

Internet Explorer 4.0 Stumbles, p. 41 • 19-Inch Monitor Shoot-Out, p. 85

M A Y 1 9 9 8

Macworld

THE ESSENTIAL MACINTOSH® RESOURCE
www.macworld.com

EXCLUSIVE LAB TEST

300MHz!

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

\$4.99/\$5.99





**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

LACIE



Macworld

Incorporating MacUser

Features

- 63** **The Build-to-Order Dilemma**
BY ALLYSON BATES 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.

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

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



Preventing font fiascos, page 105.



Nineteen-inch monitors are now inexpensive and good—see for yourself, page 85.

Create

- 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.

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

- 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.



New layout software tries to pave new ground, page 24.



Apple's new Java
has a real kick,
page 81.

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.

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**



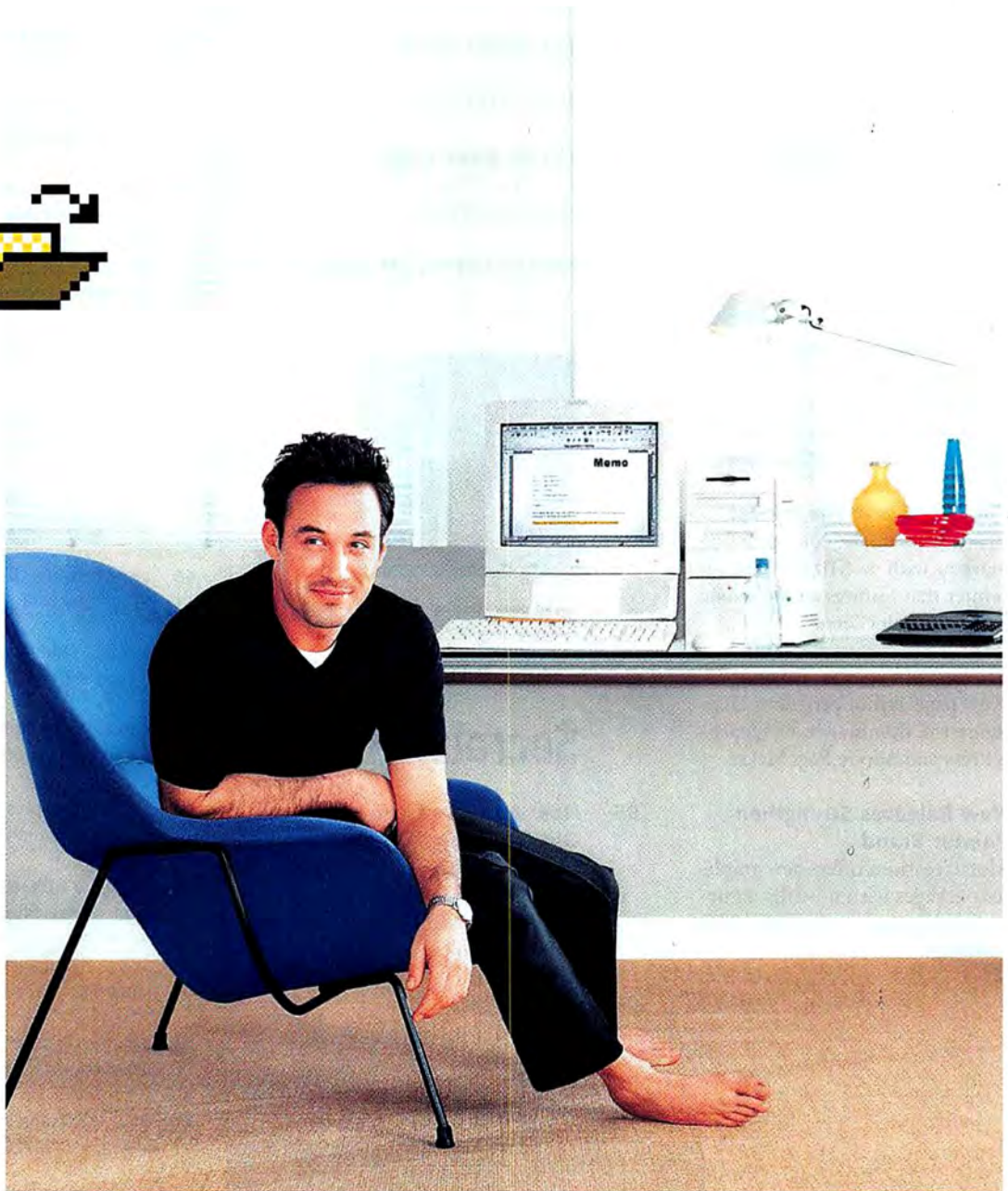
Epson goes after color
proofing, page 23.

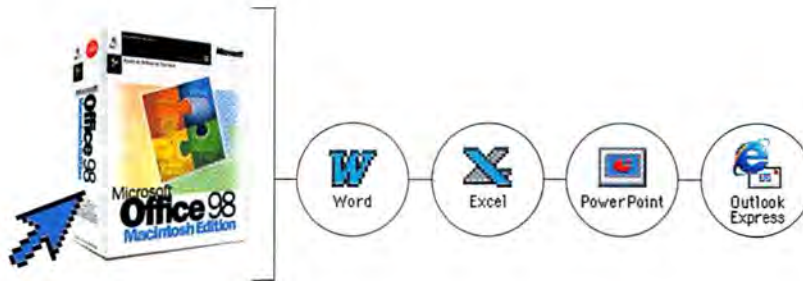
Secrets

- 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.

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** **Movioke**
Interactive cinema game
- 58** **Deadlock**
Simulation game





Introducing **Microsoft Office 98**
Macintosh Edition.

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/.

Microsoft®

Where do you want to go today?® www.microsoft.com/macoffice/now/

CAUTION

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.**
Go to <http://support.info.apple.com/ftp/8.1.us.html> or get the Mac OS 8.1 CD.
- 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



To go forward, you must backup.®

©1998 Retrospect is a registered trademark of Dantz Development Corporation. All other trademarks are property of their respective holders. Phone: 925.453.3000. Internet: www.dantz.com.

Macworld

EDITOR IN CHIEF

Andrew Gore

EXECUTIVE ASSISTANT

Patricia Carberry-Harris

EDITORIAL

EDITOR	Galen Gruman
SENIOR EDITOR/NEWS	Stephen Beale
SENIOR EDITOR/REVIEWS	Anita Epler
SENIOR EDITOR/DEPARTMENTS	Nancy Peterson
SENIOR TECHNOLOGY EDITOR	Henry Bortman
SENIOR ASSOCIATE EDITORS	Cathy E. Abes, Linda Comer, Jason Snell, Katherine L. Ulrich
ASSOCIATE EDITORS	Allyson Bates, Scholle Sawyer, Brooke C. Wheeler
EDITORIAL LAB COORDINATOR	Shawn S.J. Sadler

CONTRIBUTING EDITORS

David Biedny, Christopher Breen, Bruce Fraser, Ted Landau, Deke McClelland, David Pogue, Lon Poole, Joseph Schorr, Franklin N. Tessler

LAB

LAB DIRECTOR	Jeff S. Pittelkau
ASSISTANT LAB DIRECTOR	Susan Silvius
SENIOR LAB ANALYSTS	Jeffy K. Milstead, Kevin Mitchell
ASSOCIATE LAB ANALYST	Gil Loyola

COPY EDIT

MANAGING EDITOR	Claire H. Breen
COPY CHIEF	Paul-Michael King
SENIOR COPY EDITORS	Elissa Rabellino, Jon Zobenica

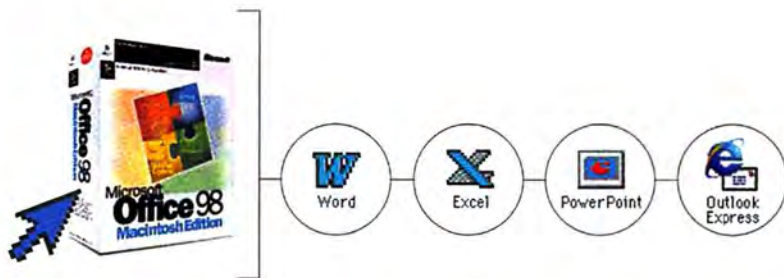
ART AND DESIGN

DESIGN DIRECTOR	Eleanor Leishman
ART DIRECTOR	Sylvia Chevrier
ASSOCIATE DESIGNERS	Martha Katt, Michael Rattary
DESIGN ASSOCIATES	Jackie Goodman, Jonathan Woolson

ONLINE

MANAGING EDITOR	James S. Bradbury
ONLINE EDITOR	Philip W. Dyer
CONTENT ENGINEER	Jeff Cheney
ASSISTANT CONTENT ENGINEER	Jessica Graves

Circle 26 on reader service card



Work different. (By this time tomorrow.)

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

Upgrade for just
\$269^{98*}
(\$449.98* for new users)

**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.



Microsoft® Where do you want to go today?*

An Apple Power Macintosh computer is required to run Office 98 Macintosh Edition. ©1998 Microsoft Corporation. All rights reserved. Microsoft and Where do you want to go today? are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. Macintosh and Power Macintosh are trademarks of Apple Computer, Inc., registered in the U.S. and other countries. *Shipping and handling charges will apply. Reseller prices may vary—estimated retail price is \$299 for upgraders and \$499 for new users. The listed prices of \$269.98 and \$449.98 are valid only from The MacZone. To qualify for the upgrade price, you must be a registered user of Microsoft Office or one of the component applications. Offer valid only in the U.S. and Canada.

Did you get your ?

Available Now!

VST Zip™ 100 Drive

for your:

**G3, 3400,
1400**



and 190/5300

Series PowerBooks®



VST
TECHNOLOGIES
Incorporated

Available At:

MacMall
1-800-222-2808

The Mac Zone
1-800-248-0800
MV02

MICRO CENTER
THE COMPUTER DEPARTMENT STORE®

MacConnection
800-998-0040

ClubMac®
1-800-258-2622

MacWAREHOUSE
1-800-255-6227

Questions? Call VST @ (978) 263-9700

iomega, the iomega logo, Zip, and The Capacity To Do More are trademarks of iomega Corporation. All other trademarks are property of their respective holders. iomega patents protected by patent applications pending in the US and other countries.

Circle 74 on reader service card

Macworld

PRESIDENT AND CEO

Colin Crawford

ASSISTANT TO THE CEO

Sharon Sanderson

CHIEF FINANCIAL OFFICER

Stephen Daniels

BUSINESS MANAGER

Eos de Feminis

ACCOUNTING COORDINATOR

Ronda Bittner

VICE PRESIDENT OF HUMAN RESOURCES

Shelly Ginenthal

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 Plevin (415/978-3138)

SALES/MARKETING COORDINATOR

Nancy Galanty
(415/978-3124)

WESTERN ADVERTISING DIRECTOR

Karl Elken (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

Jesse Wadhams (415/975-2619)

NATIONAL ACCOUNTS MANAGER

Sara Culley (970/327-4499)

ACCOUNT EXECUTIVE

Margaret Level Green (415/267-4577)

EASTERN ADVERTISING DIRECTOR

Cynthia Ramsey (973/243-1197)

NATIONAL ACCOUNTS MANAGER

Paul Bonarrigo (508/533-4020)

ACCOUNT EXECUTIVE

Jo Zotterelli (516/277-4134)

RESEARCH

SENIOR RESEARCH ANALYST

Phillip Hibbert

MARKETING

VICE PRESIDENT, MARKETING

Vickie Welch

SENIOR TRADE SHOW AND EVENTS MANAGER

Anna Noetzel

CREATIVE SERVICES MANAGER

Kelvin Gee

PRODUCTION

VICE PRESIDENT OF MANUFACTURING

Anne Foley

PRODUCTION DIRECTOR

Cynthia Neustadt

ASSISTANT PRODUCTION MANAGER

David W. McAferty

MANUFACTURING TECHNICAL DIRECTOR

Clayton Haberman

DIGITAL AD COORDINATORS

Brian Mullin,

Mark Van Slyke

AD SALES COORDINATOR

Rick Sandoval

ONLINE

PUBLISHER

Jeff Julian

NATIONAL ACCOUNTS MANAGER

Ed Ramirez

ACCOUNTS MANAGER

Nicholas Harvey

MEDIA COORDINATOR

Jamila Johnson



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)

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.

ix3D™

www.ixmicro.com



ix3D Ultimate Rez

for graphics experts who need 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 MicroStation.



ix3D Pro Rez

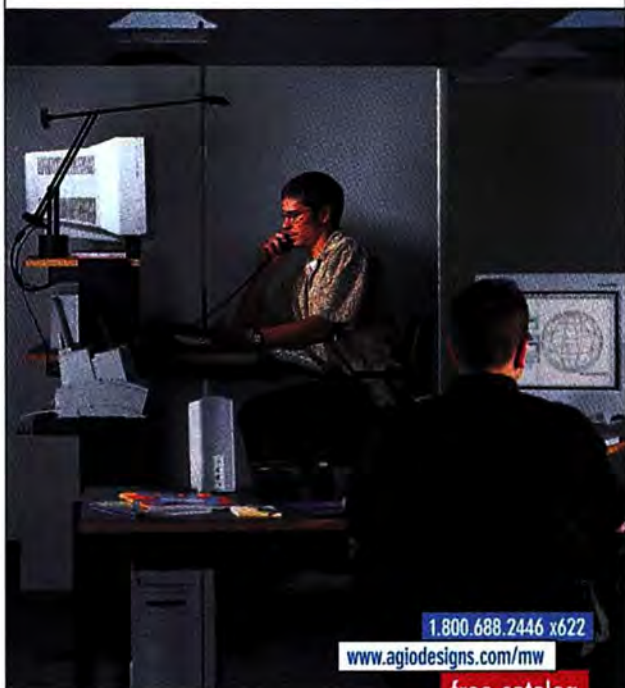
optimizes the performance and value for users who need uncompromising graphics power and who routinely operate 17-19" monitors at moderate resolutions like 1152 x 870. Video upgrade available.



ix3D Mac Rocket

provides home and office users with a blast of pure 128-bit 2D and 3D graphics power, adding speed and performance to all common operations. Video upgrade available.

work hard and fast. do it with style.



AGIO DESIGNS™
furniture for the way you do business

1.800.688.2446 x622

www.agiodesigns.com/mw

free catalog

DISCOVER A NEW WAY TO SHOP!

Find exciting product offers at the
Mac Shopper on



The Essential Macintosh Website.

www.macworld.com/buyers/shframed.htm



Contact your
Macworld sales
representative
for details.

(800) 888-8622

Macworld

HOW TO CONTACT MACWORLD

Subscription Questions

Phone	303/665-8930
Fax	303/604-7455
U.S. Mail	Subscription Services P.O. Box 54529, Boulder, CO 80322
America Online	Keyword Macworld
World Wide Web	www.zdnet.com/zdsubs/macworld/service

Reprints and Permissions

You must have permission before reproducing any material from *Macworld*. Write to Macworld, Reprints and Permissions, 301 Howard St., 16th Fl., San Francisco, CA 94105; include a phone number. To order reprints of your company's editorial coverage, call 800/217-7874.

Back Issues of Macworld

Back issues (subject to availability) are \$7 per issue for U.S. delivery (\$12 overseas); prepayment in U.S. funds is required. Send check or money order to Back Issues Department, Ziff-Davis Inc., P.O. Box 53131, Boulder, CO 80322-3131.

Macworld in Microfilm

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

Macworld Editorial

The editors of *Macworld* welcome your tips, compliments, or complaints. We are unfortunately unable to look up stories from past issues; recommend products; or diagnose your Macintosh problems by phone, e-mail, or fax. Contact Apple toll-free at 800/538-9696, ext. 500, for information on user groups in your area.

Our offices are located at 301 Howard St., 16th Fl., San Francisco, CA 94105; 415/243-0505, fax 415/442-0766.

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

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

Macworld is a publication of Mac Publishing, L.L.C. Macworld is an independent journal not affiliated with Apple Computer, Inc. Macworld, MacUser, MacWeek, Macworld Interactive, Macworld Shopper, MW, MW Lab, MW Shopper, The Desktop Critic, Expert Graphics, Quick Tips, Star Ratings, Buyers' Tools, Streetwise Shopper, and Conspicuous Consumer are registered trademarks of Mac Publishing, L.L.C. Apple, the Apple logo, Mac, and Macintosh are registered trademarks, and MacLetter and PowerBook are trademarks, of Apple Computer, Inc. Printed in the United States of America. Copyright © 1998 Mac Publishing, L.L.C. All rights reserved.



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!



The Technical Specs: OrangePC is available in 12" or 7" PCI cards (7" cards support "all-in-one" Macs); up to 233MHz MMX Intel, Cyrix® or AMD-K6; expandable RAM to 256 MB; up to 512 KB pipeline burst L2 cache on model 550; parallel port (for PC dongles); 2 high speed serial ports; game port; 3D wavetable sound in/out; 2/4MB video memory.

Now available from:

MacPowerhaus
"The Cross-Platform Connection"
(800) 615-3183

MICRO CENTER
THE COMPUTER DEPARTMENT STORE

 **Orange Micro**
inc.

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



The Super-Fast, Extremely Vast
Personal Storage Drive.*



\$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

“How I fit 5 Fortune 500 companies,
a warehouse full of big ideas, and the
entire kingdom of Valhalla into a
4 INCH SQUARE.”

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.4inchesquare.com/mwd.

† Assuming 2:1 compression ratio. Actual compression will vary with file and hardware configuration.

‡ Performance will vary when using 1GB cartridges.

©1998 Iomega Corporation. Iomega, the Iomega logo, and Jaz are registered trademarks, and “The Super-Fast, Extremely Vast Personal Storage Drive,” “Because It's Your Stuff,” and 1-Step are trademarks of Iomega Corporation. All other trademarks are the property of their respective holders. The views expressed herein are the views of the endorser and are not the views of, and do not constitute an endorsement by, any person or firm for whom the endorser has provided services. *When purchased in multi-packs. Prices listed are estimated street prices. Actual prices may vary. 2GB capacity where 1GB=1 billion bytes. The capacity reported by your operating system may differ, depending on the operating system reporting utility.

The high-performance standard in removable storage
with one million Jaz 1GB drives already out there.



BECAUSE IT'S YOUR STUFF.™



Two times the capacity and over 30% faster than the 1 gig Jaz® drive.



\$649 external drive

2 gig Jaz cartridges for as low as \$149.95*

Each cartridge has
two monster gigabytes of capacity

2GB is read/write compatible with 1GB¹¹

1-Step™ backup software can protect
up to 4 gigs (compressed¹)

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.



SHOW

Kai's Power

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 Dept. 597
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.

MAY 1998

Letters

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

continues

CORRECTIONS

- *The Emblaze WebCharger review (March 1998) was cowritten 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-Apple 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 con-

siderable 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

IN RESPONSE TO PEOPLE FLAMING Apple for relinquishing its free tech support, I'd like to give a little insight from an ex-Apple phone-support technician.

Apple cannot continue to provide free support in its current business condition—or any business condition. A toll-free number works out for Apple to be about \$13 per call for people asking how to turn their computer on. Granted, many people call in about serious bugs or engineering problems, but you would be surprised at the percentage of calls that could be prevented by the user reading the manual. If users have the choice between a free call and reading their manual, a large portion of them will make the free call. Until free tech support was taken away, we were supporting Mac Pluses and Apple II's that had been purchased at garage sales! Now tell me how a company can survive providing this service.

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

Hankering 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, 415/442-0766; or electronically via CompuServe (70370,702), MCI Mail (294-8078), America Online (keyword Macworld), AppleLink (Macworld1), or the Internet (letters@macworld.com). Include a return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of Macworld. **m**

Stranded Without the ESSENTIALS?

Get **CANVAS 5**, the only complete graphics and publishing solution.

NEW! Get up to speed fast with the
Canvas 5 Video Workshop Series
(\$59.95 SRP each). Discover the many
uses of Canvas 5 with guided,
in-depth instruction.



DTP in Photoshop™? **Nope.** Image editing in Illustrator™ or **Yeah, right.** Industrial strength vector illustration in XPress® 4? **In their dreams.** Web publishing out-of-the-box in any of these? **Not a chance.**

It's simple; with Canvas 5, you get all the illustration, photo editing, page layout, and web publishing tools you need in one fully integrated, easy-to-use application.

Vector and raster art — create both in Canvas 5. Text editing, page layout, and graphics production — Canvas 5 can handle it. Scanning and photo editing? You can do that, too. And web work? Use Colada™, our Java™-based publishing tool, to instantly convert any document to a web page or an entire web site.

So pack the essentials. 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.



Circle 57 on reader service card

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, Elliot, Marshall and Innes, Inc.

800.6CANVAS



Estimated Street Price \$399.⁹⁵
Competitive Upgrade \$149.⁹⁵

Available at:
COMPUSA
THE COMPUTER SUPERSTORE™

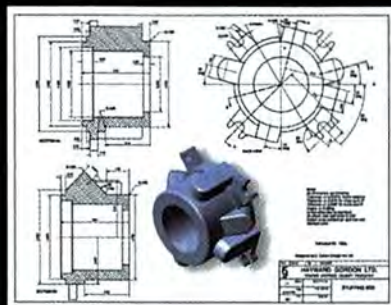
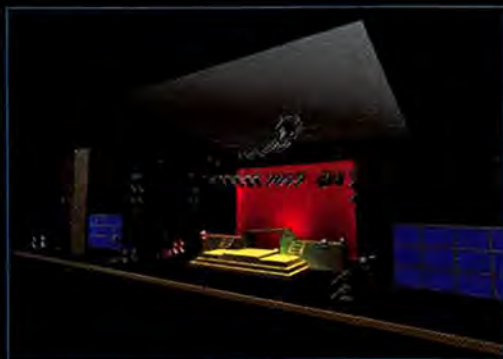
NEW VERSION!

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 coun-

tries—multi-decimal accuracy for precise drafting, a built-in database/spreadsheet to track costs and materials, 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

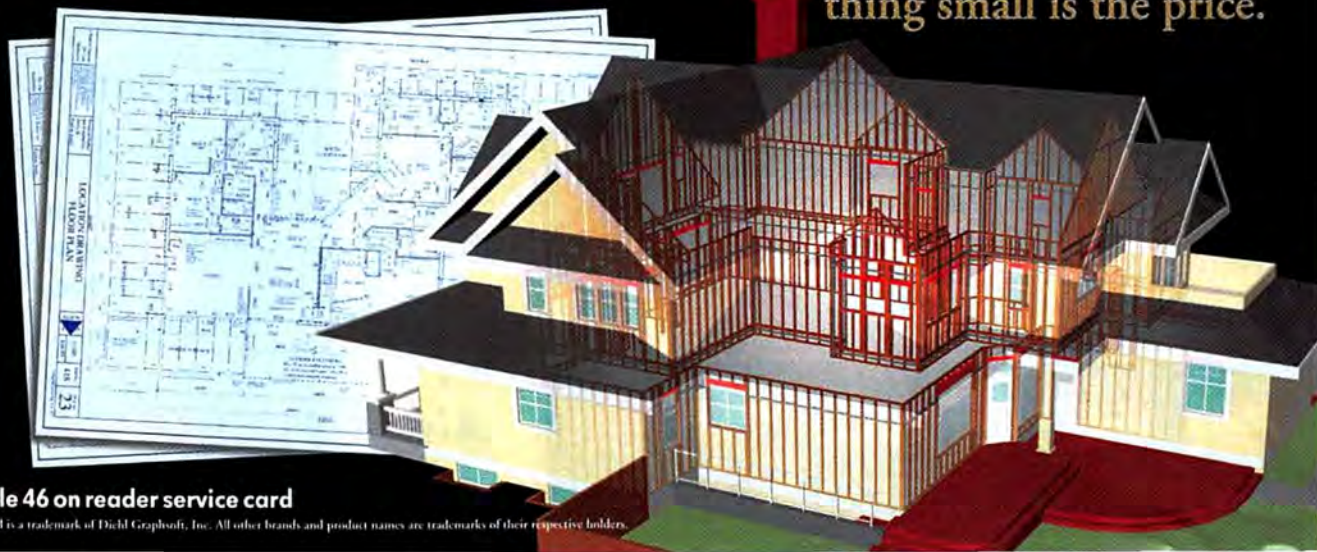
- Precise Sun Positioning
- Expression Evaluation Inside Textboxes
- Automated Databases/Spreadsheets
- Multi-Decimal Dimensioning
- Rotatable Grid and Customizable Coordinate System
- Plus Dozens of Performance and Interface Enhancements

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

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 bear it's looking to expand.



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



Internet audio

Capable of receiving downloads at up to 56 Kbps and sending at up to 31.2 Kbps. Due to FCC regulations, receiving speeds are limited to 53 Kbps. Actual speeds may vary. Requires compatible phone line and server equipment. Complies with both the determined V.90 ITU 56K standard and x2™ technology. Ratification expected September 1998. See www.3com.com/56k for details.
©1998 3Com Corporation or its subsidiaries. All rights reserved. 3Com, the 3Com logo and U.S. Robotics are registered trademarks and x2 is a trademark of 3Com Corporation or its subsidiaries. #4556 2-98



with
56K



Can a modem hurl you into
the center of a mosh pit?

In a word, no. But with
near CD-quality audio and

3Com U.S. Robotics®

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.



News

online

Mac Vendors Ponder Netscape Gambit

BROWSER DEVELOPER TO
GIVE AWAY SOURCE CODE

by Cameron Crotty

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 Macintosh 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

continues on page 26

printing

The Proof Is in the Ink-Jet

NEW EPSON PRINTER

WITH EFI RIP REDEFINES

DIGITAL PROOFING

by Stephen Beale

Epson (310/782-0770, www.epson.com), which spent much of 1997 setting new quality standards for under-\$500 ink-jet printers, is now taking on the professional graphics market with a \$10,000 digital proofer that includes a stand-alone EFI Fiery PostScript 3 color server.

The Epson Stylus Pro 5000, scheduled to ship in March 1998, is positioned as a low-cost alternative to the Iris Realist FX 5015 ink-jet printer, which sells for \$45,000. It's also likely to pose a stiff challenge to Imation's popular Rainbow 2730 dye-sublimation proofer, which sells for about \$20,000.

Where's the Proof? These printers are known as *proofers* because they are designed to replicate, as accurately as possible, what a page will look like when reproduced on a commercial press. Analog proofs, which are generated directly from the film used to make printing plates, offer the highest degree of accuracy, but they are costly and time-consuming to produce.

Digital proofers generally cannot match the accuracy of analog proofing systems, but even at \$45,000 they are cheaper than analog proofers and have the added advantage that they can work directly from digital data—there's no need to produce film on an imagesetter before you can see the proof.

Many designers who once might have produced multiple analog proofs for a project are now using ink-jet or dye-sublimation printers for preliminary proofs, turning to an analog system only when the job is ready to go on press. Some commercial printers are even accepting digital proofs as *contract proofs*—meaning the printer is contractually obligated to match the colors in the proof. In addition, digital proofers are the only choice if you're using one of the new filmless printing technologies, such as computer-to-plate systems or digital presses.

Fiery Sale At \$10,000, the Stylus Pro 5000 promises to dramatically lower the entry point for digital proofing. To put its price in perspective, consider that an EFI Fiery color server alone costs \$10,000 or more; Epson and EFI say they are counting on

rasterize, and print PostScript files and includes a built-in Web page that lets you control printer functions. Du Pont has provided color-rendering dictionaries designed to simulate popular analog proofers, including Fuji Color-Art and its own WaterProof system. Du Pont also offers a wide range of proofing media for the Epson printer.

The printer itself uses the same six-color, Micro Piezo ink-jet technology found in Epson's Stylus Photo, but the Stylus Pro 5000 boosts the resolution from 720 by 720 dpi to 1,440 by 720 dpi. Its paper cassette handles up to 11-by-17-inch paper, but you can use a straight-path paper-feed mechanism in the back to print on stocks up to 13 by 19 inches, permitting full-bleed tabloid output. The direct-feed mechanism also allows the use of heavy paper stocks, including high-rag-content watercolor papers that often jam other printers. Cost per copy ranges from about 12 cents to 7 dollars, depending on the proofing media.

Caveats Like other ink-jet printers, the Stylus Pro 5000 offers a big advantage over dye-sublimation devices in that it can print on a wide range of media. However, dye-sublimation printers—and the Iris ink-jets—are continuous-tone



Epson's \$10,000 Stylus Pro 5000 ink-jet proofer includes a stand-alone Fiery print server from EFI.

volume to compensate for the system's low price. The server and printer both include proprietary chips that prevent the use of the server with other output devices.

The server features 32MB of RAM, a 2.1GB hard drive, and a high-speed 100/10BaseT network connection. The server can simultaneously spool,

devices, meaning that they can vary the density of each dot placed on the page; the Stylus Pro 5000 uses tiny dots along with light cyan and magenta inks to simulate continuous-tone photographic output. Early print samples from Epson appear to rival the photo quality of output

continues

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 soft-

ware. 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

continues



Get 'Em while They're Hot?

Apple Computer (408/996-1010, www.apple.com) has launched a blowout fire sale on its once-exclusive Twentieth Anniversary Macintosh. These sleek 603e-based Macs—manufactured in a limited edition of 20,000 units—debuted in February 1997 at a pricey \$7,500 and were available only through select Apple Specialists. But now the computer is available from any Macintosh reseller for just \$3,999.

These Macs may seem like a bargain, but with their 603e CPUs, they are slower than the latest shipping Power Macintosh G3/266 and cost \$2,000 more.—ALLYSON BATES

**Dream Machine.
Not The Bike. The Digital Color Copier.**



Fiery Driven is a trademark of Electronics for Imaging, Inc. © 1997 Ricoh Corporation

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



Aficio Color™ 2003



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

RICOH™
Image Communication

Circle 4 on reader service card

extensions architecture offering capabilities similar to those in XTensions. 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 XTensions 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 Soft-Logik, Manhattan Graphics, and other Quark wannabes.

graphics

New Releases Strengthen Painter Brand

PAINTER CLASSIC GETS BACK TO BASICS

by Cathy Abes

Attempting 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

3-D paint software, Detailer.

With Painter Classic, the company has focused on what defined the original Painter: the program's ability to simu-



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

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.

"MAC VENDORS PONDER NETSCAPE GAMBIT"

continued from page 23

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

BUILT FOR SPEED. PRICED TO FLY. DIRECT FROM GCC.



New Printer!

Introducing two of our most advanced business printers yet, the Elite XL 20/600™ and the Elite XL 20/800™. Business machines that 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.

