1</td>
<td>$59</td>
</tr>
<tr>
<td>Portfolio 3.0</td>
<td>$69</td>
</tr>
<tr>
<td>Posei 2.0</td>
<td>$79</td>
</tr>
<tr>
<td>PosterWorks 4.0</td>
<td>$249</td>
</tr>
<tr>
<td>Power/Movez 1</td>
<td>$99</td>
</tr>
<tr>
<td>PowerPrint 4.0</td>
<td>$89</td>
</tr>
<tr>
<td>Presenter 3.6</td>
<td>$25</td>
</tr>
<tr>
<td>Private File</td>
<td>$95</td>
</tr>
<tr>
<td>QuickMedia 3.0, 2.1</td>
<td>$269</td>
</tr>
<tr>
<td>QuickTime VR Authoring Studio</td>
<td>$299</td>
</tr>
<tr>
<td>RayDream Studio 5.0</td>
<td>$129</td>
</tr>
<tr>
<td>Retrospect 4.0</td>
<td>$109</td>
</tr>
<tr>
<td>Screen Caffeine Pro 2.2</td>
<td>$75</td>
</tr>
<tr>
<td>Sculpt 3D 4.2</td>
<td>$219</td>
</tr>
<tr>
<td>SoftWindows 5.5, 5.0</td>
<td>$189</td>
</tr>
<tr>
<td>Spark/Edu &amp; Deck II</td>
<td>$249</td>
</tr>
<tr>
<td>Spell Cacher 1.5</td>
<td>$499</td>
</tr>
<tr>
<td>Sportster 30</td>
<td>$239</td>
</tr>
<tr>
<td>Spring Cleaning 2.0</td>
<td>$35</td>
</tr>
<tr>
<td>Squirzl 1.0</td>
<td>$99</td>
</tr>
<tr>
<td>StatView 5.0</td>
<td>$699</td>
</tr>
<tr>
<td>Studio Vision Pro 3.5, 4.0</td>
<td>CALL</td>
</tr>
<tr>
<td>StudioPro 2.1.1</td>
<td>$549</td>
</tr>
<tr>
<td>Stuff Deluge 4.5</td>
<td>$55</td>
</tr>
<tr>
<td>StyleScript 3.6</td>
<td>$89</td>
</tr>
<tr>
<td>SuperCard 3.0</td>
<td>$129</td>
</tr>
<tr>
<td>System 3.1. Software</td>
<td>$85</td>
</tr>
<tr>
<td>Terra Nova Regional 1.2, 3.2</td>
<td>$129</td>
</tr>
<tr>
<td>TaxiLine 2.0</td>
<td>$999</td>
</tr>
<tr>
<td>Teacher's Tool Kit</td>
<td>$699</td>
</tr>
<tr>
<td>Topdown Chart 4.5</td>
<td>$155</td>
</tr>
<tr>
<td>Trackman Marble</td>
<td>$85</td>
</tr>
<tr>
<td>TurboCAD 3.0</td>
<td>$75</td>
</tr>
<tr>
<td>TypeShop Pro</td>
<td>$39</td>
</tr>
<tr>
<td>Typo/Graphic Edges 3.0</td>
<td>$699</td>
</tr>
<tr>
<td>Umax Astra 1200W/PhotoDeluxe</td>
<td>$1499</td>
</tr>
<tr>
<td>Umax Astra 600S w/PhotoDeluxe</td>
<td>$1499</td>
</tr>
<tr>
<td>Vector Lathe 1.0</td>
<td>$109</td>
</tr>
<tr>
<td>VideoShop 3D 4.0</td>
<td>$149</td>
</tr>
<tr>
<td>Virtual PC 2.0</td>
<td>$149</td>
</tr>
<tr>
<td>VirusScan 3.0</td>
<td>$149</td>
</tr>
<tr>
<td>VizDrug 9.0</td>
<td>$1279</td>
</tr>
<tr>
<td>Wacom Artist Dream 6x8</td>
<td>$369</td>
</tr>
<tr>
<td>WebSTAR 2.1</td>
<td>$2399</td>
</tr>
<tr>
<td>WebSpice 1.0</td>
<td>$65</td>
</tr>
<tr>
<td>WildRiver SSS 1.1</td>
<td>$85</td>
</tr>
<tr>
<td>Word Cross 2.0</td>
<td>$35</td>
</tr>
<tr>
<td>WordPerfect 3.5, 4.5</td>
<td>$39</td>
</tr>
<tr>
<td>World Construction Set 3.0</td>
<td>$575</td>
</tr>
</tbody>
</table>

**Call for FREE Catalog! (800) 831-2295**

Includes Complete Price List & Free Product Info.

**FREE FIRST CLASS SHIPPING ON MOST ITEMS**

**INQUIRIES TO QUALIFIED STUDENTS, TEACHERS & SCHOOLS WELCOME**

**WE OFFER CASH/CLAIM CARD DISCOUNTS ON MOST PRODUCTS AVAILABLE!**

**WE CARRY THE LATEST SOFTWARE PRODUCTS!**

Visit our NEW Web Site!!
http://www.swsonline.com

1-800-831-2295

CIRCLE 426 ON READER SERVICE CARD
### The Lowest Finance Rate Available

**FREE Software SuperBundle - $3500 Value**

Software SuperBundle - Director, Adobe Premiere, Illustrator, PageMaker, Photoshop, LivePicture, Omni page Professional, DOS Mounter 95 Free with this Ultimate Workstation.

**PowerPC G3/266MHz or PowerTower Pro 250MHz MP**
- *$999*
- *$419*
- *$349*
- *$239*
- *$179*
- *$129*
- *$99*

**Drive/Sizes**
- 4GB DiskArray
- 1GB W/ Express Card

**Monitor & Display Card**
- 74MHz 16MB CD
- 128MB 256MB 5.75
- 655MB 828.9
- 1.2GB 337.9

**Scanner**
- Polaroid 35DEL - $739

**Software Specials - MAC & Win.**
- Apple Mac OS 7.6.1/8
- AppleShare V4/IP 5
- Adobe Creative Suite: PC Studio A/CD
- ACTIV2/8/AutoCAD R12
- BB Edit/oris FX 3
- Color/Drive/Canvas 5
- Corel Omnipage Pro/Grind
- Claris Works/Internet Cap.
- CorelDRAW 6/CyperStudio 2/8/$25
- Corel Photo House/PhotoPage 3/$49
- Dantz Dro/Boomcell
- Dantz Preflight Designer/Pro 9/$388
- Dantz RealRes 8/Reseller
- ExtenDOS EXTCADE/Tools 2/8/$69
- ExtenDOS Intellihance/Pro Tools 8/$25
- EA Bet'O Flash/3Tools 11/$69
- EA Bet'O Preflight Designer/Pro 9/$238
- F/W/3/CD or CD Tool/Kits 2/8/$25
- F/W/3/CD or CD Tool/Kits 2/8/$25
- Postscript Printer 4/600/1000
- Postscript Printer 4/600/1000
- Postscript Printer 4/600/1000
- Postscript Printer 4/600/1000

**Order from 6 to 9 weekdays, weekends from 9 to 8. Visit our showroom 9 to 6 weekdays, weekends by appointment. Prices subject to change without notice. Not responsible for typographical errors. 24-hour replacement limited to products in stock.**

**Apple G3 266MHz**
- *As Low As $2459*

**Director 5 ONLY $99 w/ $1000 PURCHASE**

**Director 5 ONLY $99 w/ $1000 PURCHASE**

**Apple G3 Ultimate Graphics Workstation**

---

**800-352-3420**

Fax: 310-782-5974

Email: imagesol@earthlink.net

http://www.imagesolution.com

385 Van Ness Ave. #110 • Torrance, CA 90501

---

**Apple G3 266MHz**

---

**$2459**

---

**$111**

---

**310-782-5974**

---

**$2459**
SHOPPER

~MONITORS

20" SONY - $499 Ref.
17" SONY - $299 Ref.

Multiscan Monitors:
21" Hitachi $999 New
20" Rasterops Trinitron $875 New
21" SONY $1399 New
24" SONY GDM 90W01 $3399 New

$149
(30 days 5 Back guarantee)
http://www.a3j.com.tw/
Tel: 909.869-9365; 888-GoToA3J
email: a3j@emailink.net
reference:
http://www.znet.com/macweek/
mw_1146/op_decade.html
Dealer Wanted!!

Macworld

56K Fax/Modem for DUs
PowerBooks, Newtons, Pilots,
Desktops,....
• ADB Powered
• Optional battery
• ITU Standard
• Fresh ROM

More Serial Ports for Your Mac!
Better than a Switch or Juggler
• Provides simultaneous use of ports
• More stable than port sharing products
• Data rates up to 230 Kbps
• PCI serial cards available in 2 or 4 port versions
• For use with Comm Toolbox savvy software

Call 800-986-9146 to Order
Order from FedEx: 7am-9pm M-F (CST)
Authorization #: 135 • Source code: 25J

Macsense

Palm Router

NEW

For Mac & PC

One Palm Router+
One Modem +
One ISP account +
One Phone line =
Web access for
up to 6 Users

• The most economical way to get everyone on the Internet.
• Ideal for the classroom, small office or home.
• Serves as a 4 port 10BASE Ethernet LAN Hub.
• Up to 6 users on the local area network.