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

 **GCC
TECHNOLOGIES**

Keycode 805MMW

Circle 43 on reader service card

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®
- Bi-directional Parallel, LocalTalk®, RS422

2nd or 3rd Paper Feeder* Add \$299
(Includes 500 sheet Universal Tray)

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 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®
- Bi-directional Parallel, LocalTalk®, RS422

2nd or 3rd Paper Feeder* Add \$299
(Includes 500 sheet Universal Tray)

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.

GCC Technologies is a registered trademark of GCC Technologies, Inc. Elite 20/600 and Elite 20/800 are trademarks of GCC Technologies, Inc.

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

PRINTERS THAT BLOW YOUR DIRECT



New Printer!

Printer shown is the new GCC Elite 12/600.

Elite 12/600

New

- 600 x 600 dpi resolution
- 12 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum print area: 8.5" x 14"
- Letter, legal, A4, envelope
- 250 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 80 PostScript fonts, 15 PCL fonts
- 8 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 Base T)
- Bi-directional Parallel, LocalTalk®, RS422

2nd Paper Feeder* Add \$399
(Includes 500 sheet Universal Tray)

Extra 8 MB memory Add \$49

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

Elite 1212

- 1200 x 1200 dpi resolution
- 12 pages per minute
- 1 year Platinum Exchange Warranty
- Maximum print area: 8.5" x 14"
- Letter, legal, A4, envelope
- 250 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 80 PostScript fonts, 15 PCL fonts
- 16 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 Base T, 10 Base2), NetWare®
- Bi-directional Parallel, LocalTalk®, RS422

2nd Paper Feeder* Add \$399
(Includes 500 sheet Universal Tray)

Extra 8 MB memory Add \$49

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
- Maximum print area: 11" x 17"
- Ledger, letter, legal, A3, A4, envelope
- 250 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 80 PostScript fonts, 15 PCL fonts
- 8 MB RAM expandable to 64 MB
- EtherTalk, TCP/IP
- Ethernet® (10 Base T, 10 Base2)
- 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 \$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 20/800 support two additional paper feeders.

MIND. NOT YOUR WALLET. FROM GCC.

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®
- Bi-directional Parallel, LocalTalk®, RS422

2nd or 3rd Paper Feeder* Add \$299
(Includes 500 sheet Universal Tray)
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

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®
- Bi-directional Parallel, LocalTalk®, RS422

2nd or 3rd Paper Feeder* Add \$299
(Includes 500 sheet Universal Tray)
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
- 24 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 \$329
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

Service. Satisfaction. Guaranteed.

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@gcctech.com.



**GCC
TECHNOLOGIES**

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.gcctech.com

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

Keycode 805MWF

Reviews

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 afflictions 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, VirusScan 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



RICHARD DOWNS

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 use-

ful 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—

REAL PRODUCTS
REAL RATINGS

Reviews you can trust: Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.

OUTSTANDING: ★★★★★

VERY GOOD: ★★★★

GOOD: ★★★

FLAWED: ★★

UNACCEPTABLE: ★

both part of the upcoming Office 98 for Macintosh—each sport a “macro-virus protection” preference 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



Hide and Seek VirusScan 3.0’s cryptic main window interface provides access to each of the program’s feature areas.

On the Horizon:

NORTON ANTIVIRUS FOR MACINTOSH

AT PRESS TIME, SYMANTEC ANNOUNCED PLANS TO SHIP ITS NEXT-GENERATION antivirus package early this summer. The package formerly known as Symantec AntiVirus for Macintosh—or SAM—will be rechristened Norton AntiVirus for Macintosh (NAV) in the new release, version 5.0.

Symantec promises that NAV’s virus-definition upgrades will be free for the life of the product. Furthermore, Symantec says that its software will be able to update itself automatically over the Internet, guaranteeing that you always have the latest version of the virus descriptions. These two features alone set NAV apart from its competition.

Symantec’s upgrade reportedly will also contain cleverer ways of detecting new macro viruses, though specifics weren’t yet available as we went to press. And unlike its predecessor, SAM 4.5, NAV will be able to repair infected files without launching the main application; the current version of Virex includes a similar feature.

If the shipping version lives up to the promise of its press release, Norton AntiVirus for Macintosh could become an interesting addition to the Mac virus-fighting arsenal. We’ll review the product when it ships, to determine whether Symantec truly delivers.

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.—STEPHAN SOMOGYI

Virex 5.8.1

RATING: ★★★ **PROS:** Excellent integration; fast repeat scanning. **CONS:** Overzealous scans. **COMPANY:** Dr. Solomon’s Software (888/377-6566, www.drsolomon.com). **LIST PRICE:** \$69.

VirusScan 3.0

RATING: ★★★ **PROS:** Offers basic antivirus features. **CONS:** Cryptic interface; other applications’ performance suffers during background scans. **COMPANY:** Network Associates (408/988-3832, www.nai.com). **LIST PRICE:** \$29.95.

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

outs 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.

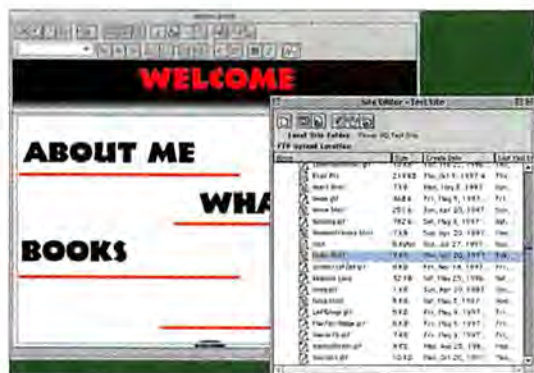
Visual Page no longer has an edge over Home Page in table formatting: you can now select the contents of multiple cells and format all of them at once; you can apply background colors or images to either one cell or all cells in a table; and it's now easier to resize rows, columns, and cells. Version 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



Viewing the Gestalt The Site Editor shows off Claris Home Page's new ability to work with sites as well as individual pages. From this window, you can check your pages and fix broken links.

Communications last year, Home Page makes it easy to build Web pages that can view, search, and modify FileMaker Pro databases over the Internet. To do this, your Web pages need to contain the special HTML-like tags of the Claris Dynamic Markup Language (CDML). These tags trigger a new component in FileMaker Pro, the Web Companion, which interprets the CDML and turns it into FileMaker commands.

If you aren't thrilled with the prospect of learning another markup language, the included FileMaker Connection Assistant can walk you through the process of building a FileMaker-enabled site. This assistant lets you select the database capabilities you want users to have, choose which fields from which FileMaker lay-

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.

UMAX[®]

expands

the Mac market again...



(in fact, our S900 has 3 more PCI expansion slots than Apple's G3)

The completely expandable **SuperMac S900BASE w/G3**.



Voted MacWorld's **"Best Professional System."**

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

Now with
2 year Warranty
& Free Tech
Support

FOR MORE INFORMATION ON WHERE TO PURCHASE
THE S900BASE w/G3, CALL **1-888-625-UMAX**
OR VISIT US AT **www.umax.com**

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.zdnet.com/pages/march.98/Reviews.4207.html>

S900BASE w/G3 has 64MB RAM, 4GB 7200rpm SCSI HD, 24x CD-ROM and ships with our unique G3 card. This G3 card is a UMAX edition MAXpower Pro+, 250MHz PowerPC 750 processor card with a full 1MB backside cache running at 166MHz. Estimated street price: \$2999. Monitor not included. Price and features subject to change without notice. See web for details. © 1999 All rights reserved. SuperMac is a registered trademark licensed to UMAX Computer Corporation. Mac and the Mac OS logo are trademarks of Apple Computer, Inc. used under license. PowerPC and the PowerPC logo are registered trademarks of International Business Machines Corporation.

Circle 99 on reader service card

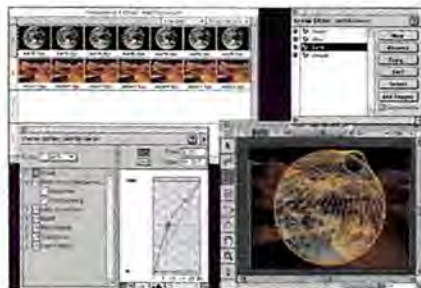
Elastic Reality 3.1

MORPHING SOFTWARE FOR EFFECTS PROS

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 for 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 Bézier shapes; and trans-



Production-Minded Precision Elastic Reality 3.1's Group Editor (upper right) color-codes the masks for the earth and sand dunes to distinguish among the elements, while the Curve Editor (lower left) lets you control how the parameters change over time.

form 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 Bézier 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 *n*th 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 Bézier 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 Booleans, 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 Bézier shapes. For example, say 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 Bézier 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 TIFF. 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

RATING: **PROS:** Professional-quality morphing; precision controls; good masking tools; robust file-format support. **CONS:** Pricey; expensive support policy; hardware copy protection; lacks real-time previews. **COMPANY:** Avid Technology (978/640-6789, www.avid.com). **LIST PRICE:** \$1,299.

UMAX

Strong Today. And Tomorrow.

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 S900'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.

UMAX[®]
www.umax.com 888-625-UMAX



Scanners
(#1 in the U.S.)



Digital Cameras



Award-winning
Mac-OS Compatibles



Intel-based
notebooks and
workstations

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 precoded 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.

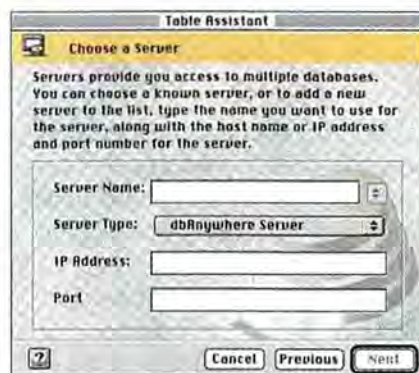
But the Professional Development Edition's most attractive feature is an interface that lets you drag and drop a huge assortment of components into a visual-editing window and then edit the resulting code in another window as if it were text. Many programming environments claim to offer that capability, 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



Data on Demand An assistant in Visual Café for Java 2.0 Database Development Edition offers straightforward, step-by-step instructions for allowing FileMaker and SQL access over the Web.

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 for SQL, 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 SEITER

Visual Café for Java 2.0 Database Development Edition

RATING: $\text{★★★★}\frac{1}{2}$ **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: $\text{★★★★}\frac{1}{2}$ **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.

HONEY, GO BOOT UP THE PHOTO ALBUM.



©1998 Iomega Corporation. Iomega, the Iomega logo, and Zip are registered trademarks, and ZIP BUILT-IN logo, "Because It's Your Stuff," and "The Capacity To Do More" are trademarks of Iomega Corporation. "MSRP" Disk price based on purchase of 10-pack. Actual prices may vary. See PC makers for ZIP BUILT-IN prices.



Zip drive. The Capacity To Do More.[®]
Drives for \$149.95 and 100MB disks
for as low as \$12.95.*



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.

BECAUSE IT'S YOUR STUFF.[™]



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

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

RATING: $\frac{4}{5}$ **PROS:** Active Pull; on-demand group retrieval. **CONS:** Difficult to configure; delays in retrieving new newsgroups. **COMPANY:** NetWin (303/347-8657, www.netwinsite.com). **LIST PRICE:** \$485.

NewsRunner 1.0

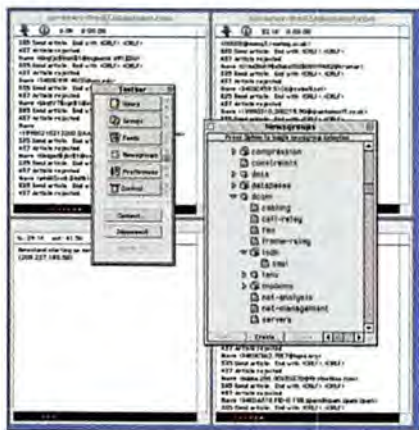
RATING: $\frac{3}{5}$ **PROS:** Active Pull; e-mail distribution; HTML output. **CONS:** Doesn't support newsreader applications; slow news collection; no reply capability. **COMPANY:** Hi Resolution (508/543-6955, www.hi-resolution.com). **LIST PRICE:** Individual license, \$99.

Newstand 1.0

RATING: $\frac{5}{5}$ **PROS:** Easy to configure; fast, multiple-newsfeed connections; downstream feeds. **CONS:** No Active Pull. **COMPANY:** Imagina (503/224-8522, www.imagina.com). **LIST PRICE:** Newstand Lite, \$498; Newstand Pro, \$998.

RumorMill 1.1

RATING: $\frac{2}{5}$ **PROS:** Active Pull; downstream feeds. **CONS:** Slow; streaming-delivery mode nonfunctional. **COMPANY:** Stairways Software (news-server@stairways.com.au, www.stairways.com). **LIST PRICE:** Individual license, \$35; site license, \$500.



Feeds and Speeds Newstand's multiple newsfeeds collect news faster than any other server but still let you be selective about what you receive.

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

HOW DO YOU FOLLOW UP A COOL MULTIMEDIA PRESENTATION?

COOL MULTIMEDIA HANDOUTS.



©1996 Iomega Corporation. Iomega, the Iomega logo, and Zip are registered trademarks, and ZIP BUILT-IN logo, "Because It's Your Stuff", and "The Capacity To Do More" are trademarks of Iomega Corporation. *MSRP. Disk price based on purchase of 10 pack. Actual prices may vary. See PC makers for ZIP BUILT-IN prices.



Zip drive. The Capacity To Do More.[™]
Drives for \$149.95 and 100MB disks
for as low as \$12.95.*



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

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

BECAUSE IT'S YOUR STUFF.[™]



As
Extreme
As You
Want
to Be!



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

Intergraph and the Intergraph logo are registered trademarks of Intergraph Corp. The Intel Inside Logo and Pentium are registered trademarks and MMX is a trademark of Intel Corp. Microsoft and Windows NT are registered trademarks of Microsoft Corp. Intergraph is not responsible for inadvertent errors. Copyright 1998 Intergraph Corp. Huntsville, AL 35894-0001 JAC980199



INTERGRAPH
COMPUTER SYSTEMS

Circle 9 on reader service card

Internet Explorer 4.0

MICROSOFT'S BROWSER ADDS NEW FEATURES—AND NEW BUGS

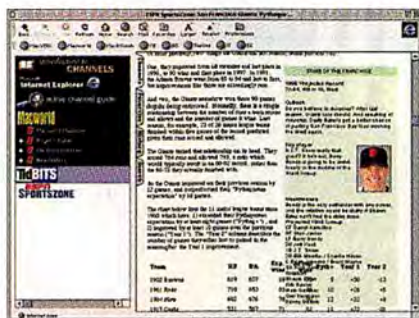
WHEN MICROSOFT RELEASED the first Macintosh version of the Internet Explorer Web browser, it was a revelation. Unlike Netscape's slow and bulky browser, Explorer was small and speedy (albeit missing some of Navigator's features). With Internet Explorer 4.0, Microsoft has caught up with Netscape: the 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-



Good, Bad, and Ugly While its Explorer Bar (left) is handy, Internet Explorer 4.0 still has problems rendering DHTML and even regular HTML.

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 off-line 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: $\$1\frac{1}{2}$ **PROS:** Nice interface touches; strong offline-browsing features; fast Java engine. **CONS:** Buggy HTML and DHTML rendering; crash-prone. **COMPANY:** Microsoft (425/882-8080, www.microsoft.com). **LIST PRICE:** Free.

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

Going to Extremes

Heli-Skiing

Kayaking

Trekking

Spelunking



EVERY

It's a jungle out there. But with the new Avery® Self-Seal Mailer you can beat the competition by cutting the mailing process in half. It's the only pre-scored, tri-fold product of its kind with a built-in adhesive strip. And it's easy to create your own mailers using popular publishing software and an ink jet printer. So there's plenty of time for your own adventures.

How will you use us today?™

www.avery.com

1-800-477-4404

Call for free sample pack.

Avery® Self-Seal Mailer 8325™

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 res true colour and workstation-class 3D performance. Get Nexus GA to supercharge your graphics performance. Ideal for working in resolutions above 1152x870 **up to 1920x1080**.



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

© Copyright 1998 ATI Technologies Inc. All rights reserved. ATI, the ATI logo and RAGE are registered trademarks of ATI Technologies Inc. All other company names and product names are trademarks of their respective owners. All other trademarks are the property of their respective owners. All specifications are subject to change without notice. ATI makes no warranty, expressed or implied, for the use of the product in any other manner than that intended by ATI.

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



SiteWarrior 1.1

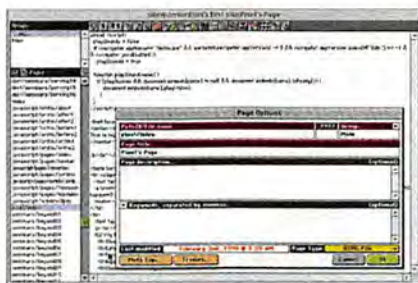
POWERFUL, SPEEDY WEB-SITE BUILDER

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 Button-Group 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



Unique Interface With its rainbow of colors, SiteWarrior's interface takes some getting used to.

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

RATING: ★★★½ **PROS:** Fast; very powerful database capabilities; lets you change entire sites without changing every page. **CONS:** Some bugs; nonstandard interface; sparse documentation; no support for drag and drop. **COMPANY:** ProVue Development (714/841-7779, www.sitewarrior.com). **LIST PRICE:** \$499.

Even your proposal on
"Federal Tax Planning"
can be a real page turner.

TAX ISSUES
ANALYSIS
PLANNING
SUMMARY

So, your proposal isn't exactly a thriller. With Avery® Direct Print® Custom Dividers, you can customize the entire divider — tab and page — with your laser printer. Everything from cool graphics to company logos. And formatting software is included. The end result? You'll dazzle clients, even if the subject matter is a little dry.

AYER
How will you use us today?
www.avery.com
1-800-477-4404 x167
Call for free sample pack.

Introducing SuperClear.™

A monitor with an image so clear we had to trademark it.



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 .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.

Model	G773
CRT Screen Size	17" (16.0" viewable)
Dot Pitch	0.26mm
Maximum Resolution	1,280 x 1,024
Recommended Resolution	1,024 x 768 @ 87Hz



ViewSonic G8771
March 1998



VS Professional Series
December 1997



ViewSonic 17GA
September 1997



ViewSonic PB115
January 1998

See The Difference® that earned over 300 awards worldwide.

(909) 869-7976 Fax: (909) 869-7958 • Internet: www.viewsonic.com • Specifications subject to change without notice.
Copyright © 1997, ViewSonic Corporation, all rights reserved. • Corporate names and trademarks stated herein are the property of their respective companies.



Circle 59 on reader service card

Final Effects Complete

TOP VIDEO-EFFECTS COLLECTION GROWS, GOES CROSS-PLATFORM

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



Out for a Spin Here's Final Effects Complete's Advanced 3D filter in action; note the extensive array of settings in the Effect Controls window. The starburst was created with the new Light Rays filter.

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

RATING: ★★★ **PROS:** Unmatched array of effects; superb particle generators; thorough manual; multiprocessor support. **CONS:** Expensive. **COMPANY:** MetaCreations (805/566-6200, www.metacreations.com). **LIST PRICE:** \$1,195.

Surf on over to
"www.avery.com"
for some free software.

It's time to put that mouse to work. Visit the Avery website and download a free copy of the Avery Wizard™ add-in software. It's the easiest way to format and print tons of Avery products from within Microsoft® Word. The Avery Wizard supports over 135 Avery laser and ink jet products, from labels to cards to tab dividers. So grab that mouse by the horns and drop in for a visit.

AVERY
How will you use us today?
www.avery.com
1-800-477-4404 x167
Call for free sample pack.

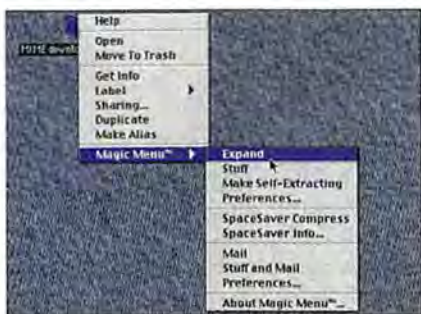
StuffIt Deluxe 4.5.1

MINOR BUGS, MAJOR USEFULNESS

AS THE INTERNET BECOMES more popular, the gulf between the Mac's ease of use and the Net's Unix-descended complexity becomes ever wider. Fortunately, the problem of downloaded and e-mailed files in bizarre formats is fading, thanks to StuffIt Deluxe. If a file's name ends in .sit, .cpt, .pkg, .zip, .arc, .gz, .tar, .Z, .lha, .uu, .hqx, .bin, or MIME, StuffIt 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 StuffIt'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 StuffIt's Finder menu isn't new, but it now works with America Online, Claris Emailer, and Lotus cc:Mail. Finally, StuffIt can now mount disk images, such as ShrinkWrap and Apple Disk Copy files.

But the shareware products StuffIt Expander 4.5 and DropStuff 4.5 can decode



UnStuffIt Deluxe In Mac OS 8, the ability to unstuff alien-looking files is just a control-click away.

all those formats, too. So what makes Deluxe deluxe? Finder integration. As in StuffIt 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. Keystrokes (⌘-S and ⌘-U, respectively) stuff and unstuff highlighted Finder icons, and only Deluxe offers the convenience of SpaceSaver, 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: SpaceSaver 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, StuffIt's importance to Mac fans has gradually changed. In this age of high-capacity hard drives and inexpensive Zip disks, we no longer need StuffIt to save us disk space; instead, we need it to extract useful data from cryptically encoded downloads. Both the commercial and the shareware StuffIt 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 StuffIt—but Aladdin needs to eliminate the last few minor bugs first.—DAVID POGUE

RATING: ★★★½ **PROS:** Unstuffs every conceivable downloaded file format; archives work like Finder folders. **CONS:** Buggy; SpaceSaver incompatible with Mac OS 8.1. **COMPANY:** Aladdin Systems (408/761-6200, www.aladinsys.com). **LIST PRICE:** \$129.95.

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



Comparative Anatomy EtherPeek's new Summary Snapshot feature lets you compare current network performance with baseline statistics.

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.

—MEL BECKMAN WITH JASON EGGLESTON

RATING: ★★★★★ **PROS:** Comprehensive protocol support; comparative summary statistics; HTML output; sophisticated plug-in analyzers. **CONS:** None. **COMPANY:** AG Group (510/937-7900, www.aggroup.com). **LIST PRICE:** \$995.



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 Insta.HTML 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 OLIVER TWIST OF VIDEO editors, VideoShop is an appealing but troubled orphan that has bounced from one home to another. Settled now into the Strata family, VideoShop 4.0.1/3D sports 3-D features and an enhanced interface. It still falls short of Adobe Premiere in many ways, but it also has some unique strengths that make it a good choice if you're on a budget and want to create multilayer video compositions.

The biggest interface change in the Power Mac-only VideoShop 4.0.1 is the addition of a Premiere-like Bin window that holds a project's imported media. (Previous VideoShop versions used a confusing folder-and-desktop metaphor.) As in earlier versions, you arrange 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



Video Cubism VideoShop 4.0.1/3D can map clips onto 3-D surfaces, which you can spin and resize using Tween tracks.

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 Air-Works' TuneBuilder, which builds custom-length music soundtracks in a variety of musical styles. TuneBuilder is more cum-

bersome 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 VideoShop 4.0.1/3D 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: ★★★½ **PROS:** Easy to learn and use; novel QuickDraw 3D support. **CONS:** Doesn't support Premiere plug-ins; some design lapses.

COMPANY: Strata (801/628-5218, www.strata.com). **LIST PRICE:** \$495 (\$89 through June).

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



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.

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 downloaded the page in 41 seconds and reloaded 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.

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 SmartFetch feature seems to have little effect, however.

Macworld's Buying Advice For modem 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 NEGRINO

RATING: ★★★ **PROS:** Accelerates loading of previously viewed sites; cached pages are searchable. **CONS:** Doesn't live up to performance claims; SmartFetch is ineffective. **COMPANY:** Connectix (650/571-5100, www.connectix.com). **LIST PRICE:** \$34.95.

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: _____

State: _____ Zip: _____ Country _____

Phone: _____

Brand of UPS Used? _____ # _____

of Macs on Site? _____

Brand of Servers Used? _____ # _____

*Become an Expert!
FREE from APC: 16 pages
of detailed information
about the hazards of bad
power and how to choose
a UPS to prevent them.*



promo.apcc.com KEY CODE
C779Z
(888) 289-APCC x8321 • FAX: (401) 788-2797



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE

APC[®]

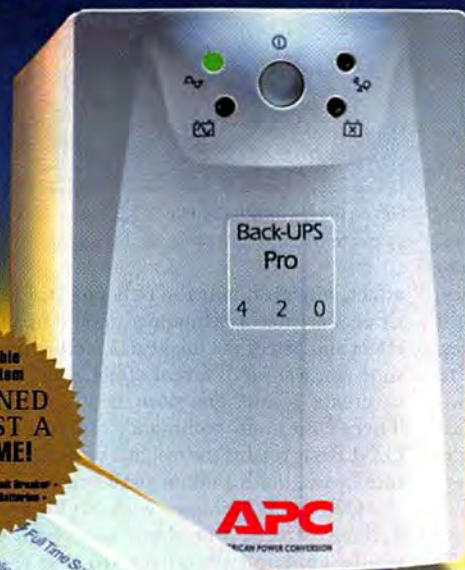
AMERICAN POWER CONVERSION

DEPT. C779Z
132 FAIRGROUNDS ROAD
PO BOX 278
WEST KINGSTON RI 02892-9920



Nothing Lasts Longer

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



Renewable
UPS System
**DESIGNED
TO LAST A
LIFETIME!**

• User-Replaceable Circuit Breaker
• User-Replaceable Batteries

Back-UPS Pro® Power User Feature

Automatic Voltage Regulation (AVR) and CellGuard™ intelligent battery management extend battery life, speed recharging and let you work through prolonged brownouts without wasting battery power

APC Safety, Readiness and Reliability

Microprocessor-controlled automatic battery self-test regularly checks status of the unit and ensures battery readiness

QuickSwap™ user-replaceable battery system lets you easily renew the UPS system and avoid factory service delays

Push-button circuit breaker provides user-resettable overload protection and eliminates the need to replace a traditional fuse or even the entire "disposable" UPS

Internet and network ready

Site Wiring Fault Indicator automatically identifies building wiring problems

BlockSafe® outlets give you room to plug in transformer blocks



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 Back-UPS Pro®, Back-UPS® and Back-UPS Office® will provide runtime which meets or exceeds that of any same VA UPS for desktop PC applications or your money back. For more information, visit www.apcc.com

Safe, even from lightning

APC multi-stage surge suppression clamps down on lightning and offers a \$25,000 guarantee against damage to your equipment.

APC packs the power and features desktop users want, plus the peace of mind and legendary reliability reflected by over 8,000,000 field-tested and proven units.



"Best Uninterruptible Power Supply" "With its wealth of features... APC Back-UPS Pro makes it easy to protect your equipment and data against electrical surges, brownouts, and blackouts."

APC products are available at:



©1998 APC. All Trademarks are the property of their owners. BK487EF - US

(800)347-FAXX PowerFax

E-mail: apcinfo@apcc.com

132 Fairgrounds Road, West Kingston, RI 02892 USA

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

KEY CODE C779Z

☐ YES! I'd like more information. Please send my FREE catalog and UPS selection Guide.
☐ NO, I'm not interested at this time, but please add me to your quarterly newsletter mailing list.

Name: _____

Title: _____ Company: _____

Address: _____

City/Town: _____

State: _____ Zip: _____ Country: _____

Phone: _____

Brand of UPS used? _____ # _____

of Macs on site? _____ # _____

Brand of Servers used? _____ # _____



OFFICIAL POWER PROTECTION SOLUTIONS

(888) 289-APCC x8321 • FAX: (401) 788-2797

APC has won more awards for reliability than all other UPS vendors combined.



Circle 72 on reader service card

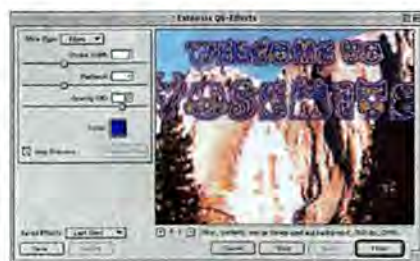
QX-Effects 3.0

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 a 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



Fun on the Fly With QX-Effects 3.0.1, you can easily create wild effects such as this blue glow.

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. There's no undo command, but because QX-Effects retains the original text and picture boxes, that's a minor omission.

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, Quark-

XPress 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

RATING: ★★★ **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.

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 removables. 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"



An Eye on Your Drive HDT 2.5's Event Monitor lets you keep track of whether your hard drive is being naughty or nice; if errors appear, your data could be in peril.

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 ease 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: ★★★ **PROS:** Polished user interface; monitors drives' health. **CONS:** Can't use Disk First Aid with removables; no SCSI Disk Mode for newer PowerBooks. **COMPANY:** FWB (650/482-4800, www.fwb.com). **LIST PRICE:** \$199.

Your Fears Unleashed.

Your Senses Expanded.

Your Reality Altered.

Forever...

MacSoft

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 on 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



A Modal Citizen Test Strip 2.02 includes a new thumbnail layout mode for viewing color corrections.

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, which sometimes caused 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

RATING: ★★★★★ **PROS:** Speedy; intuitive; inexpensive. **CONS:** Thumbnails available only in color-correction mode; no panning in magnified views. **COMPANY:** Vivid Details (805/646-0217, www.vividetails.com). **LIST PRICE:** \$149.

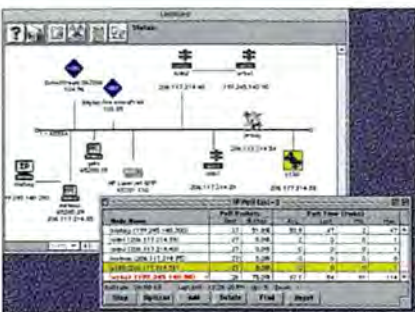
LANsurveyor 4.0

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



Watchful Eye LANsurveyor monitors devices on your LAN by polling them at regular intervals and tracking the average accessibility of each node.

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. Worst of all, 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: ★★½ **PROS:** Generates hardware and software inventory reports; remote application launching. **CONS:** Weak IP discovery and monitoring; no SNMP traffic-rate monitoring; single SNMP community name. **COMPANY:** Neon Software (510/283-9771, www.neon.com). **LIST PRICE:** Five zones, \$295; unlimited zones, \$495.

Unreal™



(actual gameplay screen)

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



westlake
INTERACTIVE

Coming Soon...

MacSoft®

Unreal™ ©1997 Epic Megagames, Inc. All rights reserved. Created by Epic Megagames, Inc. Published and distributed by MacSoft® an affiliate of GT Interactive, Corp. All other trademarks are the property of their respective companies.

Circle 23 on reader service card

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 in to fill 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



A Familiar Environment Entable's interface mimics QuarkXPress's, from the appearance of the document window to the Tools and Layout palettes.

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 cre-

ate multipage 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 its 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

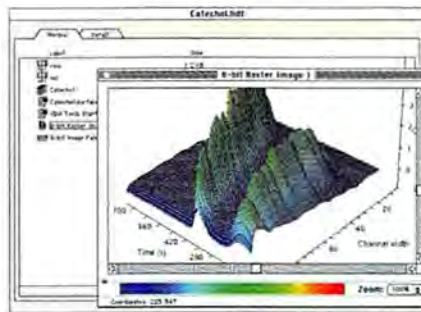
RATING: **PROS:** Tightly integrated with XPress; XPress-like interface; excellent control over the appearance of tables, cells, and text. **CONS:** XPress/Entable combination causes crashes; interface quirks. **COMPANY:** Tableworks (425/392-7745, www.tableworks.com). **LIST PRICE:** \$299.

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



Ups and Downs In addition to translating data tables into 2-D or 3-D color images, Noesys 1.1.2 offers unique data-manipulation and file-organization features.

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 instant-

aneous, 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

RATING: **PROS:** First-rate scientific-imaging utilities; powerful, FORTRAN-like macro language. **CONS:** Printed documentation costs extra. **COMPANY:** Fortner Software (703/478-0181, www.fortner.com). **LIST PRICE:** \$795.



GO FROM 0 TO 30 IN ONE MOTOR-DRIVEN SECOND. THE CANON OPTURA DIGITAL CAMCORDER.



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

optura LEADER OF THE NEW WORLD.



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

Simulated Demonstration
Digital Motor Drive Is A Trademark Of Canon, Inc.
The "DV" Logo Is A Trademark
©1997 Canon U.S.A., Inc.

Canon
Circle 23 on reader service card

Movioke

LIGHTS . . . CAMERA . . . OVERDUB!

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.

In 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



Ready on the Set! Movioke turns a microphone-equipped Mac into a do-it-yourself overdub machine.

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 no-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

RATING: ★★★½ **PROS:** Hilarious idea; dirt cheap. **CONS:** Awkward design; grainy playback; Dennis Miller. **COMPANY:** Bandai Digital Entertainment (714/816-9700, www.bdec.com). **LIST PRICE:** \$29.95.

Mac users appreciate easy. And no one makes having a website easier than InterLand®. From as little as \$19.95 a month, you can start a business, promote an existing business or even share your hobby with the world. And we'll be with you every step of the way with toll-free, 24 hour support. We can even help you with professional website design. Whether you're a beginner or a computer veteran, Interland can help bring you the world.

InterLand® Inc.
www.interland.net



30 Day
Money Back
Guarantee

HE'S GOT A WEBSITE. DO YOU?

- Website Hosting
- Website Design
- Reseller Programs

**Pricing From
\$19.95 per Month**

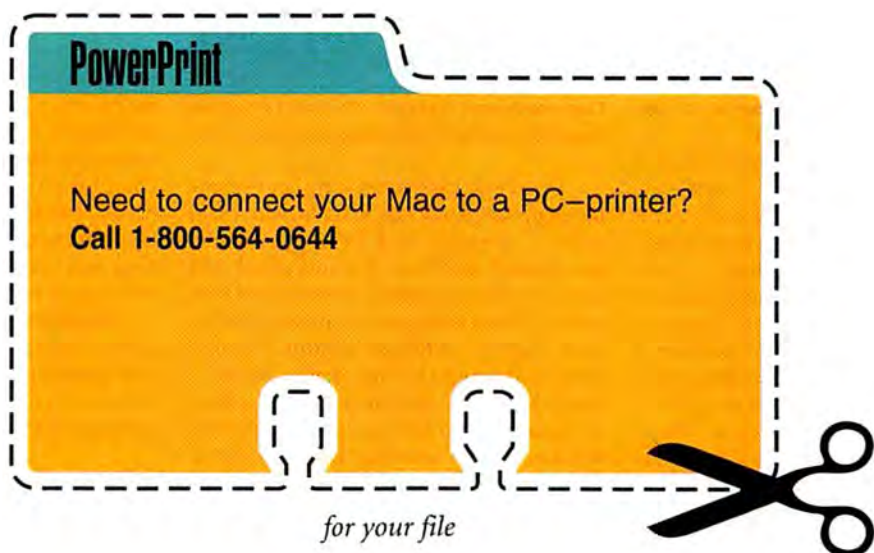
- www.anynameyouwant.com
- 80 megabyte storage
- unlimited e-mail forwarding
- unlimited e-mail aliases
- unlimited e-mail autoresponders
- free domain registration*
- front page '97 & '98 support
- real time credit card servers
- unix and nt servers
- anonymous ftp
- real time statistics
- secure server
- RealPlayer
- RealAudio
- Cold Fusion and more

1-800-599-0547
(404) 586-9999

The Only Website Hosting Company With 24 Hour Toll-Free Support

*EXCLUDES INTERLAND'S \$50 ANNUAL DOMAIN FEE.
NAME MAY SET UP ON ALL ORDERS. \$49 ONE TIME
SET UP FEE ON NEW WEBSITES.

Circle 10 on reader service card



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. After all, 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®

4664 Lougheed Highway, Suite 188, Burnaby, BC, Canada V5C 6B7
PH: 604.473.3600 FAX: 604.473.3699 E-MAIL: info@infowave.net
© 1997 Infowave Wireless Messaging Inc. Infowave, the Infowave logo, PowerPrint, and the PowerPrint logo are trademarks of Infowave Wireless Messaging Inc. which may be registered in certain jurisdictions. All other trademarks are property of their respective owners.

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 stand-off 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!



Clear and Present Manager Deadlock's entertaining graphics painlessly deliver important information.

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

RATING: ★★★ **PROS:** Simple interface; fun graphics/sound; approachable level of complexity. **CONS:** Not challenging enough for hard-core sim fans; no "hot seat" play. **COMPANY:** MacSoft (612/509-7600, www.wizworks.com/macosft). **LIST PRICE:** \$44.95.

Take the Fast Track to HFS Plus

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

Alsoft PlusMaker

www.AlsoftInc.com
800-ALSOFT1

Macworld
BEST OF SHOW



	PlusMaker	Manual Conversion
Effortlessly makes current Mac disks into HFS Plus disks without erasing and restoring from backups	YES	NO
Existing aliases and backup storage sets continue to work	YES	NO
Maximizes space savings with smallest possible allocation block size	YES	NO
Optimizes directory performance	YES	NO

Requires Mac OS 8.1 or later. Alsoft & PlusMaker are registered trademarks of Alsoft, Inc. All other trademarks acknowledged. ©1993-1998 Alsoft, Inc. All rights reserved.

THE UTILITY COMPANY
ALSOFT

Circle 140 on reader service card

NOTHING
COMES CLOSER
TO REALITY.



RASTEROPS®

	CRT size (viewable)	Dot pitch	Maximum resolution
Mc 801 HR	21 inch (20")	22 mm (h) .16 mm (v)	1600 x 1200 @76 HZ
Mc 801	21 inch (20")	22 mm (h) .16 mm (v)	1600 x 1200 @71 HZ
Mc 7515	19 inch (18")	22 mm (h) .14 mm (v)	1600 x 1200 @75 HZ
Mc 6315	17 inch (15.9)	26 mm	1280 x 1024 @78 HZ
Mc 6215	17 inch (15.9)	28 mm	1152 x 870 @75 HZ

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.



CDW 800 800-4239 Club Mac 800 258-2622 Express Direct 800 925-6777 Mac Connection 800 800-2222 Mac Mail 800 222-2808 Mac Market 800 223-4622 Mac Warehouse 800 255-6227 Mac Zone 800 248-0800
HITACHI-NSA, 200 Lowder Brook Drive, Westwood, MA 02090 TEL: 800 441-4832. Faxback: 800 555-8552. www.nsa-hitachi.com

Circle 74 on reader service card

HITACHI

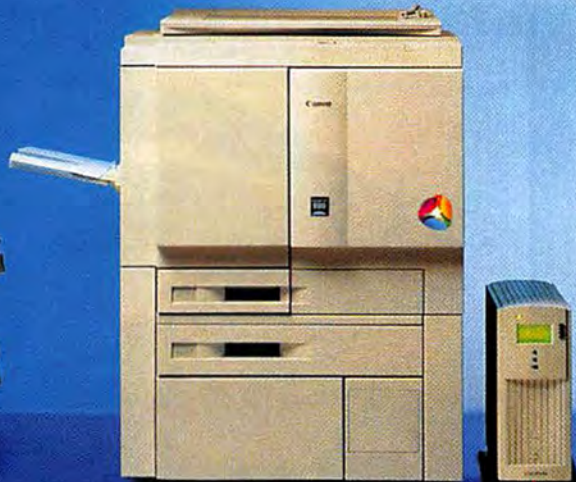
Choosing a quality color system

1

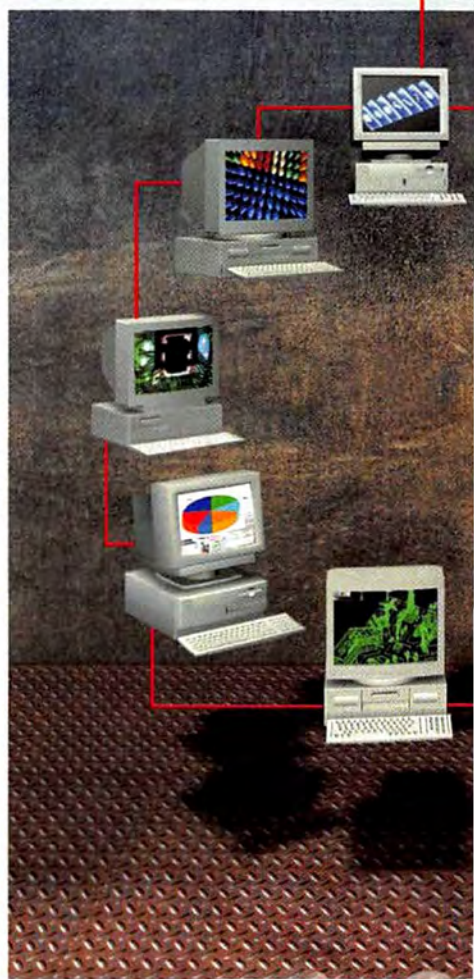
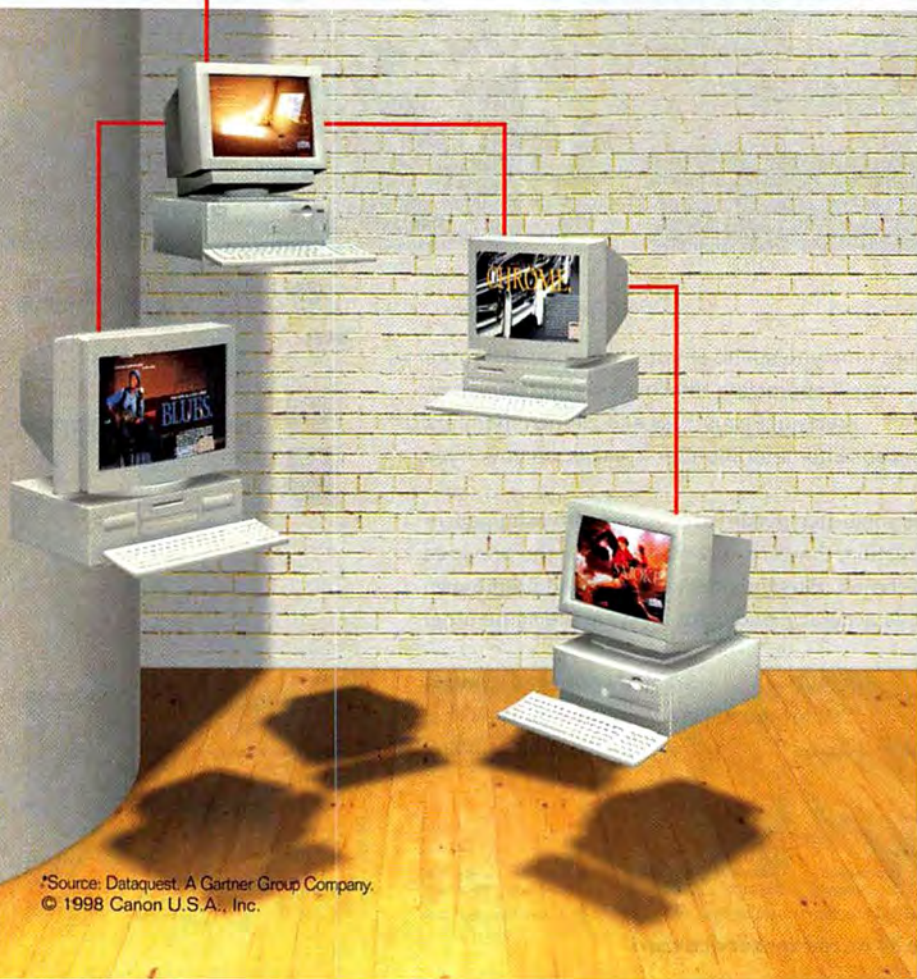


CLC 320

2



CLC 900



for your network is as easy as

3



CLC 950

CANON CONNECTS 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 7ppm.

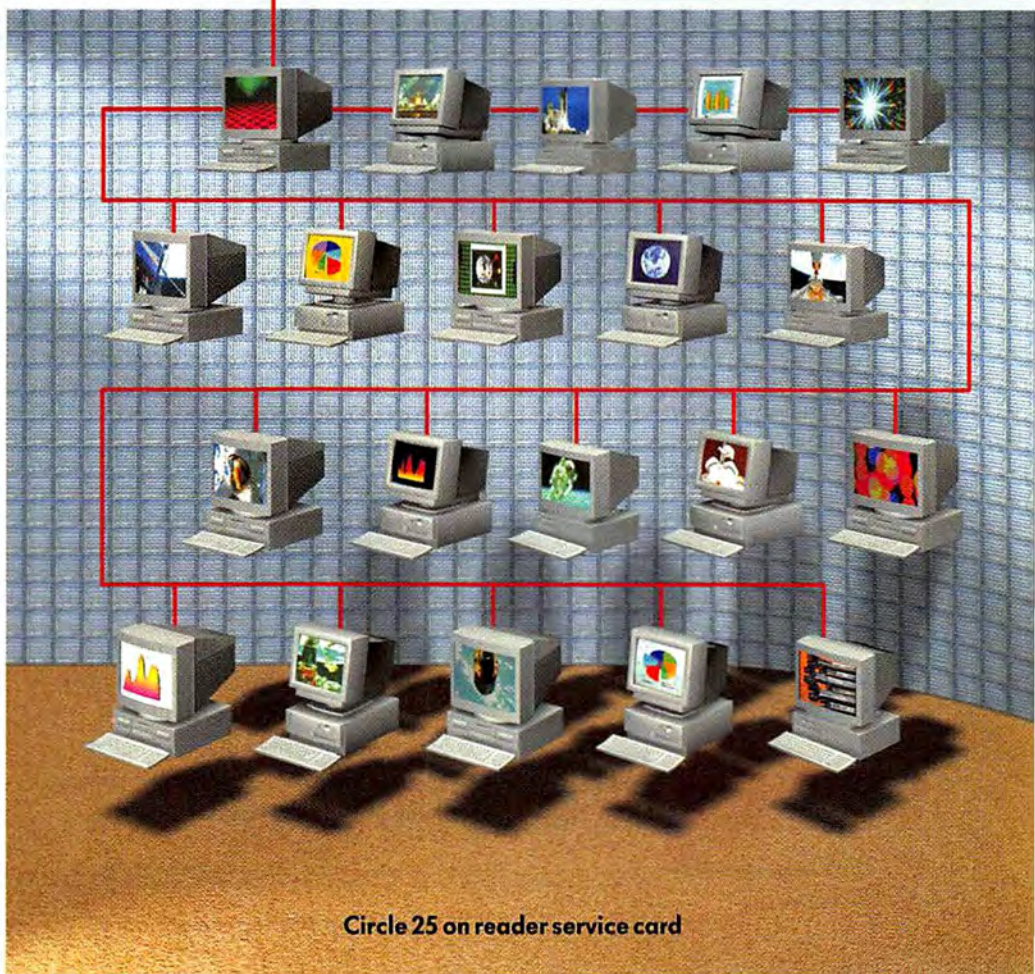
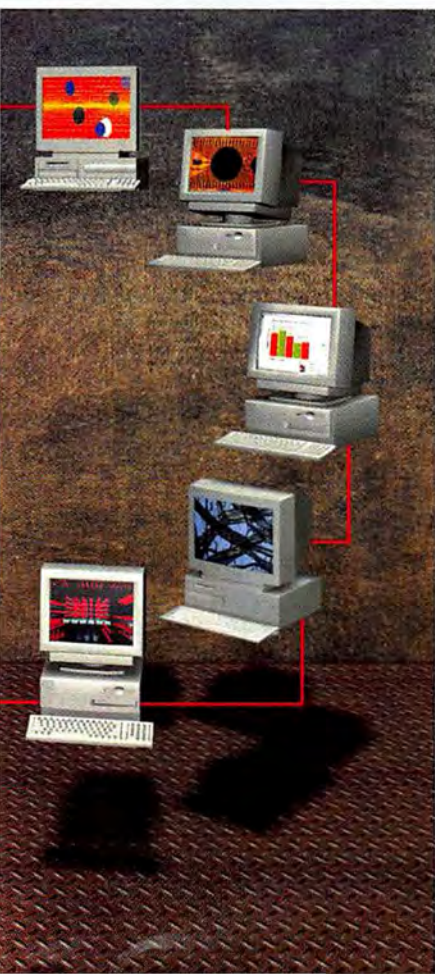
And with its Automatic Duplexing capabilities, the CLC 950 makes even the most complex network jobs quick and effortless.

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.

Canon



Circle 25 on reader service card



STAMP OUT RETYPING WITH THE WORLD'S MOST ACCURATE OCR.

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



The AutoOCR Toolbar™ performs OCR with a single click.

"OmniPage Pro is as good as it gets."

MacWeek January 27, 1997

forward in OCR accuracy, even when compared to version 7.0. What's more, it offers dramatic accuracy improvements 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.

- 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**

SAVE OVER 75%
SPECIAL UNIVERSAL
UPGRADE FOR ALL
SCANNER OWNERS!

800-736-5735 x.80



*Using standard fonts on laser-quality documents. If for any reason you are not satisfied that OmniPage Pro 8.0 dramatically improves your OCR accuracy, return it for a full refund (less shipping and handling). **Suggested price US dollars—subject to change without notice. Offer valid in US and Canada only. Caere, the Caere logo, OmniPage, and OmniPage Pro are registered trademarks and AutoOCR Toolbar is a trademark of Caere Corporation. All other names are the property of their respective holders. © 1997.

Circle 69 on reader service card

caere
www.caere.com

THE BUILD-TO-ORDER DILEMMA

APPLE NOW
OFFERS G3
MACS UP TO
300MHZ WITH
ALL THE
TRIMMINGS.
BUT IS
THE PRICE
TOO HIGH?



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 features *you* selected.

But buying a Macintosh 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 selection 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 components 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 simple: you pick the features you want, and the



GIAMPIERO BENVENUTI

manufacturer installs the components. However, deciding what features go in your Mac is a much more intricate process than simply clicking on upgrade options. You need to know about all peripherals, manufacturers, and differences in model types.

BY ALLYSON BATES

Make Your Own Mac: What's in Store for You

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 configured system from resellers and then added components that most users would want.

The Apple Better Power Mac G3/266 costs \$4,123 and includes 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

	Apple Computer	Cyberian Outpost	MacConnection	MacWarehouse	Mac Zone	Dell Computer
Information phone (toll)	408/996-1010	860/927-2050	603/446-3383	732/370-3801	425/430-3570	none
Sales phone (toll-free)	800/795-1000	800/856-9800	800/800-0009	800/255-6227	888/211-5032	800/472-3355
Web address	www.apple.com	www.outpost.com	www.macconnection.com	www.warehouse.com	www.maczone.com	www.dell.com
Power Macintosh G3/266	\$4,123	\$2,849	\$2,999	\$2,999	\$2,999	\$2,467 (300MHz Pentium II PC)
Upgrade Components						
128MB SDRAM	\$400	\$479 ^A	\$650 ^A	\$1,300 ^A	\$710 ^A	\$199
6GB IDE hard drive	\$175	included	included	included	included	included
Zip drive	included	included	included	included	included	\$99
6MB video RAM	included	\$69	\$120	\$250	\$125	included
Accelerated video card (8MB video RAM)	\$325	\$579 ^{B, C}	\$429 ^B	\$599 ^{B, C}	\$420 ^B	\$49
100BaseT Ethernet	\$100	NA	\$70 ^B	\$70 ^B	\$140 ^B	\$89
Installation	free	free	free	\$30	\$35	free
Additional Components						
17-Inch display	included (Apple ColorSync Display)	\$949 (AppleVision 750AV)	\$949 (AppleVision 750AV)	\$649 (Apple MultiScan 720)	\$850 (Apple ColorSync Display)	included
Speakers	\$110 ^D	included with monitor	included with monitor	\$90	\$110	included
Internal 56-Kbps modem	included	NA ^E	NA ^E	NA ^E	NA ^E	included
Total	\$5,233	\$4,925	\$5,217	\$5,987	\$5,389	\$2,903
Sales tax added	all states	CT, OH	OH	CT, IL, NJ, OH, WA	NV, OH, WA	KY, NV, TX

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

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 512K 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 devout 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 \$5,000 system, Apple might pay \$3,750 to make it. A reseller might buy it for \$4,500 and sell it to you for \$5,000. 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 Mac-Connection, is that you're forced to buy an existing configuration (usually not comparable to the ones offered from 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 Cool-DVD 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. **m**

New Mac Is Fast but Limited

APPLE'S LATEST ATTEMPT TO MOVE THE Mac further ahead of Intel's Pentium II CPUs is the 300MHz addition to the Power Macintosh G3 line. While this Mac tower contains the fastest PowerPC 750 CPU yet and performs 18 percent faster than the 266MHz G3 Mac, it isn't the technological advancement we were hoping for. Except for the faster CPU, the new G3 Mac is the same as previous models—even the bus speed remains at 66MHz, rather than the 83MHz expected by now.

Although Apple says that a faster bus would not have made an appreciable speed difference for this model, we're concerned that Macs could once again fall behind PCs if Apple does not equip them with faster architectures. Intel is soon to announce 350MHz versions of the Pentium II, which is expected to hit

400MHz speeds later this year, using buses as fast as 100MHz.

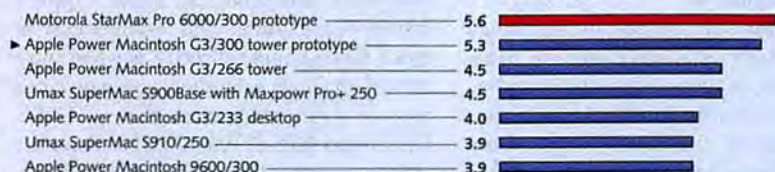
Based on our tests of a prototype, the new 300MHz G3 models should be the fastest shipping Macs yet, but the architecture clearly could stand improvement to increase speed, as shown in the results from the prototype 300MHz system (also using a 66MHz bus) that Motorola had planned to ship last fall, before Apple ended most Mac OS licensing. The \$4,899 Apple 300MHz G3 tested had 128MB of RAM (we tested it using 32MB), a 1MB cache, 6MB of VRAM, an iXMicro 3-D UltimateRes video card, two 4GB Ultra Wide SCSI hard drives, and a 24x CD-ROM drive. A FireWire card, a 100BaseT Ethernet card, and a 2x DVD-ROM drive are optional, although Apple's G3 Macs don't have enough slots to accommodate all these goodies.



300MHz G3 Mac Hikes Speed 18 Percent

■ Best overall performance. Longer bars are better. ▶ New system. SpeedMark scores are times as fast as a Power Mac 7100/80, which has a score of 1.0.

SpeedMark 1.0 Overall Performance



Behind Our Tests

Macworld's SpeedMark test suite runs 54 real-world tasks in 15 programs and the Finder. The tested systems were running Mac OS 8 and had 32MB of RAM, a 512K system disk cache, and a 16-bit video display set at 832 by 624 pixels.—Macworld Lab testing supervised by Gil Loyola

Associate editor ALLYSON BATES has evaluated Macs and PCs for several years.

A Big Plus For Dependable 30-Bit Color Scanning.

WINDOWS® MODELS
INCLUDE:



**Kai's Photo
Soap**
CLEAN UP YOUR IMAGE



STEP UP TO  MICROTEK

FEATURES



Mac OS

- 30-bit color depth / single-pass scanning
- 300 x 600 dpi optical resolution / 4,800 x 4,800 dpi enhanced
- Solid stainless steel chassis
- Precision-machined aluminum optical carriage
- Microtek's award-winning ScanWizard™ scanning software
- Kai's Photo Soap™ (full application) from MetaCreations™ — clean up images, put photos in digital albums and calendars. (for Power Macintosh)
- MicroFrontier Color It!™ for Macintosh—image editing and paint software
- Caere's OmniPage® Limited Edition OCR software — scan pages of text and convert them into editable documents

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 8 1/2" x 13 1/2". Now you can restore fading family photos, capture images for your home page, or 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.

MICROTEK
ScanMaker E3
PLUS



MICROTEK

www.microtekusa.com
1-800-654-4160

The Web Publisher's *Essential* Tool Kit

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

Our expert finds the right products for the Web creator's many needs

BY TONYA ENGST

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?

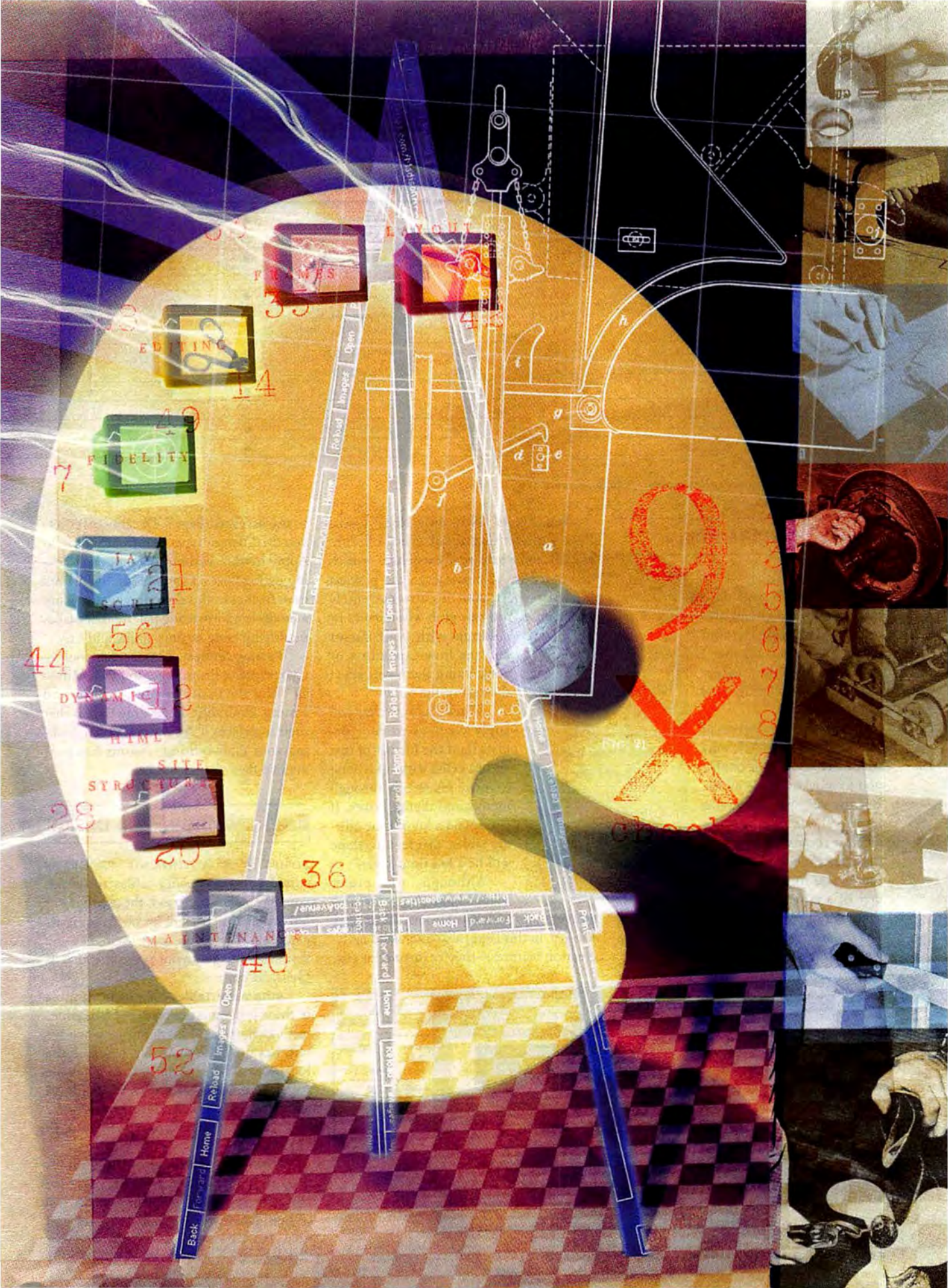
Among the products we reviewed are six HTML editors that let you build pages visually,

instead of coding directly in HTML: Adobe Systems' (www.adobe.com) \$149 PageMill 2.0, FileMaker's (www.filemaker.com) \$99 Claris Home Page 3.0, GoLive's (www.golive.com) \$349 CyberStudio 2.0.2, Macromedia's (www.macromedia.com) \$299 Dreamweaver 1.0, Microsoft's (www.microsoft.com) \$149 FrontPage for Macintosh 1.0, and Symantec's (www.symantec.com) \$80 Visual Page 1.1.

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 free-form 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.



Web Weavers: 11 HTML-Editing Tools

Company	Product	Mouse Rating	List Price	Contact	Visual Editing	FTP	Visual Site Overview
Adobe Systems	PageMill 2.0	●●●½	\$149	408/536-6000	●	●	●
Bare Bones Software	BBEdit 4.5.1a	●●●½	\$119	781/687-0700	○	●	○
FileMaker	Claris Home Page 3.0	●●●	\$99 *	408/987-7000	●	●	○
	EDITORS' CHOICE						
GoLive Systems	GoLive CyberStudio 2.0.2	●●●½	\$349	650/463-1580	●	○	●
Pete Keleher	Alpha 7.0	●●●	\$30 **	www.cs.umd.edu/~keleher/alpha.html	○	○	○
Macromedia	Dreamweaver 1.0	●●●½	\$499	415/252-2000	●	●	○
Microsoft	FrontPage for Macintosh 1.0	●●½	\$149	425/882-8080	●	●	●
NetObjects	NetObjects Fusion 2.0.2	●●●½	\$295	650/482-3200	●	●	●
Optima System	PageSpinner 2.0.1	●●●½	\$25 **	510/658-5244	○	○	○
SoftPress Systems	Freeway 1.0.1	●●½	\$299	415/331-4820	●	○	○
Symantec	Visual Page 1.1	●●●½	\$80 *	541/334-6054	●	●	○

● = yes; ○ = no * Company's estimated price. ** Shareware price.