CALL-1-800-642-8860 to find a dealer near you

Distributor, Reseller & Rep Welcome
Just Macsense Technology Inc.
Tel: 1-800-642-8860 Fax: 408-744-1060
1290 Reamwood Ave. #B Sunnyvale, CA 94089
http://www.macsensetech.com

Networking 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
1-800-862-2326

CIRCLE 424 ON READER SERVICE CARD

Macworld May 1998 143
Peripheral Products

Macworld SHOPPER

Peripheral Products
CD Rom • Magnetic Media
Systems & Peripherals

COMPU.D International, Inc.
1-800-929-9333
www.compu-d.com

G3/250 MHz
9600/200MP
32-GB, CD $295
3400c/240 MHz
32-GB, CD $495
16/36B $195
1400c/166 MHz
16/256, CD $195
1400/MHz 2x $195
1400cs/166 MHz
16/13.9 GB, CD $195
Best Deals on all Memory

Macs & PowerBooks
WANTED
TOP $$$ PAID
FAST!

Any Quantity
Trade Ups Welcome
FedEx check delivery
We Buy, Sell & Trade
New & Used Macs

(800) 80-WE-BUY
Tel (310) 966-4444 Fax (310) 966-4433

CD-ROM PRODUCTION

100 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 files! Call for details.

AMC
ADVANCED MULTIMEDIA CONCEPTS

FREE CD-R Media
Request your FREE CD-R online!
www.amc-direct.com/freecd

CUSTOM SILKSCREENING & CD DUPLICATION SERVICES AVAILABLE!
Customize your Recordable CD's! AMC can provide your company with custom silkscreened recordable CD's and CD duplication! Call AMC today for a complete design kit and information packet.

MITSUI GOLD CD-R MEDIA
Mitsui Gold CD-R Media is simply the best in the industry and the only media to come with a lifetime warranty. You can’t buy better media at a lower price anywhere!

FREE CD-R Media!
Mitsui Gold CD-R 25-pack $49.99
Mitsui Gold CD-R 100-pack CALL US!

CD PRINTERS
AMC 720dpi Color CD Printer $949.
Fargo Color CD Printer $1,295.

CD RECORDERS
Plasmon 4x8 Int. Recorder $399.
Plasmon 4x8 Ext. Recorder $499.

CD Duplicators
CD-4004 Duplicator $1,299.
CD-2601 Duplicator $999.

P.O. Box 3456 • Redmond, WA 98073-3456 • Fax: 425.861.8391 • www.mwm.amc-direct.com
CIRCLE 401 ON READER SERVICE CARD
POWERMAC G3
266 Mhz/32/64GB/24XCD/Zip/AV/Mini T.
$2289 / Lease $86

POWERMAC G3
350 Mhz 604e/4GB/4GB/24XCD
$3349 / Lease $129

POWERMAC G3
223 Mhz/32/4GB/24XCD Desktop
$1595 / Lease $60

APPLE ORIGINAL
24XCD-ROM
$189

Upgrade your
7200 To 7600 $559
Apple Original Upgrade

POWERMACS

G3
266 Mhz MiniTower 128/4GB/24XCD/AV... $3399
266 Mhz MiniTower 32/64GB/24XCD/Zip/AV... $2289
266 Mhz Desktop 32/4GB/24XCD/Zip... $1895
233 Mhz Desktop 32/4GB/24XCD... $1595
233 Mhz MiniTower 32/4GB/24XCD/Mod... $1899

9600
350 Mhz 604e/64/4GB/24XCD... $3349
300 Mhz 604e/4GB/24XCD... $2978
200 Mhz MP 604e/32/4GB/12XCD/2CD... $2599
200 Mhz 604e/32/4GB/12XCD/2CD... $2099

8600
300 Mhz 604e/32/4GB/24XCD/Zip... $2295
230 Mhz 604e/32/4GB/24XCD... $2049

7300
200 Mhz 604e/32/2GB/12XCD/2CD... $1490
180 Mhz 604e/16/2GB/12XCD/2CD... $1290

6500
300 Mhz 64/64GB/24XCD/12ZIP/56.6 Mod... $2149
275 Mhz 48/64GB/24XCD/12ZIP/56.6 Mod... $1949
275 Mhz 33/48GB/24XCD/12ZIP/56.6 Mod... $1749
250 Mhz 33/48GB/24XCD/Zip/56.6 Mod... $1449
225 Mhz 32/32GB/12XCD/23.8... $1229

4400
200 Mhz 16/2GB/CD... $1199
200 Mhz 32/32GB/CD/KB/DOS... $1279

UPGRADES
With ORIGINAL Apple Logic Board
PM 8500 Logic Board Upgrade FROM 8000, 8040AV, PM 8100 to 8500... $995
PM 7600 Logic Board Upgrade FROM PM 7200 TO 7600... $99
PM 5200/6200 Logic Board Upgrade FROM Q630, P6630... $99
Workgroup Server 9150/80L, Upgrade FROM 950, 900... $99
Duo Upgrade 200 Series To 2300 Series... $629
200 Mhz Processor Upgrade... $239

Prices Subject to Change Without Notice
All Prices reflect 5% Cash Discount + * Refurbished

POWERBOOKS

G3 250 Mhz/32/5GB/20XCD... $4189
3400c 240 Mhz/16/3GB/CD... $3049
3400c 200 Mhz/16/2GB/CD... $2689
3400c 180 Mhz/16/3GB/CD... $2177
1400c 180 Mhz/16/1.3GB/CD... $1895
2400c 180 Mhz/16/1.3GB/CD... $1949
1400cs 133 Mhz/16/1.3GB/CD... $1777
1400c 166 Mhz/16/2GB/CD... $1895
Duo 2300c 100Mhz/20/1GB/Mod... $1429
5300ce 117 Mhz/16/1GB... $1649
5300c 100 Mhz/16/750... $1395
5300cs 100 Mhz/8/500... $1079

PowerBook 100 & 500 Series In Stock

DUO UPGRADE 200 SERIES TO 2300 SERIES... $629

APPLE 166Mhz Pentium Dos Card... $589

APPLE VISION 850... $1449
APPLE 20" Multi... $1099
APPLE VISION 750... $569
APPLE VISION 750 AVS799
APPLE 1710 AV... $779
APPLE 1705 Multi... $435
APPLE 15" AV Multi... $329/$309
NEC E500/E700... $379/$659
NEC 21" P1150/1110... $1389/$1299
SONY 15" 100ES/15"100GS... $339/$369
SONY 17" 200ES/17"200GS... $598/$659
SONY 20" 300SF/20"5E2... $1169/$1869
VIEWSONIC 15"5S/GA... $319/$339
VIEWSONIC 17" GA/PT770... $549/$639
VIEWSONIC 17" PT775/EA771... $589/$499
VIEWSONIC 20" P810/P815... $1149/$1289
OPTIQUE 95 Q53-E655... $249/$269
OPTIQUE 97 V775-V773... $519/$549
OPTIQUE 97 V700/19" V95... $999/$789
RAPTOR/STKS 17"... $749
RAPTOR/STKS 15"... $509
RAPTOR/STKS 13.2"... $1309
RAPTOR/STKS 12.1"... $1679

PRINTERS

APPLE LaserWriter Color 12/660... $3699
APPLE LaserWriter 12/640... $998
APPLE LaserWriter 8500... $1879
APPLE LV 16/600... $1289
APPLE LV 4/600... $949
APPLE SW Color 2500... $210
APPLE SW Color 4500... $349
GCC XL 808... $1725
EPSON Stylus 600 Color... $249
EPSON Stylus 800 Color... $299

SCANNER
AGFA AFCONS II Transp./Full Photoshop... $11489
Umax Astra 1200U... Photo/D/Full Photo... $289/$549
Umax Astra 610SS / Photo Deluxe... $1199
Call for Prices on Other Models

APPLE PARTS & ACCESSORIES
APPLE 166Mhz Pentium Dos Card... $629
Apple 166Mhz for 4400... $189
Original Apple BATTERY... $589
Original Apple 24xCD-ROM... $189
Apple Parts Catalog... Call

CALL TOLL FREE 1.888.505.2211
Fax:(310)445-6611 Tel:(310)445-6600
FAX TOLL FREE FROM JAPAN: 00-31-114211
2045-5 S. Barrington Ave. LA, CA 90025

Lease Price based on fair market value, 36 Months

http://www.icni.com
MACworld
SHOPPER

1-888-447-3728 • MacResQ • www.macresq.com

PowerBook Screen Repair...only at MacResQ!
We can repair: scratched screens, bad pixels, lines, & dead screens- priced from $199

G3 PowerMacs
G3/233 $1550 G3/266 $1799
32/44/24/CD Mac/PC in one!