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 lot like designing a magazine in SimpleText instead of QuarkXPress.

With varying degrees of 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.

Visual Page, Visual Tables Symantec's Visual Page lets you create tables easily, using the Table Settings palette to control specific table attributes.

REPORT CARD

Visual Table Creation

Excellent

Dreamweaver,
Clariss Home Page,
Visual Page

Good

CyberStudio, Front-
Page, PageMill

Fair

Fusion, BBEEdit

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 Clariss 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. Clariss Home Page goes even further in this direction by providing a mode-less formatting palette that makes modifying table settings quick and easy.

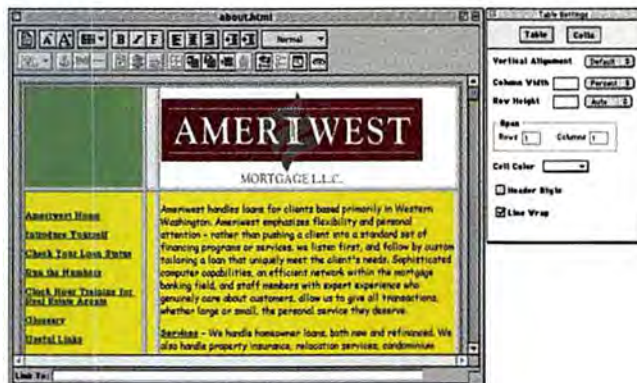
Passing Grades Three other tools—CyberStudio, FrontPage, and PageMill—all cover the basics of table creation and editing admirably. Their drawback is that their interfaces will slow you down, making your table-editing sessions less productive than they could be.

Drag-and-Drop Page Design

SOME WEB AUTHORIZING 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



Scriptable	Multiple Undo in Edit View	Sitewide Spelling Checker	Sitewide Search and Replace	Include Files	Best For
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Quick page layout; link management.
<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Professional HTML editing.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Quick page layout; FileMaker integration.
<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	Professional Web publishing.
<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Professional HTML editing.
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	Professional site design with HTML 4.
<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	Site management.
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Quick-and-dirty setup for big sites.
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	User-friendly HTML editing.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Quick, flexible page layout.
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Quick page layout; tables.

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.

Freeway Gridlock If you're looking for free-form layout tools à la QuarkXPress, SoftPress Systems' Freeway (with its grid-based layouts and detailed customization options) will suit your needs.



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. How-



ever, Fusion's support for other HTML features is better than Freeway's.

Passing Grade Although you must use automatically generated tables in Freeway and Fusion, CyberStudio allows you to alternate between automatically generated tables and traditional table-building methods, even within the same document. This flexibility is especially welcome given that many pages are relatively simple in design and don't require the added control that drag-and-drop page layout brings.

CyberStudio's drag-and-drop layout features are more rudimentary than Fusion's. It lacks rulers, can't align items with respect to one another, and won't let you position an object using x-y coordinates. But since you can mix this style of design with traditional HTML layout tools within the same document, the limitations of CyberStudio's drag-and-drop layout tools aren't quite as noticeable.

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 graphic format is **JPEG**, which stands for "Joint Photographic Experts Group." Like GIF's, 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, glows, 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



Dither Danger The image on the left wasn't created using the 216-color Web palette, and is dithered as a result. The image on the right was created with Web-palette colors only, and isn't dithered.

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 con-

stant 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.



GIF Items Images with large areas of one color, such as this one, are better off as GIF files. This image's size was 11K in GIF and 17K in JPEG.

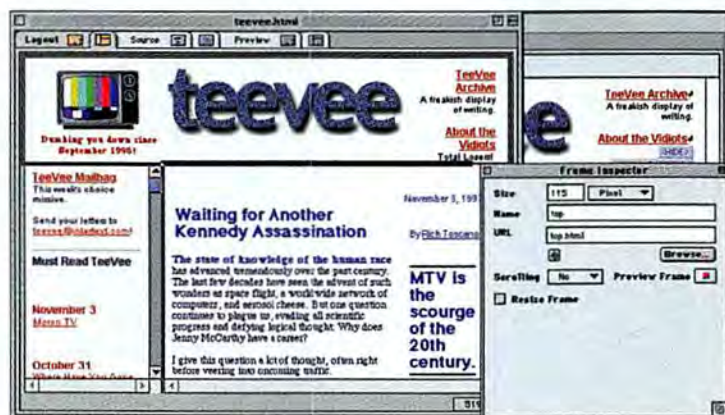


Joyful JPEG Photographic images such as this one are better saved as JPEG files. This image was 21K in JPEG and 47K in GIF.



www

www.golive.com



The Big Frame-Up GoLive CyberStudio excels at frame editing. You can preview your pages in a frame set while editing them in separate windows, and setting frame options is easy via the Frame Inspector palette.

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 pages 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 Pupils 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 GREG 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 Linde's free plug-in, HTML mode 2.0.3 (www.theophysics.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 HTML Toolbox BBEdit's helpful HTML tool bar gives you quick access to the program's handy HTML coding shortcuts.

ment of your cursor. The program's Tab Marks feature can automatically insert HTML tags and then move you in between them to enter the appropriate text. Once it's time to move on, pressing the tab key moves you instantly to the next part of your page.

Another shareware product, PageSpinner, is also a strong HTML-code editor. Unlike Alpha and BBEdit, which were originally programmers' text editors before turning their attention to HTML, PageSpinner was designed specifically as an HTML editor.

PageSpinner offers a broad collection of useful features, although it isn't as powerful or versatile as either Alpha or BBEdit; for instance, Page-

Spinner doesn't offer multiple levels of undo. But what PageSpinner lacks in maturity it makes up for with lots of features geared toward making HTML editing easy for people who aren't well-versed in the nuances of HTML coding.

Passing Grades In addition to text-only tools, many visual programs offer HTML-code-editing features of their own, meaning you don't have to close your document in one program and reopen it in another just to change one line of code. Of all the visual tools, CyberStudio and Dreamweaver clearly lead the pack.

Dreamweaver comes bundled with a copy of BBEdit and is tightly integrated with that program. As you toggle between the programs, they update your document automatically. Most impressive of all is Dreamweaver's Roundtrip HTML feature, which ensures that the program doesn't alter HTML code you've written in a text editor unless you actually edit that section of the page. In contrast, all the other visual editors modified hand-

REPORT CARD

Designing with Frames

Excellent

CyberStudio,
Dreamweaver

Good

Claris Home Page,
Fusion, PageMill,
Visual Page

REPORT CARD

Editing Raw HTML

Excellent

Alpha, BBEdit,
PageSpinner

Good

CyberStudio,
Dreamweaver

Fair

Claris Home Page,
PageMill, Visual Page

INTERNET CONFUSION

isp • *installation \$3,000*
web site creation \$2,000
email server \$2,500
modem • internet server • pc
router \$1,000
router • firewall • hub • *isp?* • pc
firewall \$2,500
web server • *web server \$2,500* • pc
email server • pc

-OR-

INTERJET

THE ALL-IN-ONE
INTERNET SOLUTION.



Router • Email Server • Firewall • Web Server •

• Intranet • Web Publishing • Easy Administration

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 1997 Networking Product of the Year.

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



www.whistle.com/98e

Call 1-888-4WHISTLE

©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.

Circle 84 on reader service card

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.bxtp.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; **★★★½**) 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 cels 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://iawwww.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; **★★★½**) 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) BBEEdit Lite (freeware; **★★★★**) doesn't offer all the great HTML features of the full BBEEdit text editor, but it's still powerful. Among BBEEdit Lite's top features is a pattern-matching, multifile search, which lets you quickly make global changes to your entire Web site or quickly transform plain-text documents into HTML.

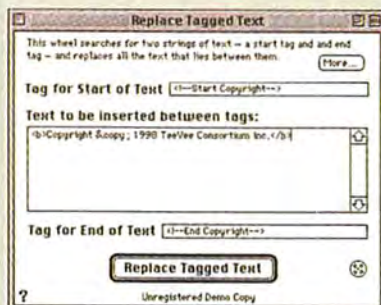
IconToGIF 1.0.3 If you ever need to transfer the icons on your Mac to a Web page, Dan Crevier's (<http://www.boingo.com/dan/software/IconToGIF.html>) simple utility IconToGIF (freeware; **★★★½**) can solve your problem. Once you drag a file onto it, IconToGIF places that icon in a GIF file.

NetClone 1.0 Most people

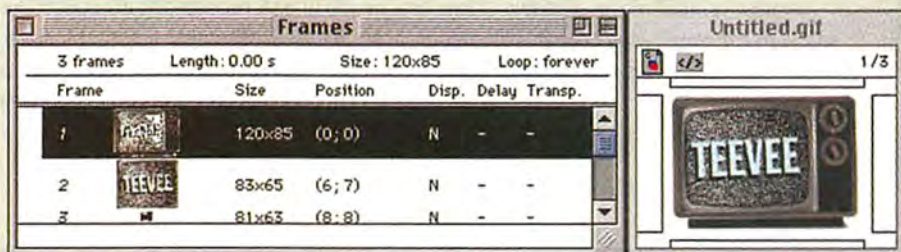
create Web sites on their Macs and then upload them to a remote Web server. But keeping track of what files you've changed and need to update on your server can be time-consuming. Progmatics' (www.progmatics.com.au/netclone/) NetClone (\$20, free for nonprofit educational use; **★★★½**), formerly called 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; **★★½**) 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.



Monkeying with Pages HTML Grinder lets you perform global changes on entire Web sites in one drag-and-drop operation. In this example, HTML Grinder will update the copyright notice everywhere on the affected Web site.



GIF Factory The free GifBuilder lets you create GIF animations quickly via an easy-to-use drag-and-drop interface.

coded HTML immediately.

While CyberStudio doesn't offer tight integration with BBEdit, its built-in text editor is still fairly useful for minor amounts of code tweaking.

Site Management

THE JOB OF KEEPING A WEB SITE UP-TO-date can be incredibly difficult, especially if your site is made up of dozens or hundreds of pages. Ideally, a Web authoring tool would let you keep track of all your site's pages, verifying that your hyperlinks still work and allowing you to update links globally. It should also be able to upload and download files from remote Web servers and let you perform global changes on your pages in a few easy steps. And it should be able to understand your site's structure and automatically generate navigational elements.

Unfortunately, none of the programs we looked at provides the complete site-maintenance solution. But some certainly come closer to the mark than others.

Passing Grades Microsoft FrontPage is the top performer in terms of site-management features. It verifies all your site's hyperlinks, it lets you upload and

download files via FTP, and you can search and replace text on all the pages of your site. And if more than one person at a time updates your site, FrontPage's to-do list is extremely useful, since it supports multiple users.

But for all of FrontPage's strengths, it's got a confusing interface, and it's almost unusably slow unless you've got a fast Power Mac.

FrontPage and Dreamweaver both let you create *include* files, template files you can insert in any Web page. When you change the contents of the main include file, that change is automatically made on every page that uses that file.

CyberStudio doesn't offer FrontPage's to-do list, but it does provide a much more appealing and useful interface. One of CyberStudio's strongest site-management features is the ability to see all the pages that are linked to or from your page in a fast, easy-to-

understand interface.

Although it's no spring chicken, PageMill and its bundled SiteMill utility still offer good link-management features at an economical price. BBEdit's multiframe search-and-replace and built-in FTP upload and download features are similarly impressive.

Both Freeway and Fusion offer strong site-creation 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 HTML-editing tools as much as they're programs with strong site-management features. UserLand's free Frontier 5 (www.scripting.com/frontier5/) and ProVue Development's (www.provue.com, 714/841-7779) \$499 SiteWarrior 1.1.1 (see *Reviews*, in this issue) are scriptable, database-related 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 style-sheet interface is clean and easy to use. However, its Director-style timeline interface for creating Dynamic HTML animation is confusing. In Dreamweaver you can create behaviors for objects on your page (for example,

REPORT CARD

Site Management

Good

BBEdit, CyberStudio,
Front Page

Fair

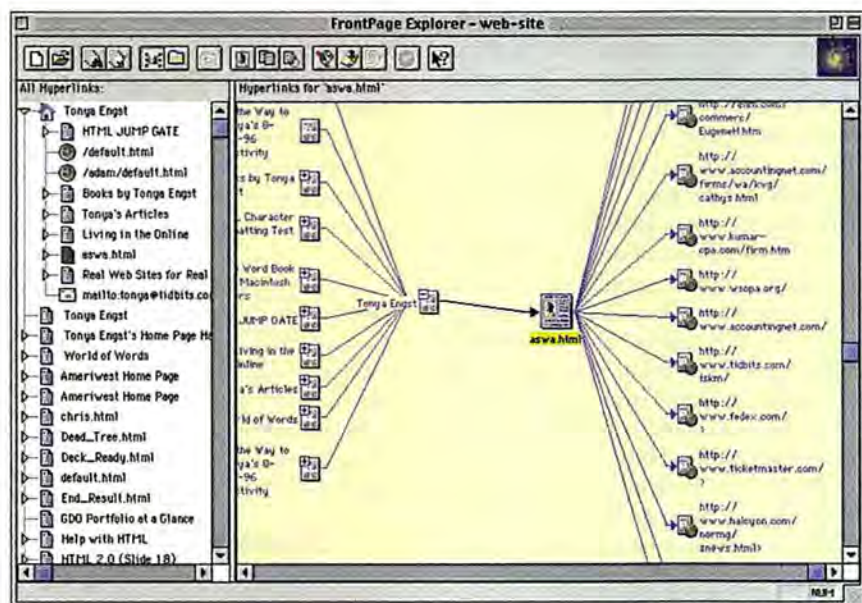
Alpha, Dreamweaver,
PageMill

REPORT CARD

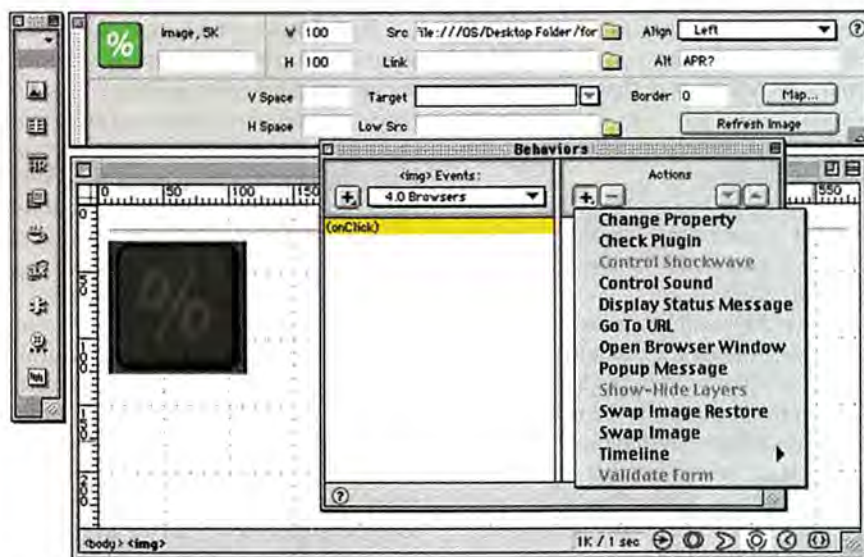
Advanced HTML

Good

Dreamweaver



Setting Your Sites Microsoft FrontPage's Hyperlink View is one of its best features. Clicking on the plus or minus sign at the upper left of an icon (a Windows convention Microsoft chose not to alter for Mac users) shows or hides links from a particular page.



The Trailblazer With such features as the Behaviors window, which lets you add JavaScript-based actions to a Web page without having to write any code, Macromedia's Dreamweaver leads the way in terms of supporting Dynamic HTML.

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 Site-Mill 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 HTML 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. **m**

TONYA ENGST has been writing about Web publishing for thousands of Internet years. She edits Tidbits, a Mac-related Web site (www.tidbits.com) and e-mail newsletter.

EDITORS' CHOICE

Visual Tool

GoLive CyberStudio This Web publishing program packs in tons of features and a good amount of flexibility. We like its optional grid for pixel-perfect layout, its framing features, and its "spider's-eye" view of a Web site. **Company:** GoLive Systems (650/463-1580, www.golive.com). **List price:** \$349.

Text Tool

Alpha 7.0 with HTML mode 2.0. Near the top in image quality and ease of use, this unit is a great buy and includes a three-year warranty. **Developers:** Pete Keleher (www.cs.umd.edu/~keleher/alpha.html) and Johan Linde (www.theophys.kth.se/~jl/Alpha.html). **Shareware price:** \$30.

REAL PRODUCTS REAL RATINGS

Reviews you can trust Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.

LOST IN SPACE

In Theaters April 3

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.

©1998 Silicon Graphics, Inc. All rights reserved. Silicon Graphics is a registered trademark, and the Silicon Graphics logo is a trademark of Silicon Graphics, Inc. Lost in Space is a trademark of New Line Productions.



SiliconGraphics

www.sgi.com/go/visual

Circle 8 on reader service card

"I'm sick of having to settle for a slower Mac just because my budget sucks."

Sometimes Newer Is Smarter Than New.

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

Newer Technology makes processor upgrade cards for almost every Power Mac and

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



To find out how to make your old Mac newer visit www.newertech.com or call 1-316-943-0222

Circle 55 on reader service card

Java Finally DELIVERS



THE NEWEST MAC

JAVA RELEASES

DELIVER TOP



PERFORMANCE—

EVEN OUTPACING

WINDOWS JAVA

BY STEPHAN SOMOGYI

AND JASON SNELL

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

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



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 UniQorn 1.2 (\$499; 415/331-4820, www.softpress.com/uniqorn/). 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 browser 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

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 programs, 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 computer. This means that you can run a Java applet on *any* computer as long as you have the means to translate instructions for the Java computer into your computer's native language. As we mentioned before, to do this your computer needs a virtual machine. This program works a

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.

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* (or *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 computer's CPU, runs that code, and then keeps

the translated code around for awhile in case it's used again soon.

Most programs run a lot of the same instructions over and over, which means that a normal virtual machine interprets that same 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 virtual 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.microsoft.com/ie/)



Faster Java, Just in Time

Java virtual machines for the Mac are fast and getting faster. So much so that Microsoft Internet Explorer 4.0's virtual machine for the Mac now runs Java slightly faster than its Windows PC counterpart. There's no doubt that just-in-time (JIT) compilers have been a big part of this acceleration. All the virtual machines with JIT compilers—namely, IE 4.0's and Netscape Navigator 4.0's virtual machines, as well as Apple's MRJ 2.0—leave non-JIT virtual machines in the dust, on average running Java three to four times as fast.

■ Best overall performance. Longer bars are better.

Mac Java Speeds Up . . .

Mac Virtual Machines	CaffeineMark 3.0 Scores	JIT Compiler*
Microsoft Internet Explorer 4.0 VM with JIT compiler enabled	1,349	●
Mac OS Runtime for Java 2.0 (running in Internet Explorer 4.0)	630	●
Netscape Navigator 4.04 VM	550	●
Microsoft Internet Explorer 4.0 VM with JIT compiler disabled	312	○
Netscape Navigator 3.04 VM	181	○
Mac OS Runtime for Java 1.0.2 (running in Internet Explorer 4.0)	154	○

. . . And Passes Windows by a Nose

Windows 95 Virtual Machines	CaffeineMark 3.0 Scores	JIT Compiler*
Microsoft Internet Explorer 4.0 VM with JIT compiler enabled	1,173	●
Netscape Navigator 4.04 VM	899	●
Netscape Navigator 3.04 VM	494	○
Microsoft Internet Explorer 4.0 VM with JIT compiler disabled	218	○

* ● = yes; ○ = no.

Behind Our Tests

Macworld Lab used Pendragon Software's CaffeineMark 3.0 to test Java virtual machines. Tests were run on a Power Macintosh 7300/200 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 Loyola

.microsoft.com/ie/mac/) using its own virtual machine with default settings.

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



Java Takes Off Why do you need a fast Java virtual machine? To take advantage of amazing Java programs like this one on the site The Trip.com. Enter an airline and flight number, and behold: the graphical flight tracker creates a map and a miniature moving plane to show you exactly where your loved one(s) are in the air.

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. **m**

STEPHAN SOMOGYI is an all-around Internet guru and freelance writer. Senior associate editor JASON SNELL covers all things Internet for *Macworld*.

Bookmarks

Java at Apple News, updates, and upgrades for Apple's MRJ
www.apple.com/macintosh/java/

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/

YOU'VE ALWAYS BEEN AN ORIGINAL THINKER.
JUST DON'T GET TOO CREATIVE WHEN YOU'RE
CHOOSING MEMORY.



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,

www.kingston.com/ad

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.

Kingston®
TECHNOLOGY

COMPUTING WITHOUT LIMITS.™



Kingston Technology Company, 17600 Newhope Street, Fountain Valley, CA 92708 USA, (714) 435-2600, Fax (714) 435-2699. © 1997 Kingston Technology Company. All rights reserved. Computing Without Limits is a trademark of Kingston Technology Company. Apple and Mac are trademarks of Apple Computer Inc., registered in the U.S. and other countries. All other trademarks and registered trademarks are the property of their respective owners.

Circle 201 on reader service card



BY SCHOLLE SAWYER

MONITORS

THAT SHOW IT ALL

MACWORLD

LAB PICKS

THE BEST

TWO-PAGE

DISPLAYS



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,

19-INCH MONITORS COMPARED

Company	Product	Mouse Rating	List Price	Phone	Viewable Area (diagonal in inches)	Free Mac Adapter Included	Controls
CTX	VL950	★★★½	\$899	626/839-0500	18	if requested	very good
Iiyama North America	VisionMaster 450	★★★½	\$899	215/957-6543	18	if requested	acceptable
La Cie	Electron19i	★★★½	\$849	503/844-4500	18	yes	acceptable
Mag Innovision	DJ800	★★★½	\$899	714/751-2008	18	yes	very good
Hitachi NSA	RasterOps Mc 7515	★★★	\$949	781/461-8300	18	yes	acceptable
Philips	Brilliance 109	★★★	\$1,049	423/475-8869	17.9	yes	good
Princeton Graphic Systems	EDITORS' CHOICE EO 90	★★★★	\$899	714/751-8405	18	if requested	good
Sony Computing	GDM-400PS	★★★½	\$1,200	408/432-1600	18	yes	good
ViewSonic	Optique V95	★★★	\$849	909/869-7976	18	if requested	good
	ViewSonic G790	★★★	\$949	909/869-7976	18	if requested	poor

green, or blue phosphor painted on the inside of the screen. Pricier Sony Trinitron and Mitsubishi DiamondTron 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.pgr.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.

■ Best overall performance. Longer bars are better. Editors' Choice winner's name is in red. Results are on a scale of 1 to 7 (with 7 being the best) for each category except Brightness.



*Results in footlamberts.

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

Warranty for Parts/CRT/ Labor (in years)	48-Hour "Swap" Program	Comments
--	------------------------------	----------

3/2/3	no	Very good image and text quality. Very good controls, below-average warranty.
3/3/3	no	Good, bright image quality at a reasonable price. Warranty and controls acceptable.
3/3/3	no	Quite good text and image quality at a low price. Warranty and controls acceptable.
3/3/3	first year	Below-average image quality and a lower maximum resolution than other monitors of this class. Innovative controls, great warranty.
3/3/3	no	Fair image quality and text sharpness. Acceptable warranty, higher price.
3/3/3	first year	Fair image and below-average text quality. Good controls, a great warranty; pricey extras such as built-in stereo speakers.
3/3/3	first year	Superb image and text quality. A great warranty and reasonable price.
3/3/3	first year	Excellent image and text quality. A great warranty, but a high price.
3/3/1	no	Fair image quality, below-average warranty, good price.
3/3/3	first year	Fair image and good text quality, great warranty. Unintuitive controls, high price.

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 Electron19i (www.lacie.com). The only monitors with an unacceptable sharpness level were the \$1,049 Philips Brilliance 109 (www.philipsmonitors.com) and Mag Innovision's \$899 DJ800 (www.maginnovision.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 (www.iiyama.com) \$899 VisionMaster 450 fol-

lowed closely. Most of the other monitors had acceptable levels of brightness, except for the Mag Innovision 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 Innovision DJ800, complaining of "flat, dull colors." Surprisingly, the G790 received a slightly lower color score than its economy-line cousin, the \$849 ViewSonic Optquest V95 (www.optquest.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 teaming elegant, clearly labeled buttons with descriptive on-screen menus, and for displaying settings with numeric values you can adjust with greater accuracy. The Mag Innovision 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. **m**

Associate editor SCHOLLE SAWYER covers monitors and graphics for Macworld.

EDITORS' CHOICE

★★★★ Princeton Graphic Systems EO 90

This excellent monitor offers first-rate features—superb image quality, a great warranty, and a clear set of controls—at a reasonable price.

Company: Princeton Graphic Systems (714/751-8405, www.prgr.com). **List price:** \$899.

REAL PRODUCTS REAL RATINGS

Reviews you can trust Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.

Spotlight on

Macworld EXPO

*the
Creative
World*

Sponsored by:

Macworld

MacWEEK

Owned by:

 **IDG**
WORLD EXPO

Managed by:
IDG Expo
Management
Company

MACWORLD Expo — the Creative World

**Jacob K. Javits
Convention Center
New York City — July 6-10, 1998**

Kickoff Reception and Sneak Peek Fair

(open to conference attendees only)

July 6, 1998

Pre-conference Workshops and Keynote Event

July 7, 1998

Macworld/Pro Conference:

July 8-10, 1998

MACWORLD Users Conference:

July 8-10, 1998

MACWORLD Expo Exhibits:

July 8-10, 1998

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 \$18

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.

Macworld
EXPO
the Creative World

Register for the conference program and not only save money, receive exclusive benefits!

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.

Special Attractions

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*.

Added Bonus!

www.macworldexpo.com

Pre-Conference Workshops/Conference Program

Macworld
EXPO

Pre-Conference Workshops

July 7, 1998

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) Web 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 IP in the Integrated Network Environment
- (K) Macintosh Network Administration with the Apple Network Administrators 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: Macs 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

the Creative World

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 8-10, 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:**

- The "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 (o... 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

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. Additionally 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
519ZW

US Airways
800.334.8644
Discount number
18180598

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.

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 Wizardry 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™ 3.0
- 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 to 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 Macs 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 Obsolescence—or 101 Things to Do with a Dead Mac
- ...and more

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: 800.799.9914 or

outside the USA 408.918.4200

fax: 408.918.4250

email: macworld@chmrooms.com

**Convention
HOUSING
Management**

MACWORLD Expo - the Creative World Advance Registration Form

Jacob K. Javits Center ■ New York City

- Kickoff Reception and Sneak Peek Fair: July 6
- Pre-Conference Workshop and Keynotes: July 7
- MACWORLD/Pro Conference and MACWORLD Users Conference: July 8-10
- Exhibits: July 8-10

1. REGISTRATION SELECTION AND FEES (SELECT ONE)

DEADLINE FOR SAVINGS IS JUNE 8!

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.

Advanced
Registration*
(on or before 6/8)

Regular
Registration*
(6/9-7/1 via phone,
Web, or on-site)

<input type="checkbox"/> 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 W (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)	\$1095*	\$1195*
<input type="checkbox"/> 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 W (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)	\$995*	\$1095*
<input type="checkbox"/> Package 3 - Macworld/Pro Conference ONLY (July 6-10) Includes: • Macworld/Pro Conference Sessions • Lunch (Tuesday only) • ALL Keynotes • Exhibits	\$795*	\$895*
<input type="checkbox"/> Package 4 - MACWORLD User Conference and Pre-Conference Workshop (July 6-10) Includes: • Pre-Conference Workshop • MACWORLD Users Conference Sessions • Lunch (Tuesday only) • ALL Keynotes • Exhibits W (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)	\$495*	\$545*
<input type="checkbox"/> Package 5 - MACWORLD User Conference (July 6-10) Includes: • MACWORLD Users Conference Sessions • ALL Keynotes • Exhibits	\$175*	\$199*
<input type="checkbox"/> Package 6 - Pre-Conference Workshop (July 6-10) Includes: • Pre-Conference Workshop • Lunch (Tuesday only) • ALL Keynotes • Exhibits W (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)	\$395*	\$445*
<input type="checkbox"/> Package 7 - Exhibits ONLY (July 8-10) Includes: • Admission to the Exhibits ONLY	\$29*	\$45*



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.

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 Extension
Fax Internet/Email Address

3. ATTENDEE PROFILE

MUST BE FILLED OUT TO PROCESS YOUR BADGE

WHAT IS YOUR INDUSTRY? (Check One Only) <input type="checkbox"/> 1. Accounting/Finance <input type="checkbox"/> 2. Aerospace <input type="checkbox"/> 3. Architecture/Construction/Process Industries <input type="checkbox"/> 4. Arts/Design/Creative Services <input type="checkbox"/> 5. Arts & Entertainment <input type="checkbox"/> 6. Computer Reseller/VAR/VAD/Service <input type="checkbox"/> 7. Consulting <input type="checkbox"/> 8. Education <input type="checkbox"/> 9. Engineering/R&D <input type="checkbox"/> 10. Government/Military <input type="checkbox"/> 11. Health/Medical Services <input type="checkbox"/> 12. Legal Services <input type="checkbox"/> 13. Manufacturing (Computer Industry) <input type="checkbox"/> 14. Manufacturing (Non-Computer Industry)	<input type="checkbox"/> 15. Marketing/Sales/PR/Communications <input type="checkbox"/> 16. Printing/Publishing <input type="checkbox"/> 17. Transportation <input type="checkbox"/> 18. Utilities <input type="checkbox"/> 19. Other _____ WHAT IS YOUR JOB FUNCTION? (Check One Only) <input type="checkbox"/> 20. Art Director/Graphics <input type="checkbox"/> 21. Consultant <input type="checkbox"/> 22. Controller/Treasurer/Accounting/CFO <input type="checkbox"/> 23. Corporate Executive <input type="checkbox"/> 24. DP/IS Management/CIO <input type="checkbox"/> 25. Editorial/Writing <input type="checkbox"/> 26. Educator <input type="checkbox"/> 27. Engineering/Scientific/R&D	<input type="checkbox"/> 28. Human Resources <input type="checkbox"/> 29. Management/Department Head <input type="checkbox"/> 30. Marketing/Sales <input type="checkbox"/> 31. Network Management <input type="checkbox"/> 32. Professional (Lawyer, Doctor, etc.) <input type="checkbox"/> 33. Programming/Analysis <input type="checkbox"/> 34. Purchasing <input type="checkbox"/> 35. Software Developer <input type="checkbox"/> 36. Training <input type="checkbox"/> 37. Other _____ WHAT IS THE SIZE OF YOUR ORGANIZATION? <input type="checkbox"/> 38. Under 50 <input type="checkbox"/> 41. 500-999 <input type="checkbox"/> 39. 50-99 <input type="checkbox"/> 42. 1000 & Over <input type="checkbox"/> 40. 100-499	WHAT IS YOUR INDUSTRY? (Check One Only) <input type="checkbox"/> 43. Macintosh Power Book Series <input type="checkbox"/> 44. Macintosh Performa Series <input type="checkbox"/> 45. Macintosh Quadra Series <input type="checkbox"/> 46. Macintosh Workgroup Series <input type="checkbox"/> 47. PowerMac <input type="checkbox"/> 48. Mac clone <input type="checkbox"/> 49. IBM PC or compatible desktop <input type="checkbox"/> 50. IBM Laptop/Notebook <input type="checkbox"/> 51. Other _____ ARE THE COMPUTERS AT YOUR ORGANIZATION NETWORKED? <input type="checkbox"/> 52. Yes <input type="checkbox"/> 53. No
--	---	--	---



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

4. PAYMENT METHOD (YOU'LL 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.

Please use one method of registration only.

- ☐ 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

REGISTER NOW!

Use ONE of the following methods to register with this form:

Call: 800.645.EXPO or 781.551.9600 outside of the U.S. (\$5 Service fee does apply) THROUGH JULY 1, ONLY.

www.macworldexpo.com
THROUGH JULY 1, ONLY.

Mail to: MACWORLD Expo - the Creative World
P.O. Box 9103, Norwood, MA 02062-9103.
THROUGH JUNE 8, ONLY.

Fax to: 781.440.0359. Faxed registration forms must include credit card information. THROUGH JUNE 8, ONLY.

(TTY) Service is available for hearing impaired. Dial 781.440.0366.

Schedule Today. Succeed Tomorrow.



Secrets

New Answers to an Old Question

HOW TO COPE WHEN A FLASHING QUESTION MARK APPEARS AT START-UP

by Ted Landau

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.apple.com> *continues*



info.apple.com/Apple.Support.Area/Apple.Software.Updates/US/Macintosh/Utilities/Drive_Setup_1.3.1.img.hqx. To fix your drive, select Update Driver from Drive Setup's Functions menu.

Be careful if you ever reinstall the Mac OS 8.0 software. The Mac OS Install utility is set to downgrade your driver back to version 1.3 of Drive Setup. To prevent this, click on the Options button and uncheck Update Apple Hard Disk Drivers. Mac OS 8.1 comes with Drive Setup 1.4, which shouldn't have the same problems as version 1.3.

Related Ills The problems with

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 2.0.X, 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.

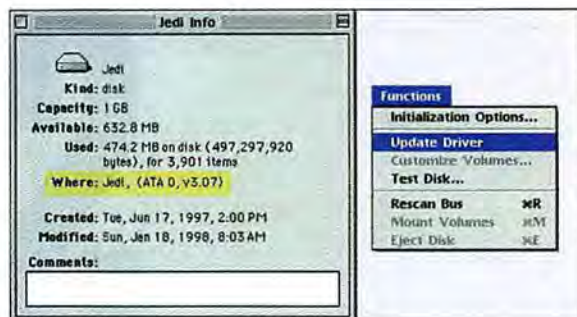
Danger: 1.2GB Drives

Diagnosis If you have a Power Mac or Performa model 5260, 54XX, or 6360, and it came with a 1.2GB drive, the drive may have faulty firmware (special code that's written to the drive at the factory and that you normally can't erase by reformatting). The same problem crops up with similar Power Computing PowerBase models. The firmware of the problem drives contains a bug that can lead to the flashing question mark symptom.

Cure Update the firmware via Apple's 1.2GB Firmware Utility, from [ftp://ftp.info.apple.com/Apple.Support.Area/Apple.Software.Updates/US/Macintosh/Utilities/Firmware_Uutilities/](http://ftp.info.apple.com/Apple.Support.Area/Apple.Software.Updates/US/Macintosh/Utilities/Firmware_Uutilities/). If this bug bites you before you apply the update, you may have to replace the drive.

Danger: Waking from Sleep

Diagnosis After putting your desktop Mac to sleep, you wake it up and find that the Mac is "frozen." Not too alarmed; you do a forced restart of the Mac (typically by holding down the ⌘ -control-power keys). Usually this gets things working fine again. However, this time the infamous



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

flashing question mark greets you. The cause is yet another hard-drive firmware problem, this time with certain 2GB, 3GB, 4GB, or 6GB hard drives that shipped with some Power Macs and Performas.

Cure Apple's solution is once again a utility to fix the bug: 2-3-4-6 GB Firmware Utility, from [ftp://ftp.info.apple.com/Apple.Support.Area/Apple.Software.Updates/US/Macintosh/Utilities/Firmware_Uutilities/2-3-4-6_GB_Firmware_Util.img.hqx](http://ftp.info.apple.com/Apple.Support.Area/Apple.Software.Updates/US/Macintosh/Utilities/Firmware_Uutilities/2-3-4-6_GB_Firmware_Util.img.hqx).

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. **m**

Contributing editor TED LANDAU runs the MacFixIt Web site, which offers solutions to Macintosh problems.

Cures for the Common Question Mark

HERE ARE FIVE TIME-TESTED cures that have brought relief to Macintosh users plagued by the flashing question mark. For a longer list, check out www.macfixit.com/reports/macible7-2.html. If none of these fixes, including those in the main article, work, you may need to reformat your drive or get a new one.

- **"Re-bless" the System Folder.**
 - a. Start up your Macintosh with an alternate disk (typically a bootable floppy disk or CD-ROM).
 - b. If the icon for your original start-up disk appears on the desktop, back up your critical files, then open the start-up disk's System Folder and remove the System file.
 - c. Close the System Folder.
 - d. Put the System file back in the System Folder.
- **Zap the PRAM.** Hold down ⌘ -option-P-R at start-up until your Mac restarts twice. Then release the keys and let start-up proceed.
- **Run Disk First Aid.**
- **Use Norton Utilities or MacTools Pro to check the disk.**
- **Reinstall your system software.**

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

ACCOLADE

Star Control 3 is a trademark of Accolade, Inc. ©1996, 1998 Accolade, Inc. All rights reserved. Created by Legend Entertainment and based upon characters created and used under license from Paul Reiche III and Fred Ford.

MacSoft®

2500 Berkeley Lane No. 7, Plymouth, MA 01961 • 617-939-7400

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.mitsubishi-display.com

Diamond Pro® Series

DIAMONDTRON solutions for graphics professionals

New!

Only \$1799
Diamond Pro 1000

- 21"/19.7" DVI*
- 1800 x 1440/76 Hz
- 30-115 kHz auto-scan range

Reduced to \$1399
Diamond Pro 91TXM

- 21"/19.7" DVI*
- 1600 x 1200/75 Hz
- 30-95 kHz auto-scan range

Reduced to \$849
Diamond Pro 700

- 17"/16.0" DVI*
- 1600 x 1200/75 Hz
- 30-95 kHz auto-scan range

Diamond Plus® Series

DIAMONDTRON displays for people who mean business

New!

Only \$1499
Diamond Plus 100e

- 21"/19.7" DVI*
- 1600 x 1200/85 Hz
- 30-108 kHz auto-scan range
- USB-ready

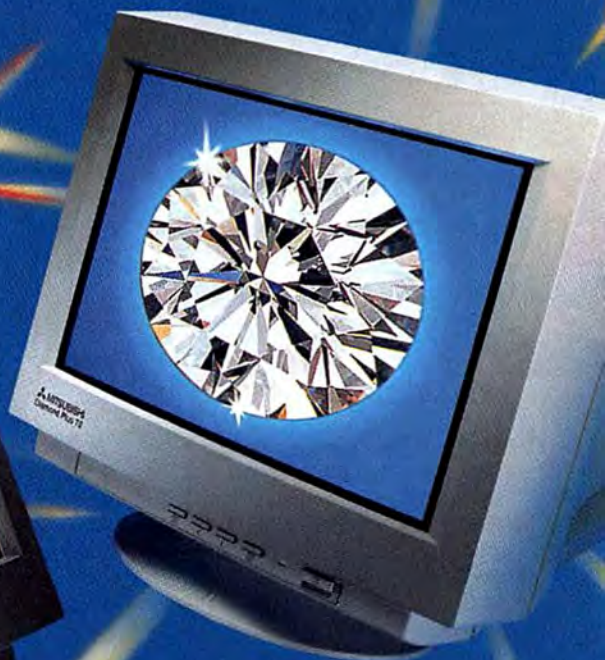
Reduced to \$679
Diamond Pro 87TXM

- 17"/16.0" DVI*
- 1600 x 1200/66 Hz
- 30-86 kHz auto-scan range

New!

Only \$599
Diamond Plus 70

- 17"/16.0" DVI*
- 1280 x 1024/65 Hz
- 30-70 kHz auto-scan range



MITSUBISHI
DISPLAY PRODUCTS
Innovation On Display™

©1998 Mitsubishi Electronics America, Inc. DIAMONDTRON is a trademark of Mitsubishi Electric Corporation. Diamond Pro and Diamond Plus are registered trademarks of Mitsubishi Electronics America, Inc. Microsoft, Windows and the Windows logo are registered trademarks of Microsoft Corporation. Mac and the Mac OS logo are trademarks of Apple Computer, Inc. Monitor prices and specifications subject to change without notice. *DVI (Diagonal Viewable Image)

Circle 261 on reader service card

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

Q 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



A You don't have to read about "cozy lummoxes" in their "job pens" (or, for those who use System 7.6.1 or earlier, "razorback-jumping frogs" and "piqued gymnasts") 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

TIP 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

continues

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 ⌘-hyphen in the following field types enters the following information:

Field Type	Displays
Number field	current record number
Date field	today's date
Time field	current time

HALIM NGAH
Kuantan, Malaysia

Also, typing ⌘-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.

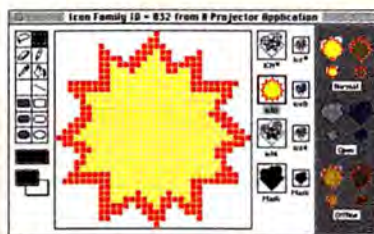
If you don't have Mac OS 8 or don't want a desktop picture, Leonard R. Murrell of Memphis suggests using Daniel Schaerer's freeware Small Screen 1.3, an application that superimposes boundaries of smaller screen sizes on your monitor.

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

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 icl8 resource in the application's resources window, and

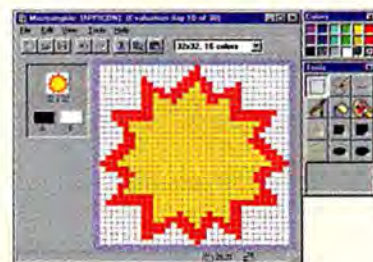


then double-click the application icon in the icl8 resources window. This opens an editing window for the application icon. After editing the icon, save your changes, select all, and copy the selection.

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 x 32 and 16 x 16 icons.

see Web pages in the newly sized Navigator browser window, type URLs in the window's Location box. **m**

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).

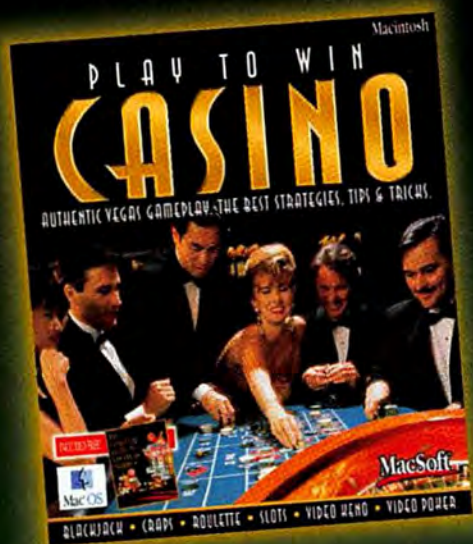
Shareware mentioned in *Quick Tips* is available from Macworld Online (www.macworld.com) or America

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.

PLAY TO WIN CASINO™

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



LEARN AS YOU PLAY, NOT AS YOU PLAY

- 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



ROULETTE



SLOTS



VIDEO KENO



CRAPS



BLACKJACK



VIDEO POKER

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
4MB RAM, CD-ROM drive and 256-color monitor (thousands of colors recommended)
©1997 Varcon Systems, Inc.



VARCON
SYSTEMS, INC.

Circle 30 on reader service card

MacSoft®

An affiliate of GT Interactive Software Corporation
2300 Berkshire Lane No., Plymouth, MN 55441 • 612-509-7600
Call for a free catalog or visit our website at www.wizworks.com

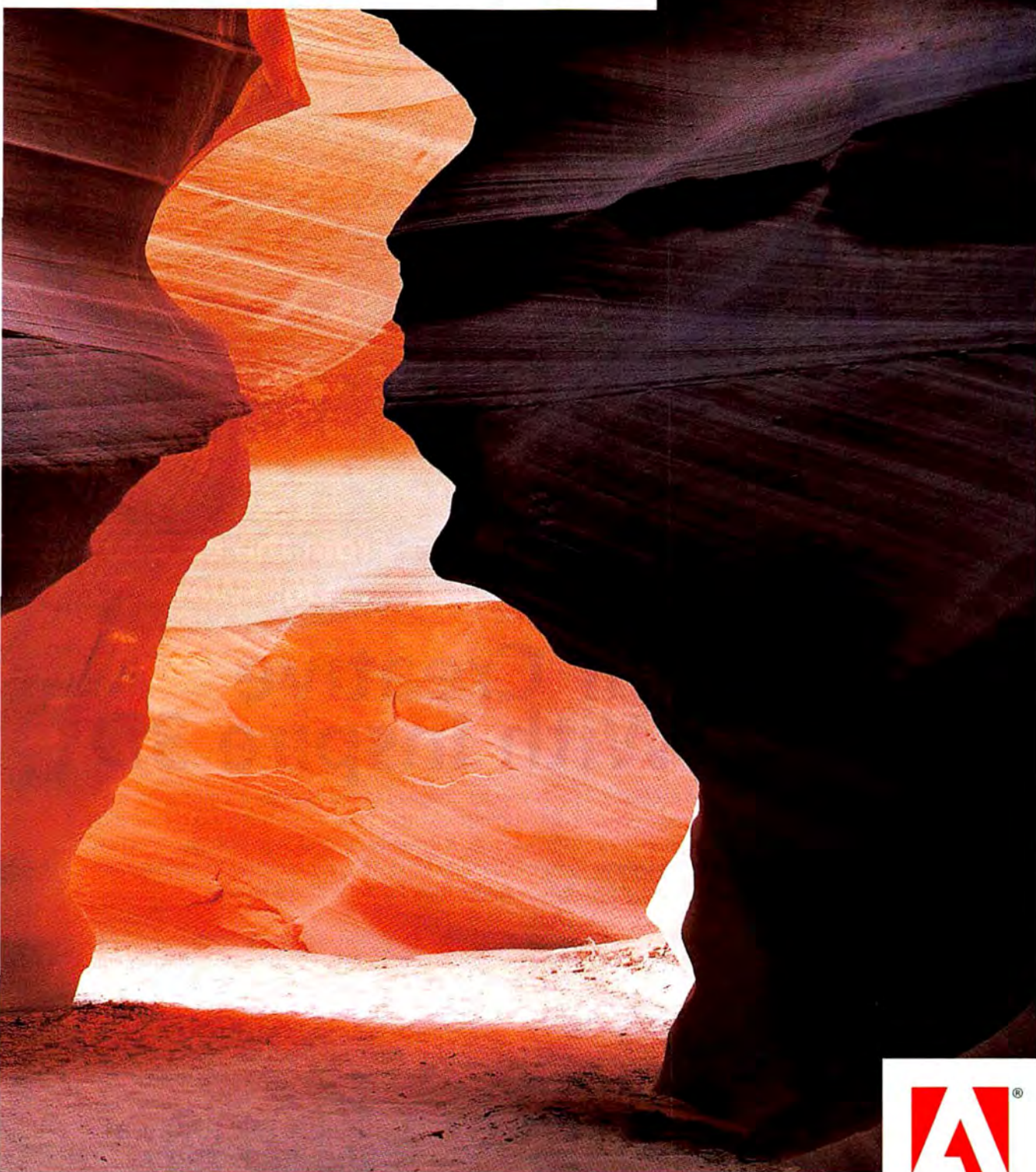
Thousands of images in multiple formats. Including that

*Offer good for a limited time while supplies last. © 1998 Adobe Systems Incorporated. Adobe, the Adobe logo, and Adobe Image Library are registered trademarks of Adobe Systems Incorporated. QuickTime is a trademark of Apple Computer, Inc.

**Adobe
Image
Library®**

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.



Adobe

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.



Image created with Inspire 3D

From the creators of
LightWave 3D

Unleash Your Creative Power With Inspire 3D

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

Outside 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



NewTek

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 “fi” 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 *l*; 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

With Ligatures

kerfluffle
stiff
sufficient

Without Ligatures

kerfluffle
stiff
sufficient

PREVENT COLLISIONS If you decide not to use ligatures, don't choose a font like Adobe Garamond, which has an *f* that will collide with *i* and *l*.

3¹/₄ 2³/₄ 1¹/₂
3¹/₄ 2³/₄ 1¹/₂

FRACTION HELP Building your own fractions helps with printing across platforms. To keep hand-built fractions from being too light (top row), increase line weight by changing the horizontal scale (width) from 100 to 120 percent (bottom row).

The Promise of OpenType

MICROSOFT AND ADOBE are devising a new font format called OpenType that promises to solve all our cross-platform font problems and most other font issues as well. If it really is widely adopted, here's what you should be able to expect:

- No more worries about format—OpenType fonts will contain either PostScript Type 1 or TrueType outlines (or both of them).
- Font files that work both on the Mac and in Windows.
- No need to convert fonts from one version to another, and no mismatched characters or styles—everyone will be using the same font.
- No expert and alternate sets—you'll be able to use a single font that contains regular and old-style figures, small caps, and standard upper- and lowercase characters, ligatures, fractions, and compatible ornaments.
- Easier use of glyphs.
- Finer control of metrics—kerning, tracking, and hung punctuation.
- Just one file for a Type 1 font instead of a suitcase and a printer font.

Don't expect these grand changes anytime soon, though. The developers expect to launch OpenType this year, but it will take some time to be adopted, since applications, printer drivers, and ATM will have to be updated. Also, it won't create expanded character-set fonts—we'll have to buy those.

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 bitmaps 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 floppies 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 Alsoft's MasterJuggler flags 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 the suitcases 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

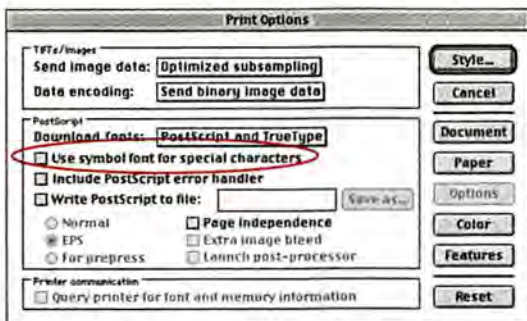
Missing Bold or Italic

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 is, 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.



HIDDEN PROBLEM Avoid unwanted character substitution by making sure this PageMaker option is not checked.

While large type retains its details,

small type degrades significantly when converted to paths or outlines in an illustration application. This problem is seen in 1-point Jenson Text Bold. When it is converted to outlines, as below, it appears to be a heavier weight, and the counters (such as the interior white space inside the "a" and "n") and serifs may fill in. While these effects may not be as noticeable on screen, when the converted type is printed on a press, ink spread exaggerates the effect.

While large type retains its details,

small type degrades significantly when converted to paths or outlines in an illustration application. This problem is seen in 1-point Jenson Text Bold. When it is converted to outlines, as it is in this section, it appears to be a heavier weight, and the counters (such as the interior white space inside the "a" and "n") and serifs may fill in. While these effects may not be as noticeable on screen, when the converted type is printed on a press, ink spread exaggerates the effect.

BIG PICTURE To ensure that you get the right font in an EPS file, try converting fonts (top) to paths (bottom). Keep type large, though, to make it readable.

You may also get odd spacing if the file contains the Mac's TrueType screen fonts Geneva, New York, or Monaco, or if a Windows file contains Arial or Times New Roman. The PostScript printer automatically substitutes Helvetica, Times Roman, or Courier, adjusting the spacing to retain the line breaks in your original.

SOLUTION Avoid using TrueType versions in files if you suspect your printer is substituting Type I fonts.

Missing Word Spaces

PROBLEM Sometimes the space between words seems to disappear. This is especially likely if you use some of the Adobe "original" fonts that are tightly spaced by design, such as Adobe Garamond or Myriad MM. The problem arises when the kern pairs for the characters on either side of a word space are large enough to eat up the word space.

For example, in one of these fonts, if you have a sentence whose last word ends in *y* followed by one that begins with *W*, the word space is reduced.

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 ©, ®, 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. **m**

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

Anyone 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 layers. 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. **m**

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.

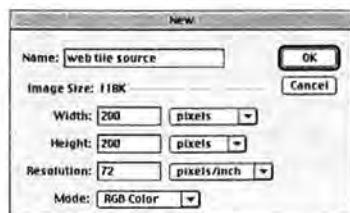
1 Create Tiles with Seams

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/.)



Source tile



Settings



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.

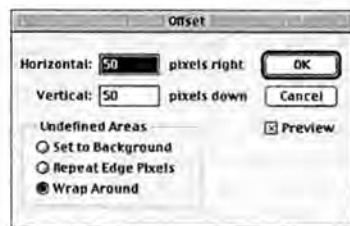
Begin with a centered image, such as the one in your source tile. Then, choose Filter: Other: Offset. Inside the Offset filter's settings window that appears, choose Wrap Around and enter the number of pixels by which you wish to offset the image. I chose a setting of 50 pixels in the horizontal and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



Source tile



Offset Image



Offset filter settings

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.



Filling in



Finished tile



Seamless background

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.



Light tile



Dark tile



Magic-wand setting

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 modem 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.



EXTENSIS POWERSUITE
FOR QUARKXPRESS
3 GREAT PRODUCTS!
ONE INCREDIBLE LOW PRICE!

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

Extensis QX-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. QX-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.

Extensis

DOWNLOAD A FREE TRIAL VERSION

<http://www.extensis.com>

Extensis, the Extensis logo and QX-Tools are registered trademarks and QX-Effects and Preflight Designer are trademarks of Extensis Corporation. Quark and QuarkXPress are trademarks of Quark Incorporated. Macintosh is a registered trademark and Mac is trademark of Apple Computer, Inc. All other trademarks are property of their respective owners.



SAVE
\$130.00

\$199.95

EXTENSIS POWERSUITE
FOR QUARKXPRESS 3.31-4.0
MACINTOSH

1.800.796.9798



SOURCE CODE 1087

Circle 14 on reader service card

The Black Art of Bluescreening

How to Combine Video Footage without Getting the Blues

by Jim Heid

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 Wolosky, 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.

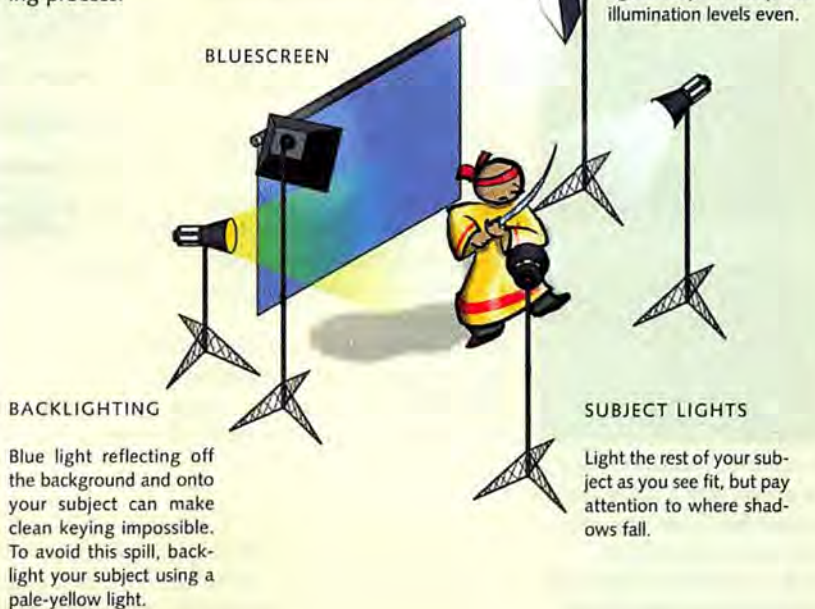
Light It Right—the Background Bluescreening has critical lighting requirements. To get good results, it's essential to light the colored background separately from the subject and as evenly as possible.

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

continues

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.





My examples combine footage of a woman with a still image of an Italian landscape. The video footage is an example file included with Sherry London and Eric Reinfeld's *Real World After Effects* (Peachpit Press, 1997).

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.

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.

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

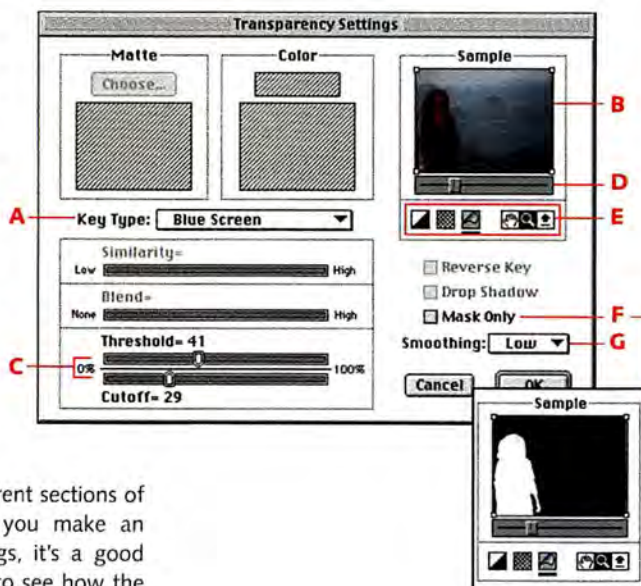
adjustment affects the entire clip.

(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.



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



BONUS:
Super
utilities,
extensions,
desk
accessories,
system
boosters,
and more!

ANNUAL COVER PRICE	YOUR ONE-YEAR RATE	BONUS STATUS
\$59.88	\$30.00	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) 5SQV2

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.

Check us out on the Web —
<http://www.macworld.com>



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 66 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld®

Subscription Department
PO Box 54506
Boulder CO 80323-4506



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.

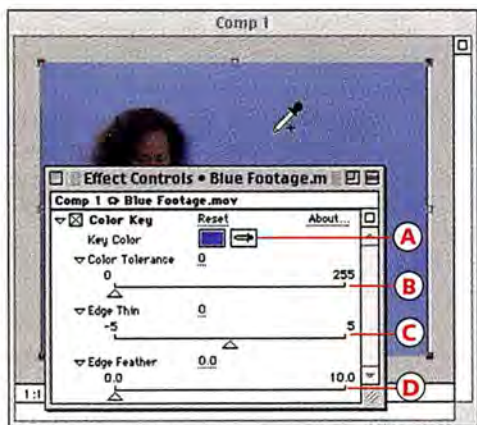
BASE VERSION

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

The Production Bundle offers several advanced keying effects. Linear Color Key is the best place to start; for footage containing smoke or semitransparent areas such as glasses, the Color Difference Key often does a better job.

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.)

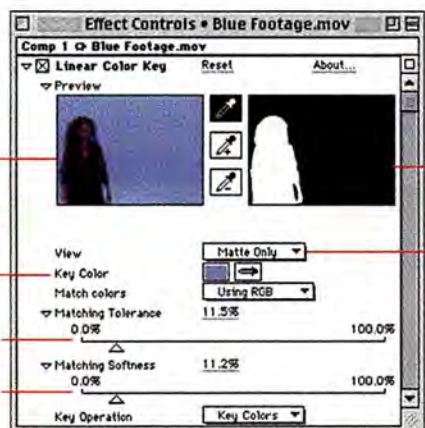
Tip To have the preview update dynamically, press the option key while dragging.

- (D) Fine-tune the key's edge sharpness and transparency. (You'll fix any blue edges in step 3.)

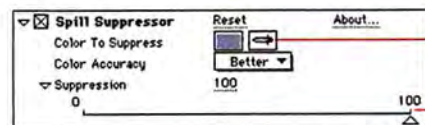
3 Apply Spill Suppression

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.



Color spill (top) creates a blue halo, but Spill Suppressor eliminates the spill and the halo effect it causes (bottom).



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.

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.



A bluescreen background doesn't need to fill the entire frame (left). You can create a garbage matte to crop in on your subject (right).

large diffusers (or softboxes) work with your video lights to cast a soft light that doesn't create distinct shadows.

To ensure even illumination, use a photographer's light meter, take readings on the entire background, and adjust your lights as needed. Many midrange and high-end video cameras have manual-exposure modes, in which the cameras display light-meter readings in their viewfinders.

Shooting your subject outdoors is one way to get realistic-looking lighting. It also helps keep lighting across the bluescreen even—especially on overcast days.

Light It Right—the Foreground

For bluescreening, it's a good idea to backlight your subject, using straw- or yellow-colored light. Doing so helps wash out any blue light that reflects off the background and onto the subject, where it causes a halo effect when keyed.

Know the Shadows Shadows and lighting direction are also important. Say you plan to combine close-ups of a kid pedaling a stationary bicycle with footage shot from a moving car. A surefire way to get amateurish results is to light the shots inconstantly: for example, having the cyclist's shadows fall to the left while the outdoor shadows fall to the right.

When superimposing a subject over an outdoor scene, be sure the subject doesn't cast shadows on the bluescreen itself. If, however, you're superimposing over something flat (say, a weather map), shadows on the screen can add realism.

Dress for Success Be sure your subject isn't wearing—or doesn't contain—colors similar to your background's. 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

shoot a blue-eyed model wearing blue velvet, go with a green background.

Camera Concerns

Your set is all set; it's time to address the camera-related issues of bluescreening.