For Fresh New Macs

MACINTOSH NEWS

NEW & USED BOUGHT & SOLD
Quadra 650 $195.00
7300/180 CALL
6300/240 CALL
9600/300/300/350 CALL
16/600/600/550/500 CALL
1440 CALL
1400C/177 CALL
1400/133 CALL
3MP CALL
2MP CALL
UMAX/SUPERMAC CALL
ScanJet CALL
Vista/Sig Soro CALL
PowerBook CALL
Expressions 838 CALL
Apple Scan CALL
AGA Arcus CALL
Apple 1705 CALL
CPD-320 CALL
Measure 21/32R CALL
CPD 1055X CALL

ALL APPLE PARTS & ACCESSORIES IN STOCK
Leasing/Rentals/Supplies
Service available in NYC area
1 800 275-9924
in NY 516 737-0800
FAX 516 737-0923
331 E DANE COURT HOLBROOK NY 11741

CIRCLE 408 ON READER SERVICE CARD

Computer Revelations

MacSales

used.macsale.com

Laptops
Powerbook 170 4/40 $449
Powerbook 160 4/80 $499
Powerbook 180 4/80 $599
Powerbook Du 230 4/80 $379
Powerbook Du 200c 12/320 $699

Save on Duo & Duo Bundles

Monitors

16" RGB $299
14" Color $179
14" Touch $189
14" AV $199
15" RGB $159

Diskets

Mac IICx 4/80 $89
Mac LC 4/40 $129
Quadra 700 8/80 $299
Quadra 940/960 8/220 $479

Laser Printers

Laserwriter IImr $199
Select 300 $189
Select 310 $249
Pro 600 $649
Pro 630 $799

1-888-MACSALE
Duy • Sell • Repair • Parts

1-888-622-7253
Products are Used / refurbished unless noted.

MacGlobal

SYSTEMS AND PERIPHERALS • SALES AND SERVICE

41047/478 Call
520 416 $850
550 518 $700
520 122/0192 $1195
560 550/CD $890
540 320 $1395
550 650/CD $950
550 850/CD $995

PowerBooks
PowerBooks 7200/500 Call
7500/1500 Call
6500/1500 Call

Memory
4 MB 72-pin $29
8 MB 72-pin $42
16 MB 72-pin $59

Printers

Stylo II $185.00
Stylo 120 $175
Laser 300 $299
Laser 333 $490
Laser 400/Call

Monitors

14" Color $199
14" Multi. $265
17" Apple $450

WE REPAIR MACS!

www.compech.com

Phone: [408] 265-6653
Fax: [408] 265-6660

CIRCLE 418 ON READER SERVICE CARD

MACWORLD May 1998 147
**SOFTWARE**

Full Retail Versions • Not Upgrades
Adobe Pagemaker 6.5 $329
Adobe Illustrator 7.0 $329
Adobe PhotoShop 4.0 $369
Microsoft Office 4.21 $299
MacroMedia Freehand 7.0 $299

**POWERBOOKS POWERMACS**

We Will
Custom Configure
Any System to Your
Specifications
and ship it in 24 Hours

G3 PowerMacs

G3/233, DT 32-4G - 24CD 1499
G3/266, DT 32-4G - 24 - Zip 1739
G3/233, MT 32-4G - 24CD-Mdm 1739
G3/266 AV, MT 32-6G - 24 - Zip 2173
G3/266AV,MT 128-UW6G-24-Zip 3299

Scanners & Cameras

Apple Color Quick take 200 $399
Agfa SnapScan 3D $299
Agfa Arcus II w/transp. $1585
Epson Expression 660 Pro $1250
Kodak DC 55/50-ID37 389/495/939
Linotype LinoColor Jade $499
Microtek Scanner E5 / E6 185/329
Microtek Scanner Mark III 1150
Olympus D2000L $549
SprintScan 35E/35S/35+ 759/1295/1755
Umax Astra 600/1200 185/395
Umax 1200 Pro w/ PS 4.0 $595
Umax Powerlook II Pro 1249
Umax Powerlook II Pro 2000 $379

MONITORS

Apple / Hitachi NEC

Radius / RasterOps Sony Visionic

CTI / Sun Microsystems Phillips / MAG / Nano

15" Apple AV Display $329
Apple 17" 170S/720 525/599
Apple 17" 75O/750AV 785/875
Apple 20" 2050 / 850AV 1649/1775
Nec 15" MAG $379
Nec 17" M700 745
Nec 21" PI220 1595
Radius 17" PressView 1755 $1605
Radius 21" PressView 2155 2895
RasterOps 21 MC601HR 1735
Sony 15" 100GS / 100ES 310/369
Sony 17" 200GS / 200EC 599/635
Sony 20" 300SF1 .3425
Viewsonic 17" P775 / P775 599/699
Viewsonic 17" P810 / P815 1275/1445

Call For Unlisted Items
Over 2500 Macintosh
Products Available

Call For Unlisted Items
Over 2500 Macintosh
Products Available

Leasing
On Approved Credit to...

Small Business
Internet Solution
only $2199

G3/233 Mhz 32 Mgs Ram
2G HD, 24CD, E-net

Home-Work
and Fun!!
$1799

G3/266 AV, MT 64-6G - 24CD-Zip 2565
G3/266 AV, MT 96-6G - 24 - Zip 2434
G3/266 AV, MT 32-6G - 24 - Jaz 2398
7300/200, 64-2G-12-CD-Zip 1720
600/300, 128-4G-8-MVram-Jaz 2820
600/300, 64-4G - 24CD-Zip 3000
960/350, 64-4G - 24CD-Zip 3450

Custom Config. Examples

Emergencies
- LIFE TIME WARRANTY

16 Meg Dimms & Simms 60ns 49
32 Meg Dimms & Simms 60ns 79
64 Meg Dimms & Simms 100ns 99
32 Sram for G3 85
64 Sram for G3 175
128 Sram for G3 399
PB 1400 8.16 / 24 65 / 89 / 165
PB 1400 32 / 48 Modules 179 / 325
PB 2400 16 / 32 Modules 119 / 199
PB 3400 32 / 48 Modules 99 / 175 / 285
PB 3400 64 / 128 Modules 279 / 535

MEMORY UPGRADES

TECHWORKS - LIFE TIME WARRANTY

16 Meg Dimms & Simms 60ns 49
32 Meg Dimms & Simms 60ns 79
64 Meg Dimms & Simms 100ns 99
32 Sram for G3 85
64 Sram for G3 175
128 Sram for G3 399
PB 1400 8.16 / 24 65 / 89 / 165
PB 1400 32 / 48 Modules 179 / 325
PB 2400 16 / 32 Modules 119 / 199
PB 3400 32 / 48 Modules 99 / 175 / 285
PB 3400 64 / 128 Modules 279 / 535

Graphics Station
G3 Speed Demon w/adobe Bundle $4989

$168 Per month

Chip Art, 3-D Accelerated Games, and much more!

Cyber Shop & Product Info at...

www.digicore.com

800-858-4622

Order Toll Free

800-858-4622

GE ON-SITE WARRANTY 2nd - 4th Year

$700 - $1200 $1201 - $2000 $3001 - $4000 $4001 - $5000

$119 $149 $209 $239

All Major Credit Cards - Corporate & School PO's - Wire Transfer & C.O.D.'s

36 Month Lease w/Purchase Option

$2500 $4000 $8000 $15,000 $25,000

$85 $136 $267 $496 $825

00 50C

11500 ERWIN ST. VAN NUYS CA 91411

International & Dealers

818-785-2800

24 Hour Fax

818-785-3100

Call digicore.com/MacWorld Ad

Macintosh Systems & Peripherals
Guaranteed Low Prices • Huge Inventory
Pricing, Product Spe's and Specials at www.digicore.com

Above...

50% Cost

85% OFF

All Major Credit Cards - Corporate & School PO's - Wire Transfer & C.O.D.'s

36 Month Lease w/Purchase Option

$2500 $4000 $8000 $15,000 $25,000

$85 $136 $267 $496 $825

GE ON-SITE WARRANTY 2nd - 4th Year

$700 - $1200 $1201 - $2000 $3001 - $4000 $4001 - $5000

$119 $149 $209 $239

11500 ERWIN ST. VAN NUYS CA 91411

International & Dealers

818-785-2800

24 Hour Fax

818-785-3100

Call digicore.com/MacWorld Ad

Macintosh Systems & Peripherals
Guaranteed Low Prices • Huge Inventory
Pricing, Product Spe's and Specials at www.digicore.com
Real People, Real Product, Real Prices!

800-951-1230

Int'l (714) 428-0777 University, School, Government & Fortune 1000 P.O.'s Accepted! FAX (714) 428-0778

Awesome New Look and Features!

WWW.MACBASE.COM

Online Detailed System Configuration, Advise Module, Accurate and Up To Date Pricing, Killer Interface.

Power
PTP 225E
96/2G/24XCD
$1999*

Powerbook
3400/200MHz
16/2G/12XCD
NO MDM $2759

Powermac
Duo Dock II Plus
1999

Powerbook
3400c/166
16/1G/CD
1999

Printers
Apple SW 1500/2500
1499*

Scanners
Umax Astra 610S
160

Scanners
Umax Astra 1200s - PhotoDeluxe
279

Scanners
Umax Astra 1200s - Full Photo
279

Scanners
Umax PowerLook II - Full Photo
279

Scanners
Umax Mirage II - PhotoPerfect
329

Scanners
Umax PowerLook III - Full Photo
339

Scanners
Umax Mirage II - Full Photo
789

Sony
Trinitron 23 SQ

Monitors
Power 17 Inch NEW

Monitors
Power 17 Inch TRINITRON

Scanners
AGA ScanStar 30s - Color/OCR
399

Storage
Western Digital 2.1G SCSI (3.5-in)

Software
Adobe Photoshop 4.0
329

Adobe Illustrator 7.0
249

Adobe PageMaker
249

Adobe AFTER EFFECT Production
1299

Quickcen 7.0
29

MacMedia FreeHand
349

MacMedia Director 5.0
299

Microsoft Office
249

Quark Express
699

Apple Magic Collection CD
29

604* FREE FOR A LIMITED TIME!