Quality Counts The desktop-video mantra—shoot in the highest-quality format you can afford—also applies to bluescreening. Low-quality formats such as VHS generate more noise than high-quality ones: Hi8 (good), Beta SP (better), and digital videocassette (best). Noise tends to show up around the edges of your subject, and that translates into poor composites.

Keep It Steady A tripod is a must. And if you're shooting a talking head, seat your subject in a chair so that the head doesn't move around excessively.

Balance the White Before shooting,

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.

Ultimate Keying with Ultimatte

Ultimatte Corporation, which won an Oscar in 1995 for its Ultimatte keying technology, now offers plug-ins for Adobe After Effects, Adobe Premiere, and Media 100 systems, for both the Mac OS and Windows.

With Ultimatte, you take a "screen-correction shot" of your bluescreen set prior to shooting the bluescreen sequence. The Ultimatte software uses this shot to compensate for flaws in the background, such as uneven lighting and smudges. The software also has a "grain-killer" feature that filters out the video noise that can cause problems at image edges.

Ultimatte excels at hard jobs, such as keying through glass and smoke or retaining shadows. It's pricey and complex, but nothing does a better job.

Keying Tools

When you digitize your video, use as little compression as possible so as not to introduce artifacts at the edges of your subject. Now you're ready to combine bluescreen footage with a background.

Today's popular video editors and 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. **m**

JIM HEID's latest book is *HTML & Web Publishing Secrets* (IDG Books Worldwide, 1997).

Macworld

Advertiser Index

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.

Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone
20,21	3COM	—	—	27-29	GCC	43	—	97	MacSoft	29	—
102,103	Adobe	—	800/521-1976	73	GoLive Systems Inc.	38	—	126,127	MacWarehouse	150	800/434-3035
94	AEC Software	203	—	59	Hitachi NSA	74	800/441-4832	88-93	Macworld Expo	—	800/645-EXPO
10	Agio Designs	—	800/688-2446	IBC	Iiyama North America	39	800/313-4335	134	MegaHaus	229	800/786-1184
136	Alliance Peripheral Systems	62	—	57	Infowave	32	800/564-0644	14	MetaCreations Corp.	5	800/ 846-0111
58	ALSOFT	140	800/257-6381	40	Intergraph Computer Systems	9	—	4,5,7	Microsoft Corporation	—	—
49	American Power Conversion	72	888/289-APCC	56	Interland	10	—	67	Microtek Lab, Inc.	—	800/ 654-4160
42	ATI Technologies, Inc.	256	—	12,13	Iomega - JAZ	—	—	98	Mitsubishi Electronics America, Inc.	261	800/ 843-2515
41	Avery Dennison	—	800/477-4404	39	Iomega - Zip	—	—	80	Newer Technology	55	—
43	Avery Dennison	—	800/477-4404	37	Iomega - ZIP	—	—	104	NewTek Incorporated	14	—
45	Avery Dennison	—	800/477-4404	9	IXMICRO	53	888/467-8282	11	Orange Micro	33	714/ 779-2772
124	Bottom Line Distribution	221	—	133	J&R Computerworld	282	800/221-8180	119	ProDirect	135	800/524-9952
62	Caere Corporation	69	800/535-SCAN	BC	Kensington	—	800/535-4242	25	RICOH	4	—
60,61	Canon USA - Graphic Systems	25	—	84	Kingston	201	800/435-0677	79	Silicon Graphics	8	800/800-7441
55	Canon USA Video	23	—	132	L.A. Trade	—	800/ 433-3726	125	The LLB Company	220	800/848-8967
130,131	ClubMac	96	800/ CLUB MAC	IFC,1	La Cie	52	—	128,129	The Mac Zone	70	800/436-0606
137	Computer Discount Warehouse	2	800/861-4CDW	122,123	MacConnection	145	800/800-3333	33	Umax Computer	99	888/625.UMAX
6	Dantz Development	26	800/225-4880	120,121	MacMall / Creative Computers	131	800/ 222-2808	35	Umax Computer	98	888/625.UMAX
17	Deneba Software	57	800/733-6322	47	Macromedia	37	800/945-9179	44	ViewSonic	59	800/888-8583
18	Diehl Graphsoft	46	410/290-5114	101	MacSoft	25	—	8	VST Technologies, Inc.	74	508/263-9700
135	Digital Graphix	36	800/680-9062	51	MacSoft	30	—	75	Whistle Communications	84	888/4whistle
110	Extensis	14	800/796-9798	53	MacSoft	23	—				

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.

Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.
SOFTWARE			UTILITIES			84 Kingston			201 SYSTEMS		
BUSINESS			58 ALSOFT			132 L.A. Trade			79 Silicon Graphics		
4,5,7 Microsoft Corporation			6 Dantz Development			26 HARD DISKS/STORAGE			ACCESSORIES		
CAD/CAM			57 Infowave			94 AEC Software			203 FURNITURE		
18 Diehl Graphsoft			32			49 American Power Conversion			72		
ENTERTAINMENT			256			130,131 ClubMac			96		
101 MacSoft			42 ATI Technologies, Inc.			12,13 Iomega - JAZ			10 Agio Designs		
51 MacSoft			9 IXMICRO			39 Iomega - Zip			41 Avery Dennison		
53 MacSoft			84 Kingston			37 Iomega - ZIP			43 Avery Dennison		
97 MacSoft			80 Newer Technology			IFC,1 La Cie			45 Avery Dennison		
29			11 Orange Micro			52 MAIL ORDER			124 Bottom Line Distribution		
GRAPHICS/DTP			33			INPUT DEVICES			130,131 ClubMac		
102,103 Adobe			136 Alliance Peripheral Systems			BC Kensington			137 Computer Discount Warehouse		
17 Deneba Software			62			MISCELLANEOUS			2		
110 Extensis			135 Digital Graphix			49 American Power Conversion			135 Digital Graphix		
57 Infowave			120,121 MacMall / Creative Computers			25 RICOH			133 J&R Computerworld		
47 Macromedia			33 Umax Computer			75 Whistle Communications			132 L.A. Trade		
14 MetaCreations Corp.			35 Umax Computer			MODEMS			122,123 MacConnection		
MULTIMEDIA			99			20,21 3COM			120,121 MacMall / Creative Computers		
73 GoLive Systems Inc.			98			NETWORKING			126,127 MacWarehouse		
47 Macromedia			67 Microtek Lab, Inc.			40 Intergraph Computer Systems			119 ProDirect		
104 NewTek Incorporated			14			75 Whistle Communications			125 The LLB Company		
OCR			261			POWERBOOK			128,129 The Mac Zone		
62 Caere Corporation			44 ViewSonic			8 VST Technologies, Inc.			SERVICES		
ONLINE			EXPANSIONS/UPGRADES			PRINTERS			TRADESHOWS/CONFERENCES		
73 GoLive Systems Inc.			59			27-29 GCC			88-93 Macworld Expo		
38			25 RICOH			4			DIRECTORY		
38			4			166					

Macworld puts you in touch with the information you need most with three easy options:

1 **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 telephone.

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.

Macworld
THE ESSENTIAL RESOURCE

■ Check this box to subscribe to Macworld

YOU WILL BE BILLED \$24 FOR A ONE-YEAR (12 ISSUE) SUBSCRIPTION (US ONLY). SUBSCRIPTION WILL BE SENT TO NAME AS NOTED BELOW. PLEASE CHANGE IF MAILING ADDRESS IS DIFFERENT.

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.

1	2	3	4	5	146	147	148	149	150	291	292	293	294	295	461	462	463	464	465	531	532	533	534	535
6	7	8	9	10	151	152	153	154	155	296	297	298	299	300	466	467	468	469	470	536	537	538	539	540
11	12	13	14	15	156	157	158	159	160	401	402	403	404	405	471	472	473	474	475	541	542	543	544	545
16	17	18	19	20	161	162	163	164	165	406	407	408	409	410	476	477	478	479	480	546	547	548	549	550
21	22	23	24	25	166	167	168	169	170	411	412	413	414	415	481	482	483	484	485	551	552	553	554	555
26	27	28	29	30	171	172	173	174	175	416	417	418	419	420	486	487	488	489	490	556	557	558	559	560
31	32	33	34	35	176	177	178	179	180	421	422	423	424	425	491	492	493	494	495	561	562	563	564	565
36	37	38	39	40	181	182	183	184	185	426	427	428	429	430	496	497	498	499	500	566	567	568	569	570
41	42	43	44	45	186	187	188	189	190	431	432	433	434	435	501	502	503	504	505	571	572	573	574	575
46	47	48	49	50	191	192	193	194	195	436	437	438	439	440	506	507	508	509	510	576	577	578	579	580
51	52	53	54	55	196	197	198	199	200	441	442	443	444	445	511	512	513	514	515	581	582	583	584	585
56	57	58	59	60	201	202	203	204	205	446	447	448	449	450	516	517	518	519	520	586	587	588	589	590
61	62	63	64	65	206	207	208	209	210	451	452	453	454	455	521	522	523	524	525	591	592	593	594	595
66	67	68	69	70	211	212	213	214	215	456	457	458	459	460	526	527	528	529	530	596	597	598	599	600
71	72	73	74	75	216	217	218	219	220	PLEASE PRINT OR TYPE ALL INFORMATION. Expires June 12, 1998. 52 May 1998														
76	77	78	79	80	221	222	223	224	225															
81	82	83	84	85	226	227	228	229	230	Name _____														
86	87	88	89	90	231	232	233	234	235															
91	92	93	94	95	236	237	238	239	240	E-mail _____														
96	97	98	99	100	241	242	243	244	245															
101	102	103	104	105	246	247	248	249	250	Address _____														
106	107	108	109	110	251	252	253	254	255															
111	112	113	114	115	256	257	258	259	260	City _____														
116	117	118	119	120	261	262	263	264	265															
121	122	123	124	125	266	267	268	269	270	State _____ Zip _____														
126	127	128	129	130	271	272	273	274	275															
131	132	133	134	135	276	277	278	279	280	Title _____														
136	137	138	139	140	281	282	283	284	285															
141	142	143	144	145	286	287	288	289	290	Company _____														
										Phone _____ Fax _____														

Simple FREE Ways to Get Product Information

3

3 Simple Ways to Get **FREE** Product Information

Macworld
THE ESSENTIAL RESOURCE

Macworld puts you in touch with the information you need most with
two easy options — fax back or mail in the reader service card.

FREE

Fax back. Mail in. Just don't miss out.

Fold here and close with tape. Do not staple.



50% TOTAL RECOVERED FIBER
10% POST-CONSUMER FIBER



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 677 PORTLAND OR

POSTAGE WILL BE PAID BY ADDRESSEE

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



READER SERVICE DEPARTMENT
12950 SW PACIFIC HWY STE 7
TIGARD OR 97223-9747



Speed-Tuning Delivers the Performance and The Awards!

Home of the
Speed-Tuned
Hard Drives

ProDirect

800-555-1256

Service • Performance • Price • Always



WIN Editors' Choice
"An outstanding value in terms of price and performance... comes with easy to use formatting utility." - PC19101 Seagate Cheetah 9.1GB Wide - MacWorld 5/98

WIN Editors' Choice
"Big fast at 7200 RPM nicely priced. Who could ask for anything more?" - MacWorld 5/97

WIN Editors' Choice
"The fastest array in the test the ProDirect PowerRAID" - MacUser 8/97

WIN Editors' Choice
"A winner all the way around in terms of speed, value and design" - MacWorld 6/96

WIN Editors' Choice
"If you're a desktop-video or graphics professional, you need not only a lot of capacity but also a lot of speed... The 9-GB ProDirect PD19171W... excellent choice" - MacUser 6/97

www.pdisales.com

Now you can quickly find and order what you're looking for on our website!

ProDirect

ProDIRECT means...

- 90 Day Test Drive
- Performance Guarantee
- Toll-Free Tech Support
- Same Day Shipping
- No Sales Tax Outside MN
- Reseller Pricing Available
- Educ. & Govt. Discounts
- Never a Surcharge!
- Free Shipping...Just Ask!

Ad No. W0598



IBM ULTRASTAR

9.1GB Narrow or Wide **\$785**
7.5ms Seek 512K Buffer 7200 RPM 5Yr Warranty

ULTRASTAR ES Reliability, Speed & Value

Capacity	Internal	External
2.1 GB (DCAS32160S)	\$185	\$245
4.3 GB (DCAS32160W)	\$195	\$275
9.1 GB (DCAS34330S)	\$335	\$385
18 GB (DCAS34330W)	\$355	\$445

9 ms Seek 5400 RPM 5Yr. Warr.

ULTRASTAR XP High Speed DTP & AV

Capacity	Internal	External
9.1 GB (DCHS39130S)	\$785	\$845
18 GB (DCHS39130W)	\$785	\$865

7.5 ms Seek 512K Buffer 7200 RPM 5Yr. Warr.

18GB ULTRA SCSI WIDE \$1845 \$1925
3.5" Drive 6.5ms Seek 1MB Buffer 7200 RPM 5Yr. Warr.

The Choice is yours... A Hard Drive from Them... HARD DRIVE IN A BOX

A Hard Drive from ProDirect...

☒ **Speed-Tuned to YOU** for the EXACT WAY YOU WORK:

- ☐ AV Recording
- ☐ Desktop Publishing
- ☐ Multi-Purpose Use
- ☒ Award-Winning Performance
- ☒ Tech Support from pros that do more than pack boxes.

The Speed-Tuned Difference
Working closely with drive manufacturers to identify and optimize key internal mode settings for the Mac, our hard drives are calibrated to operate at peak efficiency. We call it Speed-Tuning™ and it works. The proof is in the awards our drives keep winning.

Upgrade Your Mac to G3 Power!

Newer Technology G3/750 Processor Cards

	MHZ/CACHE	FOR MAC	
2068 MaxPower	210/105/512K	6100-8100	\$485
2069 MaxPower	210/105/1MB	6100-8100	\$645
2070 MaxPower	240/160/512K	6100-8100	\$575
2071 MaxPower	240/160/1MB	6100-8100	\$725
2072 MaxPower	250/125/512K	7300-9600	\$745
2066 MaxPower	275/183/1MB	7300-9600	\$1235
2073 MaxPower	275/275/1MB	7300-9600	\$1925

Seagate

CHEETAH Fastest Drive Running!

THE CHEETAH FAMILY BOASTS A 10,000 RPM SPINDLE SPEED WHICH GREATLY ENHANCES ITS OVERALL PERFORMANCE.

4.5GB Wide (ST34501W) \$695
9.1GB Wide (ST19101W) \$1075
7.9ms Seek 512K Buffer 10,000 RPM 5Yr. Warr.

BARRACUDA Legendary Performance

4.5GB Wide (ST34572W) \$575
9.1GB Wide (ST19171W) \$825
8ms Seek 512K Buffer 7200 RPM 5 Year Warranty

CHEETAH Fastest Drive Running!

Capacity	Internal	External
4.5 GB (ST34501W)	\$575	\$635
9.1 GB (ST19101W)	\$675	\$765
9.1 GB (ST19101W)	\$985	\$1045
9.1 GB (ST19101W)	\$1075	\$1165

7.9ms Seek 512K Buffer 10,000 RPM 5Yr. Warr.

BARRACUDA Legendary Performance

Capacity	Internal	External
2.2 GB (ST32272N)	\$385	\$445
4.5 GB (ST32272W)	\$420	\$509
4.5 GB (ST34572W)	\$575	\$635
9.1 GB (ST19171W)	\$625	\$695
9.1 GB (ST19171W)	\$775	\$835
9.1 GB (ST19171W)	\$825	\$905

8ms Seek 512K Buffer 7200 RPM

ELITE Awesome Capacity!

Capacity	Internal	External
23 GB (ST423451N)	\$1795	\$1895
23 GB (ST423451W)	\$1845	\$1945

11ms Seek 2048K Buffer 5400 RPM

Ultra SCSI Acceleration Cards

ATTO Express PCI Ultra SCSI Single Channel..... **\$345**
DualChannel Express PCI Ultra SCSI 3 40 MB/Sec. **\$589**
*with wide drive purchase

Quantum

CAPACITY FOR THE EXTRAORDINARY
AV SPEED-TUNED

AV Speed Atlas II 2GIG
7200 RPM 8ms Seek 512k Buffer 5Yr. Warr. INTERNAL ONLY **\$245**

VIKING
4.5 GB (Q34550VK) \$375
8.5ms Seek 512K Buffer 7200 RPM 5 Year Warranty

ATLAS II
9.1 GB (Q39100) \$690
8ms Seek 1024K Buffer 7200 RPM 5 Year Warranty

STRATUS New Heights of Value & Performance

Capacity	Internal	External
3.2 GB	\$245	\$305
6.4 GB	\$375	\$435
9.1 GB	\$495	\$555

9.5ms Seek 128K Buffer 5400 RPM 5 Year Warranty

ATLAS II Award Winning Reliability

Capacity	Internal	External
2.2 GB (Q32275N)	\$245	\$305
4.5 GB (Q32275W)	\$265	\$345
4.5 GB (Q34550)	\$475	\$535
4.5 GB (Q34550W)	\$495	\$575

8ms Seek 512K Buffer 7200 RPM 5 Year Warranty

VIKING Ultra Value and Performance

Capacity	Internal	External
2.2 GB (Q32275VK)	\$255	\$315
4.5 GB (Q32275VKW)	\$275	\$355
4.5 GB (Q34550VK)	\$375	\$435
4.5 GB (Q34550VKW)	\$385	\$465

8ms Seek 512K Buffer 7200 RPM 5 Year Warranty

ADAPTEC adaptec
PowerDomain 2940 UWM Single Channel PCI..... **\$195**
PowerDomain 3940 UWM Dual Channel PCI..... **\$539**
FireWire AHA 8945 Dual 1394 FireWire Ports and Wide Ultra SCSI Port..... **\$695**

Get a PowerRAID for Maximum Data Transfer Rates

MacUser 8/97 **BEST BUY**
"The fastest array in this test, the ProDirect PowerRAID"

All ProDirect PowerRAIDs are ready to use, Plug and Play and Include: Pre Configured Adaptec 2940 Ultra Wide Accelerator (Also available with High performance Multi Channel Accelerator), RAID-Tuned Hard Drives, ProDirect RAID Center Enclosures and "Remus Raid Software". And, all PowerRAID Components are covered by a 5 year 48 hour replacement warranty. At ProDirect we know that time means money...YOUR Money!

RAID Level 5 Available. Great for Servers!

At ProDirect, we work closely with drive manufacturers to identify and optimize key internal mode settings. This enables our PowerRAIDs to operate at peak efficiency. We call it Raid-Tuning™ and it works. The proof is in the award. AGAIN!

Seagate PowerRAID SC18

18GB CHEETAH SPEED DEMON!

This RAID features drives rotating at 10,000 RPM which greatly enhances the overall transfer rate of this 18 GB Raid.

Configuration	Price
FIXED	\$2995
REMOVABLE	\$3195

Seagate PowerRAID SC36

36GB CHEETAH AWESOME SPEED!

This RAID features drives rotating at 10,000 RPM which greatly enhances the overall transfer rate of this 36 GB Raid.

Configuration	Price
FIXED	\$5595
REMOVABLE	\$5995

Seagate PowerRAID SB36

36GB BARRACUDA MASSIVE SPEED

This RAID features the proven Barracuda technology recommended for use with most video editing systems

Configuration	Price
FIXED	\$4995
REMOVABLE	\$5495

PowerRAID Media 100 QX

With Adobe Premiere PCI..... **\$1795**
Media 100 QX alone..... **\$1895**
*with PowerRAID purchase

Seagate is Media 100 and Truevision and AVID Recommended!

GB	DRIVES	ACCEL CHANNEL	FIXED	HOT-SWAP
8	Barracuda ST3471W	Single	1825	1995
18	Barracuda ST19171W	Single	2595	2795
36	Barracuda ST19171W	Single	4995	5495
54	Barracuda ST19171W	Single	7795	8295
72	Barracuda ST19171W	Single	9695	10495

HIGH SPEED TAPE BACK-UP

IN STOCK TODAY

Speedy Tape Drives Perfect for AV Work or Server on the FLY INSTANT BACKUP!

CAPACITY	MODEL	TRANSFER RATE	SALE
8 GB	HP 1599	90 MB/Min.	1145
8 GB	CTD8000	60 MB/Min.	795
8 GB	Sony 7000	90 MB/Min.	975
24 GB	HP1554 DDS3	120 MB/Min.	1445
24 GB	Sony 9000 DD3	120 MB/Min.	1245
48 GB	HP1553 DDS2	60 MB/Min.	2485
50 GB	Sony AIT5000	120 MB/Min.	3095
144 GB	HP1559 DDS3	120 MB/Min.	3995
150 GB	DLT™ 2500XT	150 MB/Min.	4895
210 GB	DLT™ 2700XT	150 MB/Min.	6535
200 GB	DLT™ 4500	180 MB/Min.	6525
280 GB	DLT™ 4700	180 MB/Min.	7995

RETROSPECT ALL SOFTWARE INCLUDED

INCREDIBLE VALUE
40GB DLT™ 4000 180 MB/Min. **\$2989**

SPECTACULAR SPEED
50GB SONY AIT Up to 360 MB/Min. *Compressed **\$3095**

BLISTERING SPEED
70GB DLT™ 7000 150 MB/Min. **\$6985**

AWESOME SPEED
30GB DLT™ 2000XT 150 MB/Min. **\$2575**

REMOVABLE STORAGE DRIVES

IOmega ZIP
100 MB Removable with One Cartridge External: **\$138**
Internal PowerMac: **\$138**
ZIP Cartridges +1.95 ea.

IOmega JAZZ
1GB Removable with One Cartridge External: **\$295**
Internal PowerMac: **\$255**
JAZZ Cartridges \$87.95 ea.

Syquest SYJET
1.5 GB SyJet Cartridges **\$98** ea.

CD Recorders & Players

CRW 4260
CD Re-Writable Recorder with HUGE 2 Mb Buffer eliminates underruns while mastering high speed recording.
4X CD RECORDER Using CD Recordable Media, Write Music, Video or Data.
6X CD READER: As a Multi-Read CD-Rom, read back the CD you just pressed.
2X CD RE-WRITEABLE: Using Re-Writable Media, you can Write and Re-Write Your Data. Save Money by reusing your media...Great for editing or archival.

Panasonic CDR 7502 4X8X
4 Speed Recorder/Speed Player Huge 2 Mb Buffer
CD-HD Mastering System Featuring Panasonic CDR 7502 & IBM UltraStar 2 GB AV Hard Drive **\$795**
CD-RD Mastering System Featuring Panasonic CDR 7502 & Iomega 1GB Jaz Drive **\$895**
Pioneer 24x CDRom 30ms 300K/Sec. **\$165**
Phillips 8x CD ROM **\$135**

MEMORY HIGHEST QUALITY LIFE TIME WARRANTY

DIMMS	168PIN 60ns	SIMMS	60ns
SIZE	VOLTS	72PIN	
16 MB	\$42	\$46	
32 MB	\$77	\$83	
64 MB	\$139	n/a	
new G3 SDRAM DIMMS			
APPLE CERTIFIED G3 MEMORY FOR NEW G3 POWERMACS	16 MB	\$54	
	32 MB	\$89	
	64 MB	\$295	
	128 MB	\$585	

ProDirect 10830 Nesbitt Ave South Bloomington, MN 55437
Orders: **800-555-1256**
Hours: Monday-Friday 8AM-7PM
International Orders: 612-884-0012
ProDirect Fax: 612-941-1109
Toll Free Tech Support: 800-524-9952
Internet: www.pdisales.com

ALL PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. RETURNED ORDERS ARE SUBJECT TO A RESTOCKING FEE. INTERNATIONAL CUSTOMERS PAY ALL SHIPPING CHARGES. ALL SHIPPING CHARGES ARE NON-REFUNDABLE TO RETURN MERCHANDISE CALL FOR AN RMA NUMBER. ALL RMA'S MUST BE RETURNED WITHIN 30 DAYS OF ISSUANCE. CUSTOMERS ARE RESPONSIBLE FOR SHIPPING CHARGES TO RETURN PRODUCT.

Circle 135 on reader service card **MACWORLD May 1998 119**

As Much As \$300 IN REBATES

Power Macintosh® G3!

Up to
266MHz



Authorized
Catalog Reseller

Power Mac® G3!

233MHz PowerPC® G3
32MB RAM/4GB Hard Drive
24X CD-ROM

WAS \$1,999 \$
Now 1,699!

#27863 (desktop)
Model shown is #27865

Also Available from MacMail

#27874 Power Macintosh G3/233MHz G3/32MB
RAM/4GB Hard Drive/24X CD-ROM/56K
modem Mini Tower **Now! 1,999**

#27864 Power Macintosh G3/266MHz G3/32MB
RAM/4GB Hard Drive/24X CD-ROM/Zip
Drive/Desktop model **1,999**

#27865 Power Macintosh G3/266MHz G3/32MB
RAM/6GB Hard Drive/24X CD-ROM/Zip
Drive/Video In & Out/Mini-Tower **2,499**

#27875 Power Macintosh G3/266MHz G3/128MB
RAM/4GB Hard Drive/24X CD-ROM
100Base-T **Now! 3,799**

20th Anniversary Power Macintosh

250MHz PowerPC® 603e/ 32MB RAM
2GB Hard Drive/4X CD-ROM/33.6 Modem
Built-in 12.1" Active Matrix Color Display

was \$3,999 **Now \$1,999**
#27872



250MHz

**2,000
Price Drop**

Memory

Starting
as low as
\$2.50
per MB



#65416 Prices subject to change.
Please call for most current pricing.

MacMail EXCLUSIVE!



**Mac OS 8 Just 49! When
You Purchase with Any
Version of the New
Microsoft Office 98
Macintosh Edition!**

#24170

Price reflects \$30 mail-in rebate for owners of Mac OS 7.5.
Price before rebate is 79.
Product may be shipped in promotional packing.

**Take Advantage of this
Special Offer: Mac OS 8 and
a Teleport 56K Modem Both
Only 178! Ask for #15027**



Iomega® Drives!

1GB Jaz® External SCSI Drive

**50
Price Drop**



➤ 6.7MB/sec transfer rate

➤ Includes FREE Cartridge

Factory Refurbished,
1 year warranty.

\$199.99

#15813

Stock up on 1GB cartridges #74545



1-2 3-5 6+
124 99 89

Iomega® Zip® 100MB SCSI Drive!

➤ Includes 100MB disk

➤ 29ms average seek time

➤ 1.44MB/sec. max.
transfer rate

➤ Mac/PC

Factory Refurbished,
1 year warranty.

\$99.99

#98023



Up to \$1000 Price Drop!

PowerBook 1400 Series Available from MacMail

New!

#27871 PowerBook 1400cs/166MHz 603e/16MB
RAM/1.3GB Hard Drive/12X CD/11.3" Dual
Scan display was \$2,999 Now \$1,749

#27879 PowerBook 1400c/166MHz 603e/16MB RAM
2GB Hard Drive/8X CD/11.3" Active Matrix
display was \$2,999 Now \$1,999

Up to
166MHz



PowerBook® 3400!

#27876 PowerBook 3400c/240MHz/16MB
3GB HD/12X CD/33.6 Modem
12.1" Active Matrix Display **4,499**

PowerBook 2400c

#27878 PowerBook 2400c 180MHz/603e/16MB RAM/
1.3GB HD/10.4" Active Matrix Display **1,999**



Up to
240MHz

Macintosh PowerBook G3!

250MHz PowerPC® G3/32MB RAM/5GB Hard
Drive/20X CD-ROM/ 33.6 Modem/12.1" Active
Matrix Display

\$5,699!

#27870

250MHz



Power Macintosh 6500!

#27859 Power Macintosh 6500/250MHz
603e/32MB RAM/4GB HD/24X CD-ROM
56K modem Was \$1,999 **Now 1,499**

#27860 Power Macintosh 6500/275MHz
603e/32MB/6GB HD/24X CD/56K modem
Zip Drive Was \$2,499 **Now 1,799**

#27861 Power Macintosh 6500/275MHz 603e/48MB
RAM/6GB HD/24X CD/56K Modem/Zip Drive
MS Office 4.2.1 Was \$2,799 **Now 2,099**

#27862 Power Macintosh 6500/300MHz 603e
64MB RAM/6 GB HD/24X CD/ Zip Drive
Was \$2,999 **Now 2,299**

Monitor sold separately on all models.



Up to \$700
Price Drop

Up to
300MHz

12X External CD-ROM Drive

➤ SCSI Interface
➤ Durable external case
➤ 1800kb/sec transfer rate

\$119.99

#23968



GS771 17" Display Short Depth Design

➤ 16.0" viewable
➤ 1280 x 1024 max. resolution
➤ .27mm dot pitch
➤ 14" footprint

\$499.99

#25520

ViewSonic®



FREE
Sony Speakers
w/any monitor
purchase from MacMail
\$6.99 shipping and
handling applies.

maxell CD-R Media



99¢
per disc

after 20 mail-in rebates for 10-pk.

Price before rebate is .29

Ask for #99087

210MHz MAXpower G3 for Power Mac 6100

➤ 512K backside cache
at 105MHz

\$499.99

#27217

#27219 210MHz MAXpower G3/512K backside
cache/Power Mac 7100/8100 **599**



100sx Color Display

➤ 15" Color display
➤ 13.9" Viewable image
➤ 1280 X 1024 max. res.
➤ .25mm dot pitch

\$249.99!

#23973 (factory refurbish)



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.



UMAX
Computer Corporation

SuperMac
C500/200MHz
PowerPC 603e
16MB RAM/2.1GB HD
8X CD-ROM

Buy Now! only **\$995!**
#28820

PURCHASE EITHER THE C600 OR THE J700 AND GET THE ASTRA 610S SCANNER...

Purchase valid 3/1/98 thru 5/31/98. Instant Gratification! No coupons to fill out... Scanner will ship at the same time as your CPU!



Also Available from MacMall

#27884 UMAX SuperMac C600 vPC/240MHz 603e/32MB RAM 3.0GB Hard Drive/24X CD ROM Includes Insignia's Virtual PC* \$1,495

#27885 UMAX SuperMac J700 233MHz 604e/24MB RAM 2 GB HD/24X CD ROM/33.6Kbps modem/Mac OS 8 \$1,995

All monitors on UMAX systems are sold separately. *Virtual PC shipped in promotional packaging.

Great Deals from MacMall!



Save \$59!

RealPC & StuffIt Deluxe 4.5
Both for only **\$99**
#25995



PalmPilot Professional Edition w/1MB RAM

Includes: Date Book, Address Book, To Do List, Memo Pad, Security, Games and Hot Sync

for only **\$299**
#88147

Price Drop



Microsoft Office 98
Mac Upgrade only **\$268**
#26155
Call regarding Special Offers w/purchase



HP LaserJet 5000N Printer **NEW**

Full-bleed 11" x 17" capability
Up to 16ppm, at 1200dpi
PostScript Level 2 emulation

\$2,059
#28433



56K Data/Fax Modem

PnP installation
Caller ID
FREE Data/Fax software

\$99
#95195

Incredible Price!



Quicken Deluxe 98 & MacIntax Deluxe
Together For Only **\$59**
#24627

*After 20 Quicken Deluxe Mfr. mail-in rebate for previous Quicken users and 15 MacIntax Deluxe mail-in rebate, plus additional \$5 rebate for bundle purchase.



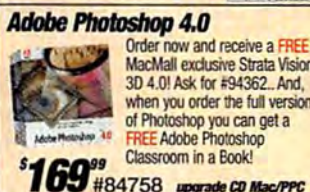
UMAX Astra 610s Scanner

30 Bit > 8.5" x 11.7"
> 300 x 600dpi (4800 max)

\$129
#28523
Price reflects \$20 mfr. mail-in rebate. Expires 5/31/98



Connectix Virtual PC 2.0
Upgrade from 1.0
Windows 95 or DOS
for only **\$39**
#28310



Adobe Photoshop 4.0

Order now and receive a **FREE** MacMall exclusive Strata Vision 3D 4.0! Ask for #94362... And, when you order the full version of Photoshop you can get a **FREE** Adobe Photoshop Classroom in a Book!

\$169
#84758 upgrade CD Mac/PPC



New Macromedia FreeHand 8!

Now with Transparency effects, animation Xtras, Freeform and path reshape tools!

\$139
#27424 (upgrade CD PowerMac)

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.



Three for FREE!

Purchase ANY item from this catalog and receive these items absolutely Free!

TrippLite Surge Protector

Ask for item #28348

Crystal Caliburn

Ask for item #76434

10-pack Mac Diskettes

Ask for item #28803

10-pack Mac Diskettes and Crystal Caliburn are shipped in promotional packaging. You pay only \$2.99 for shipping & handling per item and \$3.99 for surge protector. These free offers apply only to legitimate, paid-in-full purchases from this catalog and are not applicable to any other purchase. Good only in the U.S.; not valid with any other offer and good only while supplies last. Limit one per order. Void where prohibited.



Order Any Time! Open 24 Hours. **1-800-217-9492** Use Source Code: #ZMWD851

Order Today by 10 pm EST—Get It Tomorrow by 10:30 am. Check out our Web site www.macmall.com

We do our best to be accurate but occasionally mistakes occur. We are not responsible for any typographical, photographic or technical errors.

MacMall



MacConnection®

The Original Macintosh Mail-Order Source—Since 1984!

Order as late as 2:45 am. ET and
STILL get Overnight Delivery!

Order Online: www.macconnection.com



ONLY \$1999

High-Performance Mobile Multimedia! PowerBook 1400c

- 166MHz 603e Processor • 2GB Hard Drive
- 11.3" Active Matrix • 8X CD-ROM
- 16MB RAM

49417 Apple PowerBook 1400cs \$1749
(166MHz/16MB/1.3GB/12X/11.3" Dual Scan)

w/purchase of 49417 only



Power Mac G3/233

- 233MHz G3 Processor
- 4GB Hard Drive
- 2MB VideoRAM
- 32MB RAM
- 24X CD-ROM
- 66MHz System Bus

48158 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 15av Monitor

Power Mac G3/233 Desktop w/Monitor

- 32MB + 16MB RAM
- 233MHz G3
- 15av Monitor reg. \$2399
- 4GB HD
- 24X CD-ROM
- 52898

Save \$400! ALL FOR ONLY \$1999

Power Mac G3/266 Desktop w/Monitor

- 266MHz G3
- 32MB + 16MB RAM
- 15av Monitor
- 4GB Hard Drive
- 24X CD-ROM
- 100MB Zip Drive
- reg. \$2799 53077

Save \$500!

ALL FOR ONLY \$2299

ORDER TODAY!

CLARIS Home Page 3.0 Upgr.
48980
Web site design the easy way!
Only \$44

Mac OS 8.1 and MacInTax Dlx.
Buy Both For Only **\$89.95***
51577
*After mail-in rebate

FreeHand 8 Upgrade
The powerful graphics design tool!
\$144.95
51112

ACT! 2.8
Manage time and business contacts productively!
Only \$89.95*
43831
Save \$70 off retail

Kritter Camera
The only full-motion zoom video camera for your PowerBook!
MACCONNECTION EXCLUSIVE! \$299.95
48982

MultiSync P1150 21" Monitor
Breakthrough performance for CAD/CAM, prepress and imaging!
• 0.28mm
• 19.5" viewable
Only \$1249
34338

AGFA ePhoto 1280 Zoom
• Swivel 3X Zoom lens
• 5 image quality settings
• Stores up to 60 images
Only \$889
47140

InFocus LitePro 420 LCD Projector
Extremely portable—just 6.9 lbs!
• 500 brilliant lumens
• Includes carrying case
Only \$5199
47504

Quantum 2.2GB Ultra Wide SCSI Drive
52178
Hurry! While supplies last!
• Internal drive
• 7200 RPM
Only \$199

EPSON Expression 636 Executive Scanner
Includes great software!
34333
• Up to 4800 dpi
• 36-bit color
• Color preview in 6 seconds
Only \$799

VST Zip 100 Drive for PowerBook 3400
• 100MB internal drive
• Fits into the PowerBook's expansion bay
• Uses the same 100MB disks as Iomega's desktop version
• Plug-and-play simplicity
38024

VST Technologies Incorporated
Only \$319.95

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, CAD/CAM, presentations



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 Iomega's desktop version
- Plug-and-play simplicity



7-Time Winner! Best Mail-Order



OUR POLICY • VISA, MASTERCARD, AMERICAN EXPRESS, and NOVUS cards. No surcharge. • Most products are covered by manufacturer's warranty against defects for at least 30 days from the invoice date. • All returns require prior authorization; please call for an RMA. • We are not responsible for typographical errors. • Pricing and promotions are subject to change without notice. Continental U.S.: Shipping Charges: \$4.95 per order up to 3 pounds. On orders over 3 pounds, shipping is \$4.95 plus an additional \$1.25 per pound or fraction thereof. Please call for weight/shipping charge information. Items of excessive size and/or weight may require additional days to deliver via a freight carrier. Please check with your sales rep for more details. Barring events beyond our control, all credit card orders placed on weekdays by 2:45 p.m. ET will ship via Air-Express for delivery the next business day. Saturday delivery available to many areas upon request at no additional charge. Order all day Saturday thru noon Sunday for Monday delivery. Some states require an extra day delivery. APO/FPO, International orders and Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgin Islands: Shipping may require additional time and charges. All other areas: Call 803-446-4444 or FAX 803-445-7791 M-F 9 a.m.-5:30 p.m. ET. ©1997 PC Connection, Inc., Milford, NH. MacConnection & the econnection characters are registered trademarks of PC Connection, Inc. All other trademarks remain the property of their respective companies.

275MHz G3!

Only
\$1999

Call Today!

UMAX
Computer Corporation



S900 with MAXpower 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.

54201 S900 with G3/275MHz/32MB/2.1MB SCSI HD/4MB VRAM/8X CD..... \$1999
54202 S900 with G3/300MHz/32MB/2.1MB SCSI HD/4MB VRAM/8X CD..... 2499

**WHILE
SUPPLIES
LAST!**

Best Deals on Hardware & Software!

Utilities

43831	Act 2.8 for Mac	\$159.95
37633	Conflict Catcher	64.95
50772	Connectix Surf Express	34.95
52083	FlashBack	64.95
49791	Hard Disk Toolkit 2.5	129.95
40682	Norton Utilities Mac	97.95
41769	Retrospect 4.0	149.95
46532	Speed Doubler 8	54.95

Graphics & Design

40277	Adobe Illustrator 7 Mac	369.95
32844	Adobe PageMaker 6.5	549.95
32918	Adobe Photoshop 4 Mac	549.95
16357	Equilibrium Debabelizer 3	389.95
19599	Extensis PowerSuite for Photoshop	194.95
47735	QuarkXPress 4 Mac	689.95
49177	Strata-Studio Pro 2.1	939.95

Business

48980	Claris HomePage 3.0 upgrade	44
46966	Delorme Tripmate GPS w/Street Atlas	159.95
44990	FileMaker Pro 4.0 upgrade	99
51370	Mac OS 8.1 w/FREE Alley 19 Bowling	99
46302	Quicken Deluxe 98	39.95*

*After mail-in rebate

Games

51582	Deadlock	49.95
42144	Diablo	46.95
45697	Riven (Sequel to Myst)	49.95
51584	Top Gun	49.95

Accessories

39536	Kensington Orbit	69.95
32497	Masterlock Notebook Security Cable	39.95
25696	Mouse in the Box	39.95
33990	Solar Panel Mercury II	299.95

CD-ROM

46415	Hi-Val Soundastic 24X CD-ROM	189.95
38365	La Cie Ext 2x6 CD-R Drive w/ Toast	399
38347	MDS 12X External SCSI CD-ROM	139.95
46412	MDS 24X External SCSI CD-ROM	169.95

Digital Cameras

47140	ACFA ePhoto 1280	889
40233	Canon PowerShot 600	499
52680	Kodak DC200	599
47234	Olympus D-600L	1299
44855	Sony Mavica MVC-FD7	699

Video Cards & Accelerators

49733	ATI XClaim Enhanced VR4	\$239.95
52161	ATI XClaim 3D 4MB - PCI	179.95
46511	Averkey 3 Plus	229.95
47782	IX Micro Ultimate Rez 8MB	529
29331	IX Micro Twin Turbo 8MB - PCI	429
52389	Matrox Millennium II 4MB - PCI	189.95
53416	Matrox Millennium II 8MB - PCI	299.95

Printers

37819	Epson Stylus 600	249
37817	Epson Stylus Color 800	349
42275	Epson Stylus Color 3000	1999
43079	GCC Elite 1212	1399
40618	HP Deskjet 870cse	299
33612	HP LaserJet 6MP	899
47733	Minolta Color PageWorks	3795

Scanners

48104	Epson Expression 836XL	2499
48710	Microtek E3 Plus	149
31233	Polaroid Sprint Scan 35 Plus	1799
40083	UMAX Astra 1200s	249
40456	Visioneer PaperPort Strobe	249.95

Monitors

43348	Hitachi 751ss 19"	\$919
36276	Mitsubishi Diamond Pro 17"	1299
45917	NEC M700 Multimedia 17"	699
46460	Optique Q51 15"	219
43904	Princeton Graphics E900 19"	839
48750	Sony GDM-500PS 21"	1799
37900	Sony GDM-W900 24"	3899

Storage

28749	3M/Imation - TR-4 Travan Tape	39.95
25396	Fuji CDR 10-Pack (85C/disk)	8.50*
*After rebate		
47076	Iomega Jaz 2GB SCSI Drive	549.95
47082	Iomega Jaz 2GB 3-pack disks	449.95
19867	Iomega Zip Disk 10-Pack	129.95
44705	Iomega ZipPlus 100MB Drive	199.95
50606	La Cie 4x8 External CD-R Kit	499.99
51045	La Cie 32X External CD-ROM	199
45310	Seagate 9.1GB Ultra SCSI Cheetah	999
48040	SyQuest SyJet 1.5GB SCSI Drive	299
43688	TDK CDR 50-Pack	109.95
48734	Traxdata 2x6 External CD-R Kit	449

FREE!
CALL TODAY!
For your FREE
MacConnection
or PC Connection
catalog subscription!
(Mention source code 598MW)



800-800-6928

SUPER LOW SIMMS!

Memory as low as \$249 per MB	8MB as low as \$29.95	16MB as low as \$49.95
	32MB as low as \$79.95	



NEW!
Extended service plan
Supplements the manufacturer's warranty for a full 4 years from date of purchase!

Start Saving Now!
ask about...
LEASING OPTIONS
for BUSINESS
CALL 800-800-0014

20,000 HOT PRODUCTS 24 HRS A DAY!

800-800-6928

www.macconnection.com
Secure Online Shopping!

598MW

Special Of The Month

POWERLOGIX

G3

PowerLogix
PowerForce G3
275MHz 1MB
Backside Cache
at 275MHz

\$1599

*fine tuned and guaranteed to
run at 300MHz/300MHz!

Microsoft Office 98 For Macintosh

\$289

POWERLOGIX

PowerForce G3
250MHz/250MHz
1:1 Ratio

\$1299

UMAX Astra
1200s 600dpi
Scanner

\$239

Digital Cameras

- Kodak Digital DC-120\$799
- Kodak Digital DC-210\$759*
- Agfa ePhoto 307\$299
- Sony Mavica w/Zoom\$689
- Olympus D220L\$487
- Olympus D500L\$869
- Olympus D600L\$1259

Agfa SnapScan 310

- AGFA Snapscan 600\$385
- AGFA Snapscan 600 Artline.....\$429
- AGFA StudioStar For Mac.....\$697
- AGFA StudioStar For PC.....\$697
- Agfa Arcus II Mac/PC.....\$1569
- AGFA Arcus II *Solo*.....\$1279
- AGFA DuoScan.....\$3599

lomega

lomega Zip

- Zip Drive External\$143
- Zip Drive Internal (Tan).....\$149
- Zip *Plus* External\$185
- Zip/Jaz Internal Kits\$23
- Jaz Drive Internal (Tan)\$199
- Jaz Drive 1GB Carts.....\$86
- Jaz Drive External 2GB\$619

PowerBook 1400c/166

ATI VR PCI

w/RangePro

UMAX PowerLook II

Scanner

\$1129

Magic Yamaha

4x/2x/6x Speed CD-R

Drive External

ReRecordable

\$659

Includes SCSI cable, terminator, Astarte

Toast v3.5, 1Pc. CDR/ 1Pc. ReRecord

POWERLOGIX

radius

Quantum

KL2

BOTTOM LINE

iiyama

Seagate

newer technology

AGFA

UMAX

The one source for all your Macintosh needs.

<http://www.blol.com/>
Website prices updated every 30 minutes!

*Order online via our
secure server and SAVE!

1-800-990-5798

Don't Trash That Mac!
Check Out These Upgrades!

TEAM Equipment Leasing
"Your Partner In Business!"

Everyone Needs RAM

- All memory purchased from Bottom Line comes with a hassle free lifetime warranty!
- | | |
|-----------------------------------|------------------------------------|
| DIMMs 168-Pin 5.0/5.5 volt | 64MB 168-Pin DIMM 60ns .....\$149 |
| PCI PowerMac, UMAX, Power | 256k L2 Cache DIMM .....\$89 |
| 8MB 168-Pin DIMM 60ns .....\$24 | 512k L2 Cache DIMM .....\$99 |
| 16MB 168-Pin DIMM 60ns .....\$49 | SIMMs 72-Pin |
| 32MB 168-Pin DIMM 60ns .....\$82 | 8MB SIMM 60ns .....\$29 |
| 64MB 168-Pin DIMM 60ns .....\$139 | 16MB SIMM 60ns .....\$41 |
| 512k L2 Cache DIMM .....\$79 | 32MB SIMM 60ns .....\$74 |
| PowerLogix 1MB Cache .....\$152 | 256k L2 Cache SIMM .....\$15.99 |
| 1MB VRAM DIMM .....\$26 | 1MB L2 Cache 61/71/8100 .....\$139 |
| DIMMs 168-Pin 3.3 volt | Apple G3 RAM SDRAM |
| Starmax, PowerTools, Apple 4400 | Exclusively for the new G3 Macs |
| 8MB 168-Pin DIMM 60ns .....\$39 | 32MB 100MHz SDRAM .....\$69 |
| 16MB 168-Pin DIMM 60ns .....\$49 | 64MB 100MHz SDRAM .....\$157 |
| 32MB 168-Pin DIMM 60ns .....\$85 | 128MB 100MHz SDRAM .....\$329 |

Processor Card Upgrades

- | | |
|---------------------------------------|---------------------------------------|
| POWERLOGIX | newer technology |
| PowerBoost Pro 200MHz .....\$339 | MAXpower G3 250/512k .....\$759 |
| PowerBoost Pro 225MHz .....\$299 | MAXpower G3 266/133MHz .....\$999 |
| PowerForce G3 250/250 1:1 .....\$1299 | MAXpower G3 275/183MHz .....\$1199 |
| PowerForce G3 233/117MHz .....\$799 | MAXpower G3 275/275MHz .....\$1799 |
| PowerForce G3 250/125MHz .....\$999 | MAXpower G3 6100 210MHz .....\$499 |
| PowerForce G3 266/177MHz .....\$1199 | MAXpower G3 6100 240MHz .....\$699 |
| PowerForce G3 275/183MHz .....\$1299 | MAXpower G3 71/8100 210MHz .....\$599 |
| | MAXpower G3 71/8100 240MHz .....\$799 |

- KL2**
- Imactell**
- | | |
|-----------------------------------|-----------------------------------|
| XLR8 MACH Spd 200MHz .....\$279 | PowerJolt 233MHz 604e .....\$399 |
| XLR8 MACH Spd 225MHz .....\$299 | G3 PowerJolt 266/512k .....\$1199 |
| XLR8 MACH G3 233/512k .....\$799 | G3 PowerJolt 250/1MB .....\$1399 |
| XLR8 MACH G3 266/512k .....\$999 | G3 PowerJolt 300/1MB .....\$2699 |
| XLR8 MACH G3 266/1MB .....\$1199* | |
| XLR8 MACH G3 300/1MB .....\$1899 | |

High Performance Drives & Fast/Wide Cards

- | | |
|--------------------------------------|---------------------------------------|
| Drives 7200rpm Or Faster: | Seagate Barracuda 9.1GB .....\$809 |
| Quantum Atlas III 9.1GB .....\$1149 | Seagate Barracuda 4.5GB XL .....\$559 |
| Quantum Atlas III 18.2GB .....\$1949 | SCSI Cards: |
| Quantum Viking 2GB .....\$269 | Jackhammer Fast/Wide .....\$399 |
| Quantum Viking 4GB .....\$395 | ATTO Express PCI Fast/Wide .....\$279 |
| Seagate Cheetah 4.5GB .....\$627 | Adaptec 2940UW Fast/Wide .....\$259 |
| Seagate Cheetah 9.1GB .....\$999 | Initio Miles Fast/Wide .....\$199 |

Video Cards 2D/3D Accelerators

- | | |
|-------------------------------------|--------------------------------------|
| IX Micro ProREZ 4MB .....\$299 | Vision 3D Imagine II 8MB .....\$595 |
| IX Micro UltimateREZ 8MB .....\$539 | Vision 3D Imagine III 8MB .....\$839 |
| IX Micro MacRocket 4MB .....\$539 | ATI Nexus 2D/3D 8MB .....\$519 |
| Matrox Millennium II 4MB .....\$219 | ATI VR 3D w/Range Pro 4MB .....\$259 |
| Matrox Millennium II 8MB .....\$339 | Technix Power3D .....\$199 |
- Adding RAM, A Processor Card, A Video Accelerator, And/Or Fast/Wide Hard Drives Can Greatly Increase The Performance Of your OlderMac

Do you subscribe to our eMail Specials?
If not, look what you missed!

Netscape: Bottom Line Distribution Home Page

Back Forward Reload Home Search Guide Images Print

Go To: <http://www.blol.com/>

64MB DIMM .....\$99	MaxPOWER 200MHz .....\$219
32MB DIMM .....\$69	RapidCache 1MB .....\$144
Virtual PC .....\$69	PowerLogix PBP225 .....\$299
IX Micro 4MB .....\$169	Newer G3 210MHz .....\$649
Seagate Hawk 4.3GB .....\$219	Miro DC30 .....\$599

Subscribe to our eMail specials on our web site and save!
http://www2.blol.com/mail_list.t

Bottom Line now offers the most flexible leasing options in the business.
Call for details on our personal or business leasing options on any item we carry over \$1000.00.

Lease An Apple G3
233MHz Complete
System for only
\$83.39 per month!

36 Months \$83.39

- Apple G3 233MHz 64MB RAM/4GB HD/24x Speed CD-ROM 1-Year Warranty 1024x768 .28mm
- Epson Stylus 600 Color Printer 1440x720dpi
- Global Village 56k Modem
- Apple Kbd. & Mouse

Apple G3 Systems are Here!

<p>PowerMac G3 750/266MHz</p> <p>\$84/mo</p> <ul style="list-style-type: none"> 750PowerPC 266MHz! 32MB RAM, 512k Cache 24x Speed CD-ROM 6GB 5400RPM IDE HD 2MB VRAM Ziff Socket Processor 1-Year Warranty Non-Lease Price \$2369 	<p>PowerMac G3 750/233MHz</p> <p>\$67/mo</p> <ul style="list-style-type: none"> 750PowerPC 233MHz! 32MB RAM, 512k Cache 24x Speed CD-ROM 4GB 5400RPM IDE HD 2MB VRAM 56k Internal Modem 1-Year Warranty Non-Lease Price \$1890
---	--

- 4GB 5400RPM IDE HD, Internal Zip
- 32MB RAM, 512k Cache, 2MB VRAM
- Keyboard and Mouse included
- Non-Lease Price \$1890

- More Apple Systems:**
- | | |
|----------------------------|--------|
| G3 PowerMac 266MHz Ultra | \$3599 |
| 6500/275 w/MS Office Bndl. | \$2299 |
| 6500/275 32/6GB/24x/Zip | \$1839 |
| 6500/300MHz 64/6/24x/Zip | \$2239 |

Scanners

- UMAX Astra 610s *NEW***\$125*
- UMAX PowerLook II**\$1129*
- Epson Expression 636 Upgrade.....\$719
- Microtek Scanmaker V310\$145
- Microtek Scanmaker E6\$229*
- Microtek Scanmaker E6 w/PhT\$478*
- Nikon CoolScan II Slide Scnr\$881
- Visioneer Paperport Strobe\$269
- Visioneer Paperport Vx w/SCSI.....\$149

Printers

- | |
|--------------------------------------|
| HP LaserJet 400N 1200dpi.....\$1499 |
| HP 6MP 600x600 Laser .....\$929 |
| Epson Stylus Color 600 .....\$249 |
| Epson Stylus Color 800 .....\$359 |
| Epson Stylus Photo 6-Color.....\$369 |
| Epson Stylus 3000 11"x17".....\$1799 |

Modems

- | |
|---|
| USR Sportster 56k X2 .....\$194.95 |
| Teleport 56k X2/FLEX.....\$157.99 |
| Supra Express 33.6k.....\$69.99* |
| Supra Express 56.6k w/Spkr .....\$119.95* |

PowerBooks/RAM

- 1400 RAM Modules**
- | | |
|-----------------|-----------------|
| Newer Tech | Viking |
| 12MB .....\$89 | 16MB .....\$93 |
| 16MB .....\$99 | 32MB .....\$139 |
| 24MB .....\$139 | 48MB .....\$189 |
- 3400/G3 RAM Modules**
- | | |
|-----------------|------------------|
| 24MB .....\$99 | 64MB .....\$219 |
| 32MB .....\$129 | 96MB .....\$399 |
| 48MB .....\$149 | 128MB .....\$429 |
- PowerBook**
1400cs\$1799
166MHz

http://www.blol.com/ *Rebate available <http://www.blol.com/rebate> Mac On! **1-800-990-5798** M-F 8-8 CST Sat 10-4 CST

Shipping: \$5, 5 lbs., 2 Days Payment: No surcharge on credit cards. Corporate POs welcome. Tax: Texas residents add 8.25% sales tax. Prices: Items, prices and availability subject to change w/out notice. Returns: Call for RMA number. Must be in original condition, opened software is non-refundable. All orders subject to a restocking fee. Original shipping is non-refundable. Apple brand products are not returnable for refund. Bottom Line Distribution cannot be responsible for errors in typography or photography. Customer Service: 512-485-4600. International Sales: Bottom Line Distribution is committed to the needs of the international Macintosh user. We offer discounted rates with DHL. Delivery to most countries is 2 to 3 days. Dealer inquiries are welcome. Language interpreters available. Address: 715 West 23rd Suite N, Austin, TX 78705, FAX: 512-485-4601.





The LLB Company, Inc.

1-800-848-8967



Website: www.llb.com International: 425.746.0229 Fax: 425.746.5168

DESKTOP MEMORY UPGRADES

168-PIN SDRAM			168-Pin DIMMs			EDO 3.3V 60ns DIMMs			EDO 5v 60ns DIMMs			72-Pin SIMMs			30-Pin SIMMs		
G3 Systems			PowerMac Series-60ns			Scarmax & Pm 4400			Power Base Series			PowerMac 6100...			Mac IIcx, si, se, IICx...		
Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price
128MB	128664SD	\$519	128MB	128664	\$644	64MB	64764EDO3.3V	\$165	64MB	64764EDO5V	\$165	32MB	32632	\$79	16MB	1601	\$115
64MB	64764SD	\$219	64MB	64764	\$152	32MB	32764EDO3.3V	\$80	32MB	32764EDO5V	\$80	16MB	16732	\$43	8MB	8888	\$42
32MB	32764SD	\$77	32MB	32764	\$82	16MB	16764EDO3.3V	\$40	16MB	16764EDO5V	\$40	8MB	8032	\$23	4MB	4000	\$18
16MB	16764SD	\$69	16MB	16764	\$45	8MB	8764EDO3.3V	\$37	8MB	8764EDO5V	\$37	4MB	4032	\$18	2MB	2000	\$16

POWERBOOK MEMORY UPGRADES

POWERBOOK G3			POWERBOOK 3400			POWERBOOK 2400			POWERBOOK 2300			POWERBOOK DUO			POWERBOOK 190		
Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price
128MB	PB3400-128G3	\$425	128MB	PB3400-128	\$439	64MB	PB2400-64	\$382	48MB	PB2300-48	\$288	36MB	PBDUO-36	\$142	32MB	PB190-32	\$155
64MB	PB3400-64G3	\$230	96MB	PB3400-96	\$399	32MB	PB2400-32	\$186	36MB	PB2300-36	\$245	28MB	PBDUO-28	\$239	16MB	PB190-16	\$116
32MB	PB3400-32G3	\$119	64MB	PB3400-64	\$236	24MB	PB2400-16	\$153	32MB	PB2300-20	\$205	20MB	PBDUO-20	\$139	12MB	PB190-12	\$70
16MB	PB3400-16G3	\$78	32MB	PB3400-32	\$119	16MB	PB2400-8	\$93	20MB	PB2300-16	\$162	14MB	PBDUO-14	\$115	8MB	PB190-8	\$65
			24MB	PB3400-24	\$145				16MB	PB2300-16	\$118	12MB	PBDUO-12	\$109			

POWERBOOK 5300			POWERBOOK 1400			POWERBOOK 500			POWERBOOK 150		
Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price
48MB	PB5300-48	\$205	24MB	PB1400-24	\$117	32MB	PB500-32	\$88	28MB	PB150-28	\$219
32MB	PB5300-32	\$95	16MB	PB1400-16	\$89	16MB	PB500-16	\$49	20MB	PB150-20	\$160
16MB	PB5300-16	\$77	8MB	PB1400-8	\$60	8MB	PB500-8	\$45	8MB	PB150-8	\$70
8MB	PB5300-8	\$65				4MB	PB500-4	\$40	4MB	PB150-4	\$45

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

PRINTERS & SCANNERS

Astra 1200

\$248
 Astra 610s \$148
 Astra 1200 w/Full PS & Trans \$579

EPSON
 Stylus 600 Inkjet **\$319**
 Stylus 800 Inkjet \$399
 Expression 636 Executive \$805
 Stylus Color 1520 \$807
 Stylus Color 3000 **IN STOCK \$1922**

HEWLETT-PACKARD
 Laserjet 6MP 600 DPI \$927
 Laserjet 4000 17PPM \$1139

MODEMS

GLOBAL VILLAGE COMMUNICATION
As Low As \$159

Teleport 56 K56 Flex Ext \$159
 Teleport 56K X2 Ext \$157
 Powerport 56K PCMCIA/Enet \$388

DIAMOND
 SUPRA Express 56e K56 Flex Sp \$149
 SUPRA Express 56e K56 Flex Ext \$137
 SUPRA Express v.34 Ext 14.4 S/R \$89

US Robotics
 Sportster 56K X2 Ext Fax \$195
 Sportster 33.6 Ext w/voice(14.4 Fax) \$128
 Sportster 56K XJack PCMCIA \$228

Jaz 2 Drive with 1 Free Disk

\$634
 Zip Drive w/Disk \$149

newer tech
 Add G3 Power with the NEW Maxpower Series

For the PowerMac 6100 Series
 Maxpower G3 210MHz/512K Cache \$496
 Maxpower G3 240MHz/1MB Cache \$680

For the PowerMac 7100 Series
 Maxpower G3 210MHz/512K Cache \$580
 Maxpower G3 240MHz/1MB Cache \$778

For the PowerMac 7275/85/9500...
 Maxpower G3 275MHz/512K Cache \$2110

For the PowerBooks.....
 PB1400 Nupowr 183MHz CPU \$477
 PB500 Nupowr 183MHz 24MB \$869

MONITORS

NEC
 NEC LCD 2000 20" \$7786
 NEC M500 15" Multisync \$389
 NEC E500 15" Multisync \$404

SONY
 CPD 200ES 17" \$649
 CPD 100ES 15" \$359

ViewSonic
 G800 20" \$1089
 E655 15" \$274

UMAX SUPERMAC SYSTEMS

Computer Corporation
STATE OF THE ART PERFORMANCE WITH AFFORDABLE PRICING!

SuperMac	Processor/Speed
UCC 500L-200LT	603E 200MHz (LT) \$997
UCC 600L-240LT	603E 240MHz (LT) \$1397
UCC 600L-200	603E 200MHz \$1195
UCJ 700L-180	603E 180MHz \$1775
UCJ 700L-233	604E 233MHz \$1945
UCS 900L-200	604E 200MHz \$2435
UCS 910E-250	604E 250MHz (E) \$4246
UCS 910E-250D	604E 250MHz (DP) \$6759

DRIVES
LACIE

Q 2.1 GB (Ext) 5400RPM \$332
 Q 4.3 GB (Ext) 5400RPM \$418
 Q 6.4 GB (Ext) 7200RPM \$538
 Q 9.1 GB (Ext) 7200RPM \$919
 LaCie 24X Ext CD-Rom Drive \$199

Electronic Orders: E-Mail: sales@llb.com · Web Site: 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 1pm Sat. PST · Returns subject to restocking fee · Not responsible for errors · We welcome International orders

· Orders received before 8:00p.m. EST weekdays shipped same day

1-800-848-8967

Apple Power Mac G3



Apple PowerBooks AS LOW AS

\$1749!