Under $1000

6400/180MHz
16/1.6G/CD/DM
KEYBOARD $899*

7200/180MHz
16/1.6G/CD/DM
KEYBOARD $899*

MacWorld May 1998 149
**Systems & Peripherals**

Custom Configuration Specialists
- Dealers & International sales welcome
- Govt, University & Corporate POs welcome
- Best Prices, Service & Delivery

**BEST PRICES, SERVICE & DELIVERY**

**Apple**

**PowerMac**

- 6100/180CP
- 6100/100CP
- 5600/160CP
- 4400/200CP
- 3400/200CP
- 3400/160CP
- 3400/100CP
- 2400/100CP

**Best**

- Custom Configuration Spec'd
- Two 802.8/5.25" floppy drive
- 10 MB hard drive
- 4 MB memory (4 MB optional)

**Price**

- 320/5/8/600CP: $1245
- 320/5/8/400CP: $1195
- 320/5/8/200CP: $1095
- 320/5/8/100CP: $1055
- 320/5/8/60CP: $995

**PowerBook**

- 520/5/7/5.25" floppy drive
- 16 MB memory (8 MB optional)

**Price**

- 520/5/7/5.25" floppy drive: $1195
- 520/5/7/3.5" floppy drive: $1195

**MAC WORLD**

**Seagate**

- 3.5" Ultra Wide SCSI
- 3.5" Multi-Format Ultra Wide SCSI
- 3.5" Wide Ultra Wide SCSI
- 3.5" Wide Ultra Wide SCSI

**Price**

- 3.5" Ultra Wide SCSI: $695
- 3.5" Multi-Format Ultra Wide SCSI: $775
- 3.5" Wide Ultra Wide SCSI: $495
- 3.5" Wide Ultra Wide SCSI: $495

**FARGO ELECTRICAL**

- Winchester A. McNeil, Los Angeles, CA 90024
- Tel: (310) 770-4260 Fax: (310) 770-9155
- Custom Configuration Spec'd
- Two 802.8/5.25" floppy drive
- 10 MB hard drive
- 4 MB memory (4 MB optional)

**Price**

- 320/5/8/600CP: $1245
- 320/5/8/400CP: $1195
- 320/5/8/200CP: $1095
- 320/5/8/100CP: $1055
- 320/5/8/60CP: $995

**GCE**

- 24" Monitor, Keyboard, mouse
- 15" Monitor, Keyboard, mouse
- 10" Monitor, Keyboard, mouse

**Price**

- 24" Monitor, Keyboard, mouse: $1249
- 15" Monitor, Keyboard, mouse: $895
- 10" Monitor, Keyboard, mouse: $595

**MAC WORLD**

- 2.5GB/33/24X CD-ROM Drive
- 32-bit Notion
- 56K Fax</text>
THOUSANDS OF NEW AND FACTORY RECERTIFIED OVERSTOCK COMPUTERS, MONITORS, VIDEO CARDS & PRINTERS

CRA Continues to bring the BEST DEALS on Factory Overstock and hard to find computer items!

**MONITORS**

- **SONY 20” TRINITRON BLOWOUT!**
  - $699
- **20” Color Monitors**
  - Sony Trinitron $699
  - Radius PrecisionColor 20v $99
- **21” Color Monitors**
  - SuperMac 21” Color Display $699!
  - 21” Grayscale Display NEW!
  - 20” Multi-Resolution
  - 20” Sony Trinitron
- **Radius 15” Pivot, Color**
  - Full Page Display
- **PrecisionColor Pivot**
  - Portrait Display Labs 1700 NEW!
- **15” Color Monitors**
  - Radius PrecisionColor Pivot $399
  - Radius 15” Pivot, Color & Grayscale
- **Grayscale Monitors**
  - Full Page Grayscale Display NEW!
- **21” Grayscale Display**
  - Full Page Display $199

**GRAPHICS CARDS**

**G3 SPECIAL!**

Bring Your Older Mac Back to Life!

New G3 Processor Upgrade Cards for 6100, 7100, 8100 from $499*

*With Purchase Of Qualifying VideoCard or Monitor

**GRAPHSICS CARDS**

Accelerate The Video on Your Nubus Mac! from $99!

We offer the world’s largest supply of graphics cards for older Mac II, Quadra and Nubus PowerMacs

**NUBUS CARDS**

- 17” 832 X 624 Resolution $299
- 20” 1024 X 768 Resolution $299
- 21” 1152 X 870 Resolution $399
- Thunder II Series w/DSP acceleration $199

**PCi CARDS**

- Ims Twin Turbo $199
- Thunder 30 $199
- ThunderColor 30 $199
- ThunderPower 30 $199

**PRINTERS**

- Apple LaserWriter $199
- Apple LaserWriter Int $299
- Apple LaserWriter NTR $899
- Apple LaserWriter 4/600PS $499
- Apple LaserWriter Select 360 $599
- Apple LaserWriter Pro 630 $899
- Apple LaserWriter Pro 600 $699
- QMS 925 $399
- OMS 860 Hammerhead (600dpi tabloid) NEW! $1599
- QMS PS 1700 $699
- SuperMac Proof Positive $1999

**VIDEOVISION**

Available in Nubus and PCI

- Broadcast quality video output
- Proven Non-Line Video editing technology

**DIGITAL VIDEO**

- VideoVision Studio $899
- VideoVision Telecast $999
- VideoVision Studio Array $799
- Video Spigot Cards $99
- Video Spigot Power & Pro AV $199

**COMPUTERS**

**APPLE**

- PowerMac G3/266MT $2699
- PowerMac 8600/200 $1599
- PowerMac 6500/300 $2199
- PowerMac 8600/300 $2799
- PowerMac 9600/400 $3799

**UMAX**

- SuperMac C500 Series $849
- SuperMac C600 Series $1099
- SuperMac J700 Series $1399
- SuperMac S900 Series $1899

**OMAX**

- StarMax 2000 603e processor $999
- StarMax 3000 604e processor $1499

**MAC IIvx**

- 17” Color Monitor and P/S Printer $995

**DIGITAL WORKSTATION**

**Complete Package!!**

- PowerMac 61/110 $2199
- 32mb/2gb/8xCD $1795

**MAC IV**

- 4mb/160 Hardiive $295
- 15” Grayscale Pivot
- Color Monitors Available

**4 YEAR EXTENDED WARRANTIES AVAILABLE ON MOST PRODUCTS**


CRA Systems, Inc. 300 South 13th St., Waco, TX 76701 Monday thru Friday 9am to 7pm CST - Saturday 10am-4pm Sales Dept.

Domestic Sales sales@crasystems.com Fax 254.750.9050 Consultants/Dealers 254.754.2120 International Sales 254.754.2120

Prices reflect 2% cash discount. Prices subject to change. Not liable for typographical errors. Dealers and consultants call for quantity pricing. We ship anywhere. All Monitors, Printers, and CPUs are Factory Recertified unless otherwise stated. Call for latest pricing & availability on New Options.
### Computers

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>RAM</th>
<th>HDD</th>
<th>CD-ROM</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Mac G3</td>
<td>333MHz Desktop</td>
<td>24MB DDRAM</td>
<td>4GB Hard Disk</td>
<td>24XCD-ROM</td>
<td>$1,599</td>
</tr>
<tr>
<td>Power Mac G3</td>
<td>333MHz Desktop</td>
<td>32MB DIMM</td>
<td>64MB RAM</td>
<td>16XCD-ROM</td>
<td>$1,799</td>
</tr>
<tr>
<td>Power Mac G3</td>
<td>333MHz Desktop</td>
<td>32MB DDRAM</td>
<td>64MB RAM</td>
<td>16XCD-ROM</td>
<td>$1,999</td>
</tr>
</tbody>
</table>

### Memory

<table>
<thead>
<tr>
<th>SIMMS</th>
<th>DIMMS</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>16MB</td>
<td>32MB</td>
<td>$999</td>
</tr>
<tr>
<td>128MB</td>
<td>256MB</td>
<td>$949</td>
</tr>
</tbody>
</table>

### Printers

<table>
<thead>
<tr>
<th>Printer</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>QMS Magicolor 2CX</td>
<td>$3,399</td>
</tr>
</tbody>
</table>

### Software

<table>
<thead>
<tr>
<th>Software</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>QuarkXpress 4.0</td>
<td>$679</td>
</tr>
</tbody>
</table>

### Modems

<table>
<thead>
<tr>
<th>Modem</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supra 56c</td>
<td>$135</td>
</tr>
</tbody>
</table>

### Monitors

<table>
<thead>
<tr>
<th>Monitor</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optiquest V773</td>
<td>$499</td>
</tr>
</tbody>
</table>

### Scanners

<table>
<thead>
<tr>
<th>Scanner</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agfa ScanSet 310</td>
<td>$369</td>
</tr>
</tbody>
</table>

### Storage

<table>
<thead>
<tr>
<th>Storage</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removable Media</td>
<td>$125</td>
</tr>
</tbody>
</table>

### Networking Software

<table>
<thead>
<tr>
<th>Network</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Networking Pack</td>
<td>$118</td>
</tr>
</tbody>
</table>

### Other

- **PowerBook G3**
- **PDA**
- **Multiscan LCD2000**
- **MultiSync LCD2000**
- **E655 15"**
- **GT770 17"**
- **CPD-200 GS 17"**
- **40" Plasma TV**
- **4MB G3 RAM**
- **VRAM**
- **Photo Shop**
- **Paint Shop**
- **PageMaker**
- **Autocad**

---

**Note:** All prices are subject to change and availability.
Save up to 62% on Macworld - the magazine that keeps you on the cutting edge. PLUS get the Mac Multimedia MegaPac CD-ROM, loaded with exclusive utilities, custom icons, great games and more to make computing fun! FREE with your paid subscription!

- 2 years • SAVE 62% • Just $45.00 for 24 issues!
- 1 year • SAVE 50% • Just $30.00 for 12 issues!

NAME (PLEASE PRINT)

COMPANY

ADDRESS

CITY STATE ZIP

☐ Payment enclosed. ☐ Bill me later.

Annual newsstand price $59.88. Mexico & Canada add US$18 postage; Canadian GST included. All other countries add US$70 postage.
## Computer Discounters

We will save you money - The Total Hardware Source! New, Reconditioned, and Demo Equipment in stock. We stock Computers, Computers & Computers with VA Tax Exempt Vendors. Call today...

### Newer Models & Specials

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerMac 7600/200</td>
<td>$299</td>
</tr>
<tr>
<td>PowerBook 520/520C</td>
<td>$899</td>
</tr>
<tr>
<td>PowerBook 160/170</td>
<td>$559</td>
</tr>
</tbody>
</table>

### Used Macs Priced to Move

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Classic</td>
<td>$999</td>
</tr>
<tr>
<td>Quadra 610</td>
<td>$399</td>
</tr>
<tr>
<td>Quadra 700</td>
<td>$499</td>
</tr>
<tr>
<td>PowerBook 140/160</td>
<td>$499</td>
</tr>
<tr>
<td>PowerBook 160/180</td>
<td>$499</td>
</tr>
</tbody>
</table>

### Used Logic Boards

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerBook 520/520C</td>
<td>$999</td>
</tr>
<tr>
<td>PowerBook 160/170</td>
<td>$559</td>
</tr>
</tbody>
</table>

### Used SATA Drives

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerBook 520/520C</td>
<td>$999</td>
</tr>
<tr>
<td>PowerBook 160/170</td>
<td>$559</td>
</tr>
</tbody>
</table>

### Specials

- **Monitor**: Apple Cinema Display - 19" - $899
- **PowerBook**: PowerBook 520/520C - $899
- **Quadra**: Quadra 630 - $1499

### Trade-ins & Upgrades

- **Mac Pro**
  - 8-core Intel Xeon - $2499
- **Mac Pro Tower**
  - 12-core Intel Xeon - $3499

### Call Today

- **Call Toll Free**: (800) 463-0686
- **Fax**: (303) 571-5020

---

### PowerBook Products

- **PowerBook 1400/183**
- **PowerBook 1400/166**
- **PowerBook 1400/150**
- **PowerBook 1400/143MHz**

---

### NewerTech

- **PowerBook 500/167 MHz (680MX) BUNDLE**
  - Includes: NuPower 500/167 MHz (680MX), 2MB modem, Toshiba 801 MB 2.5" SSD, SD149

---

### MCE

- **PowerBook 620/620**
- **PowerBook 630/630**
- **PowerBook 640/640**
- **PowerBook 650/650**
- **PowerBook 660/660**
- **PowerBook 680/680**
- **PowerBook 700/700**
- **PowerBook 720/720**
- **PowerBook 750/750**
- **PowerBook 820/820**
- **PowerBook 820/820**
- **PowerBook 830/830**
- **PowerBook 850/850**
- **PowerBook 860/860**
- **PowerBook 870/870**
- **PowerBook 890/890**

---

### Macworld Shopper

- **PowerBase 240MHz Upgrade Kit $199**
- **PowerBase 240MHz Upgrade Kit $199**
- **PowerBase 240MHz Upgrade Kit $199**

---

### Call Center

- **Hours**: M-F 8-6, SAT 10-5 MST
- **Fax**: (777) 822-5000
- **Email**: Sales@MediaGuide.com
- **Website**: www.medialogue.com
CALL THE MAC EXPERTS!

Your one-stop source for everything Macintosh. Complete solutions and expert advice on our specialists.

Us
- Our salespeople are some of the most knowledgeable in the business. They're not order takers and they don't push for a one size fits all. After all, over half of our business comes from repeat and referred customers.
- We have competitive prices on over 20,000 Macintosh items.
- We load over 150 megabytes of useful software on every computer.
- Every Mac system is thoroughly bench tested, then personally verified and approved by your specific consultant.
- We have 800 line tech support for as long as you own your computer.
- We will customize your computer any way you need, and always with an exact description as to what we're including.
- We give you a free mouse pad with every system.
- We have no voice mail—there's always a human being on the other end of the line—tack, sales and management.
- We answer the phone, we sell every type of quality Macintosh possible.
- All we do is Macintosh—our company is run entirely on Macs.

Then
- They call you a box.
- If you have a problem, they tell you to call the manufacturer. And then you get to wait on hold for a long, long time.

You
- Potentially one of the most important people in the world: our customer.

PowerMax Trinitron™ Monitors

Model PM1ST 25 mm dot pitch up to 1260x1024 $349
Model PM1TT 25 mm dot pitch up to 1260x1024 $649
Model PM1TTE 25 mm dot pitch up to 1600x1280 $849
Model PM20TT 25 mm dot pitch $1199

PowerMax Trinitron™ monitors are designed specifically for the rigorous demands of the Macintosh. They ship complete with Mac-ready cables and adapters, a three year warranty, and our satisfaction guarantee: if the monitor is not just right, we'll replace it for you!

"Four Mice! A Power-Max Power Play" and "Not only do the PowerMax monitors display good-looking images, but (they) are affordably priced!" and "Nice price, nice image quality, nice controls — nice monitor!"

We accept educational and corporate purchase orders, and are experts in financing for virtually any size business!

800-613-2072

Local line: (503) 624-1827 • Fax (503) 624-1635
http://www.powermax.com • email: powermax@europa.com

Prices subject to change without notice. Prices reflect cash discount. Credit card orders strictly verified against fraudulent use. With use of credit card as payment customer acknowledges that some products are subject to final sale.
Great Deals on all MAC Products

800-345-1234
Sales: (310) 398-3300

PowerBooks
G3/250 32/512CD $4249
G3/266 32/GB/CD/Zip $2395

Displays
Apple 20" Color $1495

Printers
HP LaserJet 4000N $1389

Scanners
Agfa ePhoto 1280 $799

CD Recorders
4x22Tecs $439
4x26x Yamaha CD-RW $489
4x6 Yamaha $479
4x8 Panasonic $379
Add S60 for external

Media
Mitsui (w/Drive) $11.95
CD-RW $15.99
Jazz Cartridges $78.99

Blank CDs From $1.45 Each!!

Nobody Sells for Less Than the Copy Cats!

CD Re-From $379/Complete Kit $479/$829/$999

We Custom Configure

PrePress System
SilkScreening System

Spot Color System
Digital Camera

Accessories
Software

Scitex Station

Available @ MCX Pressstation

AVID @ MFX PRESS

Workstation for Macintosh

Systems & Peripherals

MACWORLD May 1998 157
**Powerbook 5300cs**

- 100-MHz PowerPC 603e
- 8/500 Configuration
- 8-bit Dual Scan Color

As low as **$499**

*Trade in Your PowerBook 540c for this incredible deal!*

- Factory Refurbished
- Includes Battery and A/C adapter
- 90-Day Warranty

*Requires trade of Powerbook 540c, $250 minimum configuration. Unit must be good condition. $899 is the outright price.

---

**NEC Silenthwriter 1765**

- 17 pages per minute
- Ethernet, local-talk & parallel ports for easy networking
- Postscript Level 2

**BRAND NEW** ......... **$999**

---

**Performa 5200**

- 75-MHz PowerPC™ 603
- internal 14.4 fax modem
- Built-in Display
- keyboard & mouse

**BUNDLE**

**NEW**

**$999**

**NEW**

---

**Performa 6320/120**

- 120-MHz PowerPC™ 603e
- internal 14.4 fax modem
- Apple Display
- keyboard & mouse

**$1199**

Add a 1/2 Apple Trinitron for only $199!

---

**Macintosh CPUs**

- Performa 655/4/256...
- Performa 5200 800/800XCD...
- Centris 650/450 (150MHz processor)...
- Quadra 950/60...
- Quadra 860/180...
- Quadra 950/860...
- PowerMac 9500/120 16/GB/XCD...
- WGS 95/1070/CD...
- PowerMac 9500/120 16/GB/XCD...

**BRAND NEW** ......... **$749**

---

**PhotoCard Pro 180 MT**

- 180-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW OEM** ......... **$99**

---

**Powerbase 120 LP**

- 120-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW**

**$99**

---

**Powerbase 280 LP**

- 280-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW OEM** ......... **$99**

---

**New Wallaby 144 Floppyl**

**ONLY $49**

---

**LC 580**

- 180-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW**

**$229!!**

---

**PowerPort Mercury**

- GlobalSat software included. Features data transfer speeds of 19.2Kbps and fax speeds of 14.4Kbps. Fastest standard modern available for the Powerbook 5300 series.

**BRAND NEW!!!!**

**$99**

---

**Authentic Apple**

- A2B Mouse II
- Mousing kit included
- Mac Booklet

**NEW**

**ONLY $119!!**

---

**Powerbase 120 LP**

- 120-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW OEM** ......... **$99**

---

**Shreve Systems**

http://www.shrevesystems.com

**1-800-207-3971**

**FAX** (318) 424-9771 • TECHNICAL SUPPORT (318) 424-7867

**CUSTOMER SERVICE** (318) 424-9791 • PURCHASING/INFORMATION (318) 424-9751

1200 MARRSHALL STREET • SHREVEPORT, LOUISIANA 71101

---

**158 May 1998 MACWORLD**

- 100-MHz PowerPC 603e
- 8/500 Configuration
- 8-bit Dual Scan Color

* As low as $499

**Special!**

*Includes Battery and A/C adapter
- 90-Day Warranty

---

**POWERBASE 280 LP**

- 280-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW OEM** ......... **$99**

---

**POWERMAC 7200/75 LOGIC BOARD**

- Logic board with Power Supply...
- Only $299.00

---

**Apple ADB Mouse II**

- The original Apple ADB Mouse II. In stock!

**NEW**

**OLY $49**

---

**Original Apple 1.44 Floppyl**

- We have original Macintosh floppy drives!

**Now $99**

---

**QuickDraw**

- Expanded
- Accelerations for videoplayers

**NEW**

**$149**

BRAND NEW!

---

**Powerbase 120 LP**

- 120-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW OEM** ......... **$99**

---

**Powerbase 280 LP**

- 280-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW OEM** ......... **$99**

---

**Silentwriter 1765**

- 17 pages per minute
- Ethernet, local-talk & parallel ports for easy networking
- Postscript Level 2

**BRAND NEW** ......... **$999**

---

**Performa 5200**

- 75-MHz PowerPC™ 603
- internal 14.4 fax modem
- Built-in Display
- keyboard & mouse

**BUNDLE**

**NEW**

**$999**

**NEW**

---

**Performa 6320/120**

- 120-MHz PowerPC™ 603e
- internal 14.4 fax modem
- Apple Display
- keyboard & mouse

**$1199**

Add a 1/2 Apple Trinitron for only $199!

---

**Macintosh CPUs**

- Performa 655/4/256...
- Performa 5200 800/800XCD...
- Centris 650/450 (150MHz processor)...
- Quadra 950/60...
- Quadra 860/180...
- Quadra 950/860...
- PowerMac 9500/120 16/GB/XCD...
- WGS 95/1070/CD...
- PowerMac 9500/120 16/GB/XCD...

**BRAND NEW** ......... **$749**

---

**Powerbase 280 LP**

- 280-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW OEM** ......... **$99**

---

**Powerbase 120 LP**

- 120-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW OEM** ......... **$99**

---

**QuickDraw**

- Expanded
- Accelerations for videoplayers

**NEW**

**$149**

BRAND NEW!

---

**Shreve Systems**

http://www.shrevesystems.com

**1-800-207-3971**

**FAX** (318) 424-9771 • TECHNICAL SUPPORT (318) 424-7867

**CUSTOMER SERVICE** (318) 424-9791 • PURCHASING/INFORMATION (318) 424-9751

1200 MARRSHALL STREET • SHREVEPORT, LOUISIANA 71101

---

**Powerbase 120 LP**

- 120-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW OEM** ......... **$99**

---

**Powerbase 280 LP**

- 280-MHz PowerPC™ 603e
- 68040 RAM, 600 hard drive...
- 6x CD-ROM

**NEW OEM** ......... **$99**

---

**QuickDraw 3.0**

- Expanded
- Accelerations for videoplayers

**NEW**

**$149**

BRAND NEW!
We have a vast selection of Hard Drives and Memory!
You must check out our website!
http://www.macstuff.net

G3 PowerMacs
G3/233 Desktop $1,599
G3/266 Desktop $1,869
G3/266 Tower $2,329
G3/250 PBook $1,799

G3 PowerMac DIMMs
16mb SDRAM $59
32mb SDRAM $69
64mb SDRAM $179
128mb SDRAM $329

PowerMac DIMMs
16mb $45 + 32mb $69
64mb $129 + 128mb $379

www.macstuff.net

Call Toll Free
1-888-699-8787
School, Government and Corporate POs Welcome
Prices are subject to change without notice.

Macworld
SHOPPER
Memory & Upgrades

"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

1-800-334-KIWI
Kiwi Computers • Save on refurbished Macs

Data Memory Systems
24 Keewaydin Dr.
Salem, NH 03079
Tel: 603-898-7750
Fax: 603-898-6585
E-mail: sales@datamem.com

MAC & PC MEMORY
LIFETIME REPLACEMENT GUARANTEE ON MEMORY PRODUCTS

MAC & PC MEMORY
LIFETIME REPLACEMENT GUARANTEE ON MEMORY PRODUCTS

UMAX
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
University, Government & Corporate P.O.s with Approved Credit
ACCELERATE YOUR MAC FOR AN UNBELIEVABLY LOW PRICE

You can get all the speed you need and save thousands of dollars with out-of-this-world upgrade products from Sonnet. Keep your present computer, memory, hard disk, and configuration—simply work faster. Sonnet cards are fast, inexpensive, easy to install, and 100% compatible with every application, Mac OS 7 & 8. Every Sonnet product is covered by a one-year warranty and free technical support.

CHECK OUT THESE KILLER CACHE PRICES!

Adding a cache card is the most cost-effective way to increase Power Mac performance. A level 2 cache card provides more information to the CPU every bus cycle. Add a Sonnet cache card for even more speed-up to a 200% overall performance increase.

Power Mac 4400/5260/5400/5500/6100/6360/6400/6500/7100/7200/7300/7500/7600/8100/8500/8600 • Performa 611X • StarMax • Power Computing • UMAX • Radius 9/10

256K LEVEL 2 CACHE $39
IMB LEVEL 2 CACHE $149

Power Mac 6100/6110/8100/8115 • Performa 611X • Workgroup Server 8150/9150 • Power 100/120 • Radius 8/110

256K LEVEL 2 CACHE $39
512K LEVEL 2 CACHE $69
IMB LEVEL 2 CACHE $139

Power Mac 7200/7215/7300/7500/7600/8200/8500/8600 • Workgroup Server 7250/7350/8550

256K LEVEL 2 CACHE $39
512K LEVEL 2 CACHE $69
IMB LEVEL 2 CACHE $199

Power Mac 4400/5400/5500/6360/6400/6500 • StarMax • UMAX C500, C600, J700

Relative MacBench 4.0 ratings for a 200MHz PowerPC 604e in a Power Macintosh 7500.

RUN YOUR '030 MAC UP TO 500% FASTER WITH PRESTO 040!

With a 68040-based Presto" accelerator card, you can increase performance by as much as 500%. The Presto 040 80/40 MHz with a 128K level 2 cache for the Mac Iici, Iicx, Iii, Ilii, Ilvx, and Performa 550, 275, 400, 405, 410, or 430 is $199, with FPU $299. (49 Adapter required for Mac Iicx and Ilvi.) The Presto 040 50/25 MHz for Mac LC, LCII, Color Classic, or Performa 550, 275, 400, 405, 410, or 430 is $149, with FPU $199. Adding a Presto card is the only way to run Mac OS 8 on '030 Macs today (LC, Iici: Mac OS 7 only).

DOUBLE YOUR QUADRA SPEED!

Plug QuadDoublers" 040 100/50 MHz accelerator into your Quadra, Centris, or Workgroup Server 60 and double your speed for $299. The Centris 610 version runs at 80/40 MHz and is value priced at $199. Compatible with Mac OS 8.1. All QuadDoublers include an FPU.
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

“If we had to place just one ad, it would be in Macworld Shopper. It just plain works better for us than the others…”
—David Ash

Mac Solutions

Computers Plus Company
4451 East Oak St Phoenix AZ 85008
Phone: 602-267-7300 Fax: 602-267-7400
Web: www.computers-plus.com
E-mail: eprice@compuserve.com
“Too Many Products to List! Visit our Website or call:

64 Meg RAM DIMM ............... $149
32 Meg DIMM or SIMM .... $89
16 Meg DIMM or SIMM .... $49
Other Memories ............... $Call
1 Gig SCSI Hard Drive ....... $149
17” monitor 256m 1280X1024 ..... $349
17” monitor 256m 1280X1024 .... $349
Turbo Mouse ADB ............... $99
2 Gig SCSI Hard Drive ....... $249
4 Gig SCSI Hard Drive ....... $299
Asante 10BT/100BT PCI Card ... $129
Prices & Availability subject to change. Ad 98-05

WE BUY, SELL & TRADE MACS!
CALL (800) 80-WE-BUY
11933 Wilshire Blvd, West Los Angeles, CA 90025
Tel: (310) 966-4444 Fax: (310) 966-4433
www.macsolutions.com
University & School P.O.'s Welcome
Visa, MasterCard, Discover, MC, AMEX no surcharge

MAC Solutions
(800) 873-3RAM
CIRCLE 400 ON READER SERVICE CARD

Shadow Technologies
(800) 4-SHADOW
800-474-2369

Memory & Upgrades
WE SPECIALIZE IN
WHOLESALE WATERLESS
COLOR PRINTING

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.

FEATUREING 300 LINE SCREEN
WATERLESS OFFSET PRINTING

Rates for Brochures, Booklets and Flat Sheets are also available.

4-COLOR WATERLESS SPECIAL

1,000 8.5x11 8-PG BOOKLETS
PRINTED ON 80 LB. FORTUNE GLOSS TEXT
4-Color Process (4/4) plus FREE aqueous coating. Includes full bleed, folding, collating & stitching.
Get 5,000 for only $2,659

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

Do You Throw Your Car Away When the Battery Dies?

Of course not — you don’t need to throw out your battery-back-up unit either. We recondition battery back-up (UPS) systems for a fraction of the cost of a new one.
• Much less than trade-in programs
• Complete inspection & repair
• Full 18-month warranty
• Loaner units available

Average UPS battery life: 3-5 years

1-888-2 FIX UPS

DATA RECOVERY: 800-440-1904

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 Macintosh data recovery experience.
5. Certified to maintain most drive warranties.
7. All storage devices: Mac OS, DOS, Win95, WinNT, OS2, UNIX, Sun, SGI, Novell.

Clip and save this ad. Visit DriveSavers at: www.drvsavers.com

Call 24 hours a day.
415-382-2000
FAX: 415-382-0780
800-622-7977

COPY CRAFT PRINTERS, INC.

4413 82nd 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

Visit http://www.copycraft.com for more 4-Color Specials!

CALL TODAY FOR A FREE COPY OF OUR NEW FULL COLOR CATALOG

CATALOG AVAILABLE!

DIGITAL DOCUMENTS
"Digital Printing From Your Internet File"

FULL COLOR PRINTING LARGE FORMAT COLOR
49¢ 24 HOUR SERVICE Please Visit Our Web Site For A List Of Services & Prices

www.Digital-Documents.com
1-888-450-SEND (7363)

Lazarus DATA RECOVERY
Working at the speed of business.

800-341-DATA

GRAPHIC ARTS AVAILABLE

PRINTED ON 80 LB. FORTUNE GLOSS TEXT
4-Color Process (4/4) plus FREE aqueous coating. Includes full bleed, folding, collating & stitching.
Get 5,000 for only $2,659

SUGGESTED RETAIL $2,659

Average UPS battery life: 3-5 years

1-888-2 FIX UPS

DATA RECOVERY: 800-440-1904

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 Macintosh data recovery experience.
5. Certified to maintain most drive warranties.
7. All storage devices: Mac OS, DOS, Win95, WinNT, OS2, UNIX, Sun, SGI, Novell.

Clip and save this ad. Visit DriveSavers at: www.drvsavers.com

Call 24 hours a day.
415-382-2000
FAX: 415-382-0780
800-622-7977

COPY CRAFT PRINTERS, INC.

4413 82nd 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

Visit http://www.copycraft.com for more 4-Color Specials!

CALL TODAY FOR A FREE COPY OF OUR NEW FULL COLOR CATALOG

CATALOG AVAILABLE!

DIGITAL DOCUMENTS
"Digital Printing From Your Internet File"

FULL COLOR PRINTING LARGE FORMAT COLOR
49¢ 24 HOUR SERVICE Please Visit Our Web Site For A List Of Services & Prices

www.Digital-Documents.com
1-888-450-SEND (7363)

Lazarus DATA RECOVERY
Working at the speed of business.

800-341-DATA

GRAPHIC ARTS AVAILABLE

PRINTED ON 80 LB. FORTUNE GLOSS TEXT
4-Color Process (4/4) plus FREE aqueous coating. Includes full bleed, folding, collating & stitching.
Get 5,000 for only $2,659

SUGGESTED RETAIL $2,659

Average UPS battery life: 3-5 years

1-888-2 FIX UPS

DATA RECOVERY: 800-440-1904

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 Macintosh data recovery experience.
5. Certified to maintain most drive warranties.
7. All storage devices: Mac OS, DOS, Win95, WinNT, OS2, UNIX, Sun, SGI, Novell.

Clip and save this ad. Visit DriveSavers at: www.drvsavers.com

Call 24 hours a day.
415-382-2000
FAX: 415-382-0780
800-622-7977

COPY CRAFT PRINTERS, INC.

4413 82nd 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

Visit http://www.copycraft.com for more 4-Color Specials!

CALL TODAY FOR A FREE COPY OF OUR NEW FULL COLOR CATALOG

CATALOG AVAILABLE!

DIGITAL DOCUMENTS
"Digital Printing From Your Internet File"

FULL COLOR PRINTING LARGE FORMAT COLOR
49¢ 24 HOUR SERVICE Please Visit Our Web Site For A List Of Services & Prices

www.Digital-Documents.com
1-888-450-SEND (7363)

Lazarus DATA RECOVERY
Working at the speed of business.

800-341-DATA

GRAPHIC ARTS AVAILABLE

PRINTED ON 80 LB. FORTUNE GLOSS TEXT
4-Color Process (4/4) plus FREE aqueous coating. Includes full bleed, folding, collating & stitching.
Get 5,000 for only $2,659

SUGGESTED RETAIL $2,659

Average UPS battery life: 3-5 years

1-888-2 FIX UPS

DATA RECOVERY: 800-440-1904

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 Macintosh data recovery experience.
5. Certified to maintain most drive warranties.
7. All storage devices: Mac OS, DOS, Win95, WinNT, OS2, UNIX, Sun, SGI, Novell.

Clip and save this ad. Visit DriveSavers at: www.drvsavers.com

Call 24 hours a day.
415-382-2000
FAX: 415-382-0780
800-622-7977

COPY CRAFT PRINTERS, INC.

4413 82nd 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

Visit http://www.copycraft.com for more 4-Color Specials!
Call for a brochure on our services •••

Fujix photo color print s... 51 0 .00/$5 .00

Macworld. Repair • Data Recovery • Digital Production • Color Printing Services

Active Buyers turn to the Macworld Shopper

Over 590,000 Macworld subscribers turn to the Macworld Shopper monthly. 531,250 of these buyers have taken action as a result of seeing an ad in the Macworld Shopper.

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

VISIT US AT: www.mactechsinc.com

1-888-622-3493

WE GET TO THE CORE OF THE PROBLEM

INTERNATIONAL

Macintosh Repair, Sales & Upgrades
24 Hour Turnaround
Powerbook Specialists
Component Level Repair
Great Memory & Hard Drive prices

© 1997 Ontrack, Inc.

DIGITAL IMAGING

Slides & Negatives $3.75
4x5 chromes / negs $30
Large Posters & Displays
Scanning High & Low Res
Photo CD Scans & LVT Output
Short Run 1200 dpi Color Output
Quantity Prints, Slides, Overheads
Show & Tell 39 W 39th St., NY, NY 10018
212 840 2912 • 212 840 7953 (fax)

DIGITAL OUT put

Overnight
PC or Mac
Send PC/Mac files by FTP or Priority Air Express to Images and for post output, your finished work is in your hands the very next morning.

Modern Postcard™

1-800-959-8365

© 1993 Modern Postcard. All rights reserved

The Data Recovery Experts.

When it comes to recovering your critical data, bigger is better.

- Experts on every operating system and storage media.
- Calls answered 24-hours a day, everyday.
- Emergency & onsite services.

Ontrack

800-872-2599 www.ontrack.com

Mpls • LA • San Jose • DC • London • Tokyo • Stuttgart

DIGITAL IMAGING

Component Level Repair
Great Memory & Hard Drive prices

3337 El Camino Real
Palo Alto, CA 94306
Phone: 650.845.5400
Fax: 650.845.6411
www.mactechsinc.com

1-888-622-3493

WE GET TO THE CORE OF THE PROBLEM

CIRCLE 433 ON READER SERVICE CARD

1-800-MAC-SHOP

CIRCLE 435 ON READER SERVICE CARD

CIRCLE 436 ON READER SERVICE CARD
Think better. Think quick. Think web.
Think fast. Think success.
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

Then select the products, product categories or advertisers for whom you want to receive information.

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.

continued from page 170

come—Merlin the magician! (Gotta love that OK button; it says "Begone")

Photoshop 3 shows three different credit screens. One appears when you choose About Photoshop from the Apple menu; add the option key to see the second; and hold down Option to see the third.

But if you've been looking for a reason to upgrade to Photoshop 4, here it is: hold down the Option key while choosing About Photoshop. Your reward: the Big Electric Cat. This isn't just any old cat; Option-click on its nose to hear the most resonating, gurgly, disgusting audio belch ever.

The Lonely-Geek Consolation Prize

At Microsoft, the decree from the Richest Man Alive is: Hide your name in a Microsoft program, and you're fired. As a result, Easter eggs in Microsoft programs are slightly harder to find.

In a new Word 6 document, for example, type T3! (including the exclamation point). Highlight your T3!, and make it bold. From the Format menu, choose AutoFormat. Click on OK and then on Accept. And now, from the Apple menu, choose About Microsoft Word. Click on the Microsoft Word icon in the About box.

The screen goes black . . . thunder rumbles . . . and before your very eyes, a list of programmers crawls up the screen in colored lettering. (Why so much effort to see who wrote Word 6? Well, maybe it was Bill's Decree. On the other hand, maybe they were just embarrassed.)

Believe it or not, that's not the Egg awards winner tonight. In a new Word 6 document, type zzzz. Now run the spelling checker on your document. Word flags zzzz as incorrectly spelled, all right. But check out what it suggests as the correctly spelled equivalent.

Sex = zzzz? Only from the minds of Microsoft.

The Software-as-Metaphor Award

In the Finder, open Conflict Catcher. Click on the version number in the lower-right corner. Type play and press return.

Suddenly, Mr. Logo Man evaporates. In his place is a game of Breakout—except that the bricks aren't aliens, they're your own extension icons! Use the arrow keys to move the cannon; don't let the ball strike bottom.

The Jerry Seinfeld Memorial

If you open a desktop StuffIt Deluxe 4.0 (not 4.5) archive on a holiday, such as July 4 or December 25, you'll see a tiny, holiday-specific graphic surprise in the window's corner. (Balloon help added a cheery, holiday-specific message.) Now how much would you pay? But wait, there's more! Open an archive in the Finder. While pressing the shift key, choose About This Macintosh from the Apple menu.

Up pops the secret StuffIt About box, filled with thank-you notes to the programmer's friends. Now press the clear key on your number pad. The screen is instantly filled with a pages-long, hilarious comedy routine about the differences between men and women. Example: "Women have many faults. Men have only two: everything they say and everything they do."

Look, guys: we love seeing your names and your photos. But keep your personal problems to yourself, OK?

DAVID POGUE (www.pogue.com) is the author of The Great Macintosh Easter Egg Hunt (Berkley Books, 1998). Can you find the Easter egg on his home page?

May 1998, Volume 15, Number 5  Macworld (ISSN 0741-8647) is published monthly by Mac Publishing, 169 Howard St., 30316, San Francisco, CA 94105. Phone: (415) 961-0000. Subscription orders and inquiries should be addressed to 1000 E. 68th Street, Suite 910, Chicago, IL 60637.

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

Introducing a New Service to Readers...

Macworld's NEW Online Reader Service

www.macworld.com/getinfo

Get Info

www.macworld.com/getinfo

Then select the products, product categories or advertisers for whom you want to receive information.

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.
The 1998 Eggy Awards

THE YEAR'S FUNNIEST, CLEVEREST, AND MOST ENTERTAINING EASTER EGGS

DOESN'T IT STRIKE you as weird that novelists, composers, and screenwriters get their names plastered all over their work but most people can't name a single person who writes software?

The programmers whose creations run our businesses, banks, and government toil in obscurity. Why aren't any schools named after Raymond Lau, who invented StuffIt? Where's the beverage called the Jeff Robbin, after the guy who wrote Conflict Catcher? Why don't posters of a shirtless Jorg Brown, who invented RAM Doubler, hang on the bedroom walls of American teenagers?

In recognition of their lack of recognition, programmers have learned to take matters into their own hands. In the wet cement of their newly created software, they carve their initials by planting a movie, a photograph, a sound effect, or some other credits screen. In the lingo of programmers, they create Easter eggs.

Now, because most software companies frown on such frivolous expenditures of talent, programmers must hide their Easter eggs (which is why they're called Easter eggs). To discover one, you must, for example, press a certain combination of keys, click the mouse 128 times in one spot, or hold down F7 while singing the theme song from Friends.

The Mac has always been at the vanguard of Easter-egg coolness. Unfortunately, Apple's efforts to make Mac OS 8 rock-solid meant the demise of many beloved, but potentially destabilizing, System 7-era eggs. With Mac OS 8, classics such as the astounding 3-D Iguana flag, the Sound control panel's drugged-out shriek, and the immortal Programmer Breakout game were flung into the silicon dustbin.

Tonight, then, let us salute those who salute themselves. The egg carton, please!

The Dirty Crayola Award

Fortunately, a few classic Mac Easter eggs survive in OS 8. For example, the scenic painting of Silicon Valley lives on. (Press the option key, and choose About The Finder from the Apple menu.) So does the QuickTime extension's slide show of California hairstyles (hold down #-option-Q-T during start-up).

But OS 8 offers a few new goodies, too. For example, choose Preferences from the Edit menu, click on one of the label colors, and shift-click on the Crayons icon in the resulting dialog box.

Now, if you click on the crayon tips, you'll see the programmers' names, one per crayon. Some of the crayons just say "Color Picker 2.1"; some show programmers' names; and a few, in the case of very shy programmers, show anagrams of names.

The Carmen Sandiego Prize

Open the Date & Time control panel. Click on Set Time Zone. Up pops a list of 180 major world cities. No, make that 178 major cities and 2 obscure, statistically insignificant towns. There they sit, down among the L's: Lower Burrell, Pennsylvania, and Lake Nebagamon, U.S.A. Can you say, "programmers' hometowns"?

Lest you think including these oddball cities' names is an accident, open the Map control panel. Type low into the Find box, and press return—there it is again! That darned Lower Burrell! And sure enough, typing lake uncovers—but of course—Lake Nebagamon, U.S.A.

Their folks must be so proud!

The "Independence Day" Trophy

To qualify for this Eggy award, an Easter egg must be more than a couple of programmers' names in an About box. These coveted trophies demand multimedia . . . motion . . . action!

Take QuarkXPress, for example. Create a text or picture box, and then press #-option-K, #-option-shift-K, or #-option-shift-delete, depending on your version of the program. Out walks Quark the Alien, antennae focused, making clomping footsteps as he invades your document. Taking careful aim with his ray gun, he proceeds to blast your box into oblivion with his radioactive death beam.

Well, I should hope so. After paying $995, you'd better get a decent Easter egg.

Garfield the Cat Special Citation

Three things made Adobe Photoshop famous: (1) a powerful set of image-processing tools, (2) a unified suite of color-management protocols, and (3) enough Easter eggs to make an omelette.

For example, choose Show Layers from the Window menu. (In Photoshop 3, it's in the Palettes submenu.) Now the Layers palette appears. While pressing the option key, choose Palette Options from the corner pop-up menu. Now welcome to page 169.
It may not be your father’s monitor, but it could be your grandson’s.

Our engineers take pride in their work. That is why they have designed our monitors with an increased bandwidth. This extra bandwidth means that even while running at their maximum resolution, our monitors are not being pushed to their limit. The result is components that run cooler and therefore last longer.

How much longer? Our VisionMaster 450, for example, has a Mean Time Before Failure (MTBF) of 46,900 hours. This equates to 23.4 years of life when used in normal business applications.**

So that monitor you just bought could very well be used to put your teenage son through college and his son through high school.

This philosophy of building high-quality, long-lasting products goes into everything we do. Take USB for example. Other manufacturers make their customers buy a new monitor if they want the latest technology (like USB) integrated into their monitors. (Perhaps this is because after three years they need a new monitor?) iiyama has designed a convenient and cost-effective upgrade solution – a USB hub that replaces the user’s existing tilt/swivel stand.

It is due to innovations like these and a unique devotion to quality that makes iiyama monitors so reliable.

<table>
<thead>
<tr>
<th>Model/Viewsize Area</th>
<th>Dot Pitch/CRT Type</th>
<th>Max. Horizontal Scan Rate</th>
<th>Max. Resolution</th>
<th>Est. Street Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>VisionMaster Pro 500 (19.5” WD)</td>
<td>0.25mm/AG</td>
<td>12.0kHz</td>
<td>1600 x 1440</td>
<td>$649</td>
</tr>
<tr>
<td>VisionMaster 450 (19.5” WD)</td>
<td>0.27mm/AG</td>
<td>12.0kHz</td>
<td>1600 x 1200</td>
<td>$799</td>
</tr>
<tr>
<td>VisionMaster Pro 450 (18.0” WD)</td>
<td>0.25mm/AG</td>
<td>12.0kHz</td>
<td>1600 x 1200</td>
<td>$589</td>
</tr>
<tr>
<td>VisionMaster Pro 17 (16.1” WD)</td>
<td>0.29mm/AG</td>
<td>12.0kHz</td>
<td>1600 x 1200</td>
<td>$529</td>
</tr>
<tr>
<td>VisionMaster 17 (16.1” WD)</td>
<td>0.30mm/AG</td>
<td>12.0kHz</td>
<td>1600 x 1200</td>
<td>$379</td>
</tr>
</tbody>
</table>

*Monitor shown with optional USB hub ( $130 ESP)
Tired of that same old mouse? Want to go where no one has ever gone before? Orbit is a new kind of trackball that combines the comfort of a mouse with the control of a trackball. Orbit comes with Kensington’s award-winning MouseWorks software. So you can save time with our unique MouseWorks Button, cut down on your repetitive mouse tasks with Pop-up Menus, even change the cursor speed to match the way you work.

What’s more, you get Kensington’s legendary Satisfaction Guarantee. That means a 5-year warranty, toll-free technical support, and a no-risk 90-day trial.

For more information, call 800-535-4242, or visit our web site at www.kensington.com.