Price for PowerBook 1400CS/166MHz — Item # CPU0990
WHILE SUPPLIES LAST! Shown is PowerBook 3400C/240MHz.

PowerBook 1400CS/166MHz/16MB RAM 1.3GB HD/
12X CD-ROM/11.3"/Dual-Scan display. While supplies last.
CPU0990 was \$2299 **\$1749**

PowerBook 1400C/166MHz/16MB RAM
2.0GB HD/8X CD-ROM/11.3"
Active-Matrix display.
CPU0745 was \$2099 **\$1999**

PowerBook 2400C/180MHz
16MB RAM/1.3GB HD/
10.4" Active-Matrix display.
CPU0713 was \$2499 **\$1999**

PowerBook 3400C/240MHz/16MB RAM
3.0GB HD/33.6K modem/
10Base-T Ethernet/12XCD
CPU0610 **\$4499**

UP TO
240MHz!



**PRICES
SLASHED
UP TO
\$700!**

Power Mac
6500/275MHz shown.
Monitor sold separately.

Apple Power Mac 6500

\$1299!*
AS LOW AS

WHILE SUPPLIES LAST!

- *Power Mac 6500/225MHz: 32MB RAM/3GB HD/12X CD/
33.6K Modem: # CPU0625 was \$1699 While Supplies last! **\$1299**
- Power Mac 6500/250MHz: 32MB RAM/4GB HD/24X CD/
56.6K Modem: # CPU0862 was \$1499 **\$1499**
- Power Mac 6500/275MHz: 32MB RAM/6GB HD/24X CD/
56.6K Modem/ZIP Drive: # CPU0864 was \$2499 **\$1799**
- Power Mac 6500/275MHz: 48MB RAM/6GB HD/24X CD/
56.6K Modem/ZIP Drive: # CPU0863 was \$2799 **\$2099**
- Power Mac 6500/300MHz: 64MB RAM/6GB HD/24X CD/
56.6K Modem/ZIP Drive: # CPU0865 was \$2999 **\$2299**

MacWAREHOUSE

Ordering Information

- Our sales staff is ready to take your order 24 hours a day, 7 days a week.
- We accept the following major credit cards: Visa, MasterCard, Discover Card/NOVUS, AmEx. Your credit card will not be charged until each item is shipped (no surcharge).
- CT, IL, NJ, OH and WA residents add applicable sales tax.
- Overnight delivery just \$4.95 per order up to 3 pounds. For all orders over 3 pounds, shipping is \$4.95 plus \$1.25 per pound or fraction thereof. (Example: a 4 pound order is \$6.20). Please add an additional handling charge of \$3.00 for all orders under \$50.00.
- Place your order for "in-stock" items up to 12:00 midnight (weekdays), and we will ship same day for overnight delivery (barring system failure, etc.).

Many of our products come with a 30-Day Money Back Guarantee. All items we sell come with the MacWAREHOUSE 30-Day Guarantee Against Defects. If your Apple Computer hardware is defective you must call Apple Computer, Inc. directly at 1-800-SOS-APPLE (1-800-767-2775). Apple Computer will repair or replace products at its sole discretion. If you do return Apple hardware to us, you will be assessed a 15% restocking fee which will be charged to your account.

© Copyright 1998 Micro Warehouse, Inc. MacWAREHOUSE is a division of Micro Warehouse, Inc. Item availability and price subject to change without notice. We regret that we cannot be responsible for typographical errors. All prices shown in U.S. dollars.

30 DAY Money Back Guarantee
30-DAY Guarantee Against Defects

Power Mac 4400 Special Edition



\$1299!
only

WHILE SUPPLIES LAST!
Ask for item # CPU0611

The Special Edition Power Mac 4400 comes LOADED with software!

Includes: Microsoft Office, Norton Utilities, MacLink Plus, BizPlan Builder, and more!

Monitor sold separately.

- 200MHz PowerPC 603e processor
- 32MB RAM • 2.0GB hard drive
- Internal 12X CD-ROM drive

- 33.6 modem
- 2MB EDO VRAM (4MB max)
- Built-in 2D graphics acceleration

Power Mac 8600 and 266MHz G3 Upgrade Card

Buy them both together and **SAVE \$500!**



Monitor sold separately.

- Power Mac 8600/250MHz 604e: 32MB/4.0GB/
24X CD/Built-in 100MB Imega Zip Drive: # CPU0850 **\$2499**
- With XLR8 G3 Processor Upgrade Card**
266MHz 512K backside cache @133MHz: # BND2571 **\$2998**
- Power Mac 8600/300MHz 604e: 32MB/4.0GB/
24X CD/Built-in 100MB Imega Zip Drive: # CPU0784 **\$2999**
- With XLR8 G3 Processor Upgrade Card**
266MHz 512K backside cache @133MHz: # BND2572 **\$3498**

G3 card also available with Power Mac 9600. Call for details.
**G3 card requires customer installation. Card does not come pre-installed.
†Savings based on regular product prices if purchased separately.

WOW! 1440 dpi!

Epson Stylus Color 600 Printer

Stylus Color 800 Printer (shown) Item # PR12127
• Up to 7ppm color
• Optional LocalTalk/Ethernet
ONLY \$349

ONLY \$249!
Was \$269

Item # PR12126

HP LaserJet 6MP Printer

ONLY \$949.95!

- 8ppm
- 600dpi
- 3MB RAM (35MB max)
- Optional LocalTalk

Item # INP0975

HEWLETT PACKARD
Expanding Possibilities

Astra 600S Color Scanner

AS LOW AS **\$149.95!**

- 30-bit single-pass color
- 300 x 600dpi max 4800
- 8.5" x 14" legal scanner

Item # INP1145

Price reflects \$50 mfr's mail-in rebate. Price before rebate is \$199.95. Ask for coupon # AA40634. Expires 5/31/98.

UMAX

Imega 100MB Zip Drives

ONLY \$139.95!

Item # DRI 1050

100MB Zip Disks
Ask for MED 8155

*Disk includes Zip Tools Software

1-9	10-19	20+
\$19.95ea	\$16.95ea	\$12.99ea

ORDER ONLINE! and Get FREE Software!

www.warehouse.com

Choose one of these software packages when you place an online order with MacWAREHOUSE!

*Limit one per customer per order \$3.95 shipping & handling. Shipped in promotional packaging. While supplies last.

Upgrade your G3

with the latest DIMMs Now!

AS LOW AS **\$99.95!**

16MB upgrade for G3 PowerBook.
Ask for Item # CHP0547 only \$99.95.

Blowout!

Get a Furiously-Fast G3

FOR AS LOW AS **\$1699!**



Price for Power Mac G3 Desktop/233MHz—Item # CPU0956, see below.
Shown at right is Power Mac G3 Mini-tower/266MHz, now only \$2499.



UP TO **266MHz!**



Monitor sold separately.



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 # CPU1105 WAS: \$2149

\$1999

Power Mac G3 Mini-tower/266MHz/32MB RAM/
6.0GB HD/24X CD/ZIP Drive: Item # CPU0958 WAS: \$2099

\$2499

Power Mac G3 Mini-tower/266MHz/128MB RAM/4.0GB HD/Ultra-wide
SCSI HD/24X CD/100Base-T Ethernet: Item # CPU1104 WAS: \$4499

\$3799

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: \$1999

\$1699

Power Mac G3 Desktop/266MHz/32MB RAM/
4.0GB HD/24X CD/ZIP Drive: Item # CPU0957 WAS: \$2099

\$1999

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



Item # CPU0961 **\$5699**

While supplies last!



UP TO **266MHz!**

Model shown is Power Mac G3/266MHz w/ZIP.
Monitor sold separately.



Mac OS 8.1
Upgrade only **\$69.95!**
Item # SYS0280

*Price after publisher's \$30 mail-in upgrade rebate for previous owners of Mac OS 7.6. Proof of ownership of Mac OS 7.6 purchased separately or acquired through CPU purchase required.



QuarkXPress 4.0
Only **\$699.95!**
Item # DTP0557 (Mac CD-ROM)

- Character-based style sheets
- Open up to 11 movable palettes for fast action and control
- Enhanced item and content tools

Olympus D-320L High-Resolution Digital Camera

Resolutions up to 1024 x 768
2MB Storage
2.0" color LCD monitor
Only **\$599!**
Item # IWP1304



Accessories Kit includes:
AC Adapter, 2MB Card and Vinyl Carrying Case: # ACC 2978, \$119.95

iOmega 1.0GB JAZZ DRIVE!
As low as **\$199.95!**
Item # RDRI 1119



Internal Drives also available. Call for configurations.
*Refurbished by the manufacturer to meet original factory specifications. While supplies last.



Microsoft Office 98
Upgrade as low as **\$239.95!**
Item # M9800000

when you buy Microsoft Office 98 and 16MB RAM at the same time!

For Power Macs

*Price for Microsoft Office 98 upgrade when purchased with 16MB RAM. Price reflects MacWAREHOUSE \$20 mail-in rebate for Microsoft Office 98. Price before rebate is \$259.95. 16MB SDRAM as low as \$99.95. Office 98 & RAM must appear on same invoice. Ask for coupon # AAA0643. Offer expires 4/30/98.

MacWAREHOUSE

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



CALL TODAY FOR A **FREE CATALOG!**



PROUDLY SERVING MAC USERS SINCE 1986



ONLY \$3199
#60423

Own the Upgrade Card that won "Best of Show" at Macworld '98!



UMAX S900 Tower w/Newer Technology MAXpower G3/275 Upgrade Card Bundle

S900 Tower

- 32MB interleaved RAM, upgr. to 1GB
- 2.1GB SCSI HD; 512K Level 2 cache
- 5 available PCI slots

Upgrade Card

- 275MHz G3
- 1MB backside cache at 183MHz

Monitor sold separately. Upgrade Card is pre-installed before being shipped.

High-resolution scanning without the high prices

ScanMaker V600

MICROTEK



ONLY \$189.98*
#72396

*After \$60 Mfr. mail-in rebate. Low Zone price: \$249.98.

Incredible digital images from Eastman Kodak!



DC200 Digital Science Camera

Kodak digital science SOLUTIONS

ONLY \$599.98
#52844

Sharp, accurate images at value prices!

NSA **HITACHI** RASTEROPS®

Mc 7515 19" (18" viewable)

ONLY \$899.98
#80700



WAS \$999 SAVE \$100!

Lowest price ever on the classic portable storage solution!

\$100 PRICE DROP!



Jaz 1.0GB External SCSI Drive

ONLY \$299.95
#25659



The ultimate digital drawing tablet!

CalComp Drawing Slate II 4x5"

with Pressure Sensitive Pen



LIMITED SUPPLY - CALL NOW!

ONLY \$49.98
#89316

#59108 Drawing Slate II 6x9 w/Pressure Sensitive Pen \$99.98

Perfect print output with this thorough "preflight"!



FLIGHTCHECK

ONLY \$298.98*
#77613

*Special price when purchased with QuarkXPress. Must be on same invoice. Low Zone price: \$398.98.

QuarkXPress 4.0

ONLY \$698.98
#95320



New V.90 is here!

US Robotics 56K* V.90 External Faxmodem

ONLY \$178.98
#60313

*Capable of downloading at 56 Kbps; however, current FCC regulations limit transmission to 53 Kbps.



Run PC software on your Power Mac!



Connectix Virtual PC 2.0 Upgrade

ONLY \$32.98
#55394



Create and distribute electronic documents!



Adobe Acrobat 3.0.1* Upgrade from Pro 2.X

ONLY \$58.98
#59624

#59623 Acrobat 3.0.1 Upg. for any Exchange... \$74.98
#77473 Acrobat 3.0.1 Full Version \$198.98

*All sales are final on this product.

Web savvy, auto effects, publishing ease & more!



FreeHand 8 Upgrade with Nova ArtMania 10,000 ClipArt and 2 FREE CDR's

ONLY \$148.98
#77495

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.



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
7 days a week



Even **more** speed,
flexibility and
Internet power!

Mac OS 8.1
Upgrade from 7.6

ONLY
\$68⁹⁸*
#60602

*After \$30 mfr.
mail-in rebate.
Low Zone price:
\$99.98. For 7.6
upgraders only,
call for previous
version upgrades.

A Mac Zone exclusive!

Conflict Catcher 4
with Connectix
DoublerPak and
FREE FlashBack

ONLY
\$99⁹⁸
#72590

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

**INCREDIBLE
LOW PRICE!**

**233
MHz!**

ONLY
\$1699
#77039

**UP TO \$300
INSTANT REBATE
ON MAC OS SYSTEMS!**
CALL FOR DETAILS

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

with any purchase from The Mac Zone!

ActionTec DataLink 33.6 PC Card

73556 Reg. Price: \$109.98. **ONLY \$89.98**
Product shipped in promotional packaging.



ONLY
\$1749
#77048



Now tightly
integrated
with **Mac OS 8!**

Microsoft
Office 98
Macintosh Edition
Upgrade

ONLY
\$269⁹⁸
#55870

Save up to 50% on memory

with these Office 98 Mac Edition or
Office 98 Mac Edition GOLD Memory Bundles*!



Computer	Viking Memory Upgrade	MAC Edition Bundle* ONLY	MAC Edition GOLD Bundle* ONLY
G3 Minitor, Desktop	16MB SDRAM 100MHz 3.3V	#59055 \$357.98	#59061 \$457.98
	32MB SDRAM 100MHz 3.3V	#59056 \$401.98	#59062 \$501.98
G3 PowerBook	16MB PowerBook Upgrade	#59057 \$341.98	#59063 \$441.98
	32MB PowerBook Upgrade	#59058 \$401.98	#59064 \$501.98
PowerBook 1400	16MB PowerBook Upgrade	#59059 \$346.98	#59065 \$446.98
	24MB PowerBook Upgrade	#59060 \$377.98	#59066 \$477.98

Computer	PNY Memory Upg.	MAC Edition Bundle* ONLY	MAC Edition GOLD Bundle* ONLY
PowerMac 6500, 7300, 8600, 9600, 7200, 7500, 8500, 9500 Series	16MB DIMM 60ns	#57577 \$325.98	#57583 \$425.98
	32MB DIMM 60ns	#57578 \$370.98	#57584 \$470.98
Umax SuperMac C, J, S Series	16MB EDO DIMM 5V 60ns	#57579 \$325.98	#57585 \$425.98
	32MB EDO DIMM 5V 60ns	#57580 \$377.98	#57586 \$477.98
Motorola StarMax 3000, 4000, 4400 Series	16MB EDO DIMM 3.3V 60ns	#57581 \$344.98	#57587 \$444.98
	32MB EDO DIMM 3.3V 60ns	#57582 \$414.98	#57588 \$514.98

* Special Bundles for version upgraders only. Proof of previous version ownership required.

CALL US TOLL-FREE!
or **FAX** your order to 425-430-3500
Shop online at
www.maczone.com

SOURCE CODE
MW805

1-800-436-0606

Circle 71 on your reader service card

A NASDAQ® COMPANY Ticker Symbol: MZON

MACWORLD May 1998 129

ClubMac® GREAT DEALS!

ON ALL YOUR STORAGE NEEDS

Quantum

STRATUS SE 2.1GB

512K CACHE
5400 RPM
Internal

ONLY
\$219

OUTSTANDING DEAL!

Seagate

BARRACUDA 4XL 4.5GB

8.5MS Access
7200 RPM
Internal

NEW
LOW
PRICE
ONLY
\$549.!!

Quantum
STRATUS SE
8.4GB \$489
512K Buffer Internal

Seagate
CHEETAH
Fast & Wide
4.5GB \$699
10000 RPM Internal

Quantum
VIKING
4.5GB \$379
7200 RPM Internal

Quantum
ATLAS II
9.1GB \$699
7200 RPM Internal

HARD DRIVES

Quantum									
Description		Quantum Stratus drives carry a 3 Year Warranty Quantum Atlas & Viking drives carry a 5 Year Warranty							
		Model	Access	RPM	Internal	External			
2.1GB	Stratus SE	QM32160SES	10ms	5400		'219	'269		
3.2GB	Stratus SE	QM33240SES	10ms	5400		'249	'299		
4.3GB	Stratus SE	QM34320SES	10ms	5400		'289	'339		
4.5GB	Viking	QM34550VKS	8ms	7200		'379	'429		
4.5GB	Atlas II	QM34550ALS	8ms	7200		'499	'549		
6.4GB	Stratus SE	QM36480SES	10ms	5400		'379	'429		
8.4GB	Stratus SE	QM38420SES	10ms	5400		'489	'539		
9.1GB	Atlas II	QM39100ALS	8ms	7200		'699	'749		
UltraWide SCSI-3									
4.5GB	Viking	QM34550VKS	8ms	7200		'399	'479		
4.5GB	Atlas II	QM34550ALS	8ms	7200		'519	'599		
9.1GB	Atlas II	QM39100ALS	8ms	7200		'779	'859		

IDE Drives						
2.1GB	Stratus SE	QM32160SEA	10ms	5400	'159	----
3.2GB	Stratus SE	QM33240SEA	10ms	5400	'189	----
4.3GB	Stratus SE	QM34320SEA	10ms	5400	'219	----
6.4GB	Stratus SE	QM36480SEA	10ms	5400	'299	----
8.4GB	Stratus SE	QM38420SEA	10ms	5400	'389	----

IBM									
Description									
IBM 18XP drive carries a 5 Year Warranty									
18.1GB UltraStar 18XP	59H6589	6.5ms	7200		\$1849	\$1899			

THE CLUBMAC PACKAGE

ClubMac drives are preformatted and thoroughly tested. ClubMac drives include a 30-Day Money Back Guarantee, Charismatic Anubis Formatting Utility software, user's guide, brackets (wide drives include internal ribbon cable), 25/50-pin SCSI cable and power cord for external drives (wide drives include 68/68 pin SCSI cable).

TAPE BACK-UP

ClubMac® DDS-3 DAT Drive
12-24GB
\$1099

CLUBMAC TAPE BACK-UP
4-8GB DDS-2 DAT Drive w/ Retrospect... \$799
12-24GB DDS-3 DAT Drive w/ Retrospect... \$1099
15-30GB DLT Drive w/ Retrospect... \$2599
20-40GB DLT Drive w/ Retrospect... \$2899
35-70GB DLT Drive w/ Retrospect... \$6999

ClubMac® 8mm AIT Drive
25-50GB
Up to 6MB/Sec!
ONLY \$2999

CLUBMAC AIT DRIVE
25-50GB 8mm AIT Drive... \$2999
25-50GB 8mm AIT w/ Fast & Wide Card... \$3179

BONUS OFFER!!!
All ClubMac Tape Back-up Products are bundled with Retrospect 4.0

RETROSPECT 4.0
Retrospect 4.0 Retail Single User... \$149
Retrospect 4.0 Remote 10 User License... \$175
Retrospect Network Kit 4.0 (w/10 User license)... \$275

REMOVABLE

\$299
syJet 1.5GB

REMOVABLE DRIVES
ClubMac SyQuest 200MB 5.25"... \$349
SyQuest EZ Flyer 230MB 3.5"... \$149
SyQuest syJet 1.5GB 3.5"... \$299

SYQUEST® MEDIA

Media	Qty 1	Qty 10	Qty 20
44MB	\$38ea	\$379ea	\$37ea
88MB	\$38ea	\$379ea	\$37ea
200MB	\$59ea	\$58ea	\$57ea
270MB	\$43ea	\$42ea	\$41ea
EZ230MB	\$27ea	\$26ea	\$26ea
1.5GB SyJet	\$69ea	\$68ea	\$67ea

CD READERS & RECORDABLES

BLAZING FAST!
32X CD-ROM

ONLY \$159
5400KB/sec data transfer
90ms avg access time
Caddy-less design

CLUBMAC CD-ROM READERS
32X 90ms 5400k/sec... \$159
16X 5 Disc CD Changer... \$279

ClubMac® NEW!
4X/12X CD Recorder
\$479.!!

CLUBMAC CD-RECORDERS
4X/12X CD-R w/Toast Pro 3.5... \$479
CLUBMAC CD-REWRITABLE
2X/2X/6X CD-RW w/Toast Pro 3.5... \$459
4X/2X/6X CD-RW w/Toast Pro 3.5... \$599

THE CLUBMAC PACKAGE: ClubMac CD-ROM & CD Recorders are thoroughly tested. CD-ROM & CD Recorders include a 30-Day Money Back Guarantee, Charismatic CD AutoCache utility software, user's guide, 25/50-pin SCSI cable, terminator, and power cord.

Zip Drive Solutions

Includes One Free Cartridge
ZIP DRIVE ONLY
\$139.95
100MB
NEW! ZipPLUS
\$199.95

IOMEGA ZIP DRIVES
ZipPlus™ Drive w/one cartridge... \$199⁹⁵
Zip Drive w/one cartridge... \$139⁹⁵
Zip Bundle - drive, 11 Disks, Case, 2 Caddy's... \$279
Zip Drive Internal - all PowerMacs... \$159
Zip Drive Internal - all PowerComp/Umaks... \$139

Jaz Drive Solutions

Includes One FREE Cartridge
HOT NEW PRICE!
ONLY \$299.95
1.0GB

IOMEGA JAZ DRIVES
Jaz 1GB Drive w/one cartridge... \$299⁹⁵
ClubMac Jaz 1GB Drive w/3 cartridges... \$459
Jaz 1GB Drive Internal - all PowerMacs... \$279
Jaz 1GB Drive Internal - Power/Umaks... \$259
Jaz 2GB Drive w/one cartridge... \$649

IOMEGA MEDIA

ZIP Media as low as \$12.95
as low as \$89.95 For JAZ media

Format	Part#	Qty 1-2	Qty 3-6	Qty 7-9	Qty 10+
ZIP 100MB	1040 1006	\$19 ⁹⁵	\$16 ⁹⁵	\$14 ⁹⁵	\$12 ⁹⁵
Format	Part#	Size	Qty 1-2	Qty 3-5	Qty 6+
JAZ 1GB	1040 1015	1.0 GB	\$124 ⁹⁵	\$99 ⁹⁵	\$89 ⁹⁵
JAZ 2GB	1040 1074	2.0 GB	\$169 ⁹⁵	CALL	CALL

CALL 1-800-260-8549
FOR A FREE CATALOG

WARRANTIES: All items manufactured by ClubMac are insured to ClubMac for warranty repair. All other items carry manufacturer's warranty. MONEY BACK GUARANTEE: All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac intends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when resold. RETURNS: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused. ALL PRODUCT INFORMATION AND PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS.

WE WILL TRY TO MATCH OR BEAT ANY ADVERTISED PRICE. CALL FOR LATEST PRICING!!

WE ACCEPT PO'S
FROM QUALIFIED FIRMS

M E M O R Y

WE NOW ACCEPT
ORDERS THROUGH EDI

L.A. Trade has served the PC
market for 14 years...

MACINTOSH MEMORY UPGRADES

Now we bring our expertise
to the Apple Macintosh user.

YOUR MACHINE	STANDARD	MAX	VIDEO UPGRADE	VIDEO COST	256K/512K/1MB CACHE	2MB	4MB	6MB	8MB	10MB	12MB	16MB	20MB	24MB	32MB	48MB	64MB	128MB
Apple PowerBook G3									59			79		139	119	169	219	369
Apple PowerBook 160C, 180C							99	139	169	219								
Apple PowerBook 160, 165, 180							99	139	169	219								
Apple PowerBook 190, 190CS	4/8	36/40					40		55			75			119			
Apple PowerBook 520, 520C, 540, 540C Notebook	4	36										79		99	119			
Apple PowerBook DUO 210, 230, 250 Notebook	4	24										70	99	99				
Apple PowerBook DUO 270C Notebook	4	32										70	99	99				
Apple PowerBook DUO 280, 280C Notebook	4	40										70	99	99	119			
Apple PowerBook DUO 2300C/100 Notebook	8/20	56										70		119	129	40=164		
Apple PowerBook 1400	12/16	60/64							69			70		119	149	179		
Apple PowerBook 2400	16	80							49			70		109	109		189	
Apple PowerBook 3400C EDO	16	144										70				169	219	379
Apple PowerBook 5300 Series	8/16/32	56/64				49		54			69	79		149	159			
Apple Macintosh IIfx (64 pin)	4	128				50						129					356	
Apple Macintosh IIfx	2/3/5	17				28						88						
Apple Macintosh IIfx & IIfx	4	68	512k	44		28						88					356	
Apple Macintosh Classic II, LC, LCII	2/4	10	512k	29		16			44									
Apple Macintosh LCIII, LC475, LC550, LC575, LC580	4	36	256k	44			15	34				49			99			
Apple Macintosh LC520	5	36					15	34				49			99			
Apple Macintosh LC580	4	48					15	34				49			99			
Apple Macintosh LC499	4	36					15	34				49			99			
Apple Macintosh LC5200	8	64					15	34				49			99			
Apple Macintosh LC530	5	36					15	34				49			99			
Apple Macintosh IIfx	1/5	128					40					119			208		356	
Apple Macintosh II, IIfx, IIfx (w/PA)	1	32					48	109				149			298			
Apple Macintosh SE30	1/2	32					40					119			238			
Apple Performa 400	4	10	512k	68		22	30		56									
Apple Performa 405, 410, 430	4	10	512k	44		22	30		56									
Apple Performa 450, 460, 466, 467, 475, 476	4	36	256k/512k	34/68	29/44		15	34				99			99			
Apple Performa 550, 560, 575, 577, 578, 580	5	36	256k	34			15	34				99			99			
Apple Performa 600, 600CD	5	68	512k	44			32					88					356	
Apple Performa 6110CD, 6112CD, 6115CD (pairs)	8/16	72					15	34				49			99			
Apple Performa 6117CD, 6118CD (pairs)	8/16	72					15	34				49			99			
Apple Performa 630, 630CD, 636	4	36					15	34				49			99			
Apple Performa 631CD, 636CD, 640CD	8	52	512k	44			15	34				49			99			
Apple Performa 635CD	5	36					15	34				49			99			
Apple Performa 637CD, 638CD	8	36					15	34				49			99			
Apple Performa 5200 Series 5200CD, 5215CD, 5300	8/16	64					15	34				49			99			
Apple Performa 6100 Series 6116CD (pairs)	8/16	72					15	34				49			99			
Apple Performa 6200 Series 6200CD, 6216CD, 6218CD	8	64					15	34				49			99			
Apple Performa 6200 Series 6220CD, 6230CD, 6290	8	64					15	34				49			99			
Apple Performa 6205CD, 6214CD	8	64					16	34				49			99			
Apple Performa 6300CD, 6320	16	64					15	34				49			99			
Apple Performa 6400CD, 6360 (2K Refresh)	16	136			94							49			99		149	
Apple Centris 610, 650, 660 AV	4	132	512k	29			15	34				49			99			
Apple Quadra 605	4	36	512k	44			15	34				49			99			
Apple Quadra 610	4	68	512k	29			15	34				49			99			
Apple Quadra 630	4	36					15	34				49			99			
Apple Quadra 650	4/8	132/136	512k	29			15	34				49			99			
Apple Quadra 660AV	4	68					15	34				49			99			
Apple Quadra 700	4	68	512k	29			48		104								356	
Apple Quadra 800 (pairs)	8	136	512k	29			15	34				49			99			
Apple Quadra 840AV	8	128	512k	29			15	34				49			99			
Apple Quadra 900	4	256	512k	29			48		104								356	
Apple Quadra 950	8	256	512k	29			48		104								356	
Power Macintosh G3			2/4/8M	38/59/99					39			49			89	189	409	
Power Macintosh 4400/160	8	72	4M	55	89/119/-							53			99		149	
Power Macintosh 5200, 5260, 5300	16	136			89/119/-		15	34				49			99			
Power Macintosh 5400	8	136			89/119/-							53			99		149	
Power Macintosh 6100/60, 6100/66, 6100/66AV (pairs)	8/16	72			29/-		15	34				49			99			
Power Macintosh 6200/75	8/16	72			29/-		15	34				49			99			
Power Macintosh 6400/200	8/16	72			89/119/-		15	34				53			99		149	
Power Macintosh 6500/225, /250, /275, /300 (Edo)	8/16	72			29/-		15	34				53			99		149	
Power Macintosh 7100/66, 7100/80, 7100/66AV (pairs)	8/16	136	512k	29	29/-		15	34				49			99			
Power Macintosh 7200/75, /90, /120, /120PC	8/16	256	1mg	49	59/74/169							53			99		149	
Power Macintosh 7300/166, /180, /200, /200/100	8/16	256/1gig	1mg	49	59/74/169							53			99		149	
Power Macintosh 7600/100, /120, /132, /200	8/16	1gig/512	1mg	49	59/74/169							53			99		149	
Power Macintosh 8100/80, /100, /110	8/16	264	512k	59	29/109		15	34				49			99			
Power Macintosh 8100/80AV, /100AV, /110AV (pairs)	8/16	264	512k	59	29/109		15	34				49			99			
Power Macintosh 8500/120, /132, /150, /180	8/16	1gig/512	1mg	29	49/74/169							53			99		149	
Power Macintosh 8600/200, /233	8/16	1gig/512	1mg	49	49/74/169							53			99		149	
Power Macintosh 9500/120, /132, /150, /180MP, 200	16/32	768/1.5 gig	2mg	99								53			99		149	
Power Macintosh 9600/200, /233, /200MP	8/16	768	2mg	87								53			99		149	
Color Laserwriter 12/600 PS	12	40					16					49						
Color Laserwriter 12/640 PS	4	64					16		29			49						
Color Laserwriter 16/600 PS	8	32					16		29			49						
Motorola Starmax 3000 EDO/160, 200; 4000/160, 200	16/32											49			89		149	

ORDER ON LINE &
RECEIVE A FREE GIFT!
Orders of \$100 or more
receive a gift worth \$19.95
Orders of \$500 receive a
gift worth \$39.00
www.4LATrade.com

NEW
168 Pin EDO
3.3V Dimms
Call!!

APPLE POWERBOOK BATTERIES

Powerbook 140, 145, 150, 160, 185, 170, 180	\$ 69.00
Powerbook 1400, 150, 150CS, 3400, 3500	133.00
Powerbook 2200, 520, 520C, 540, 540C	123.00
Powerbook DUO 700, 210, 230, 250, 270, 280	112.00

GET G-3 SPEED AND POWER for POWERMAC 7200, 7500, 8500, 9500

MaxPower G3 275MHz w/1 Mb Cache/275	\$1949.00
MaxPower G3 275MHz w/1 Mb Cache/183	\$1999.00
MaxPower G3 250MHz w/512k Cache/125	\$1910.00
MaxPower G3 240MHz w/1 Mb Cache/150	\$799.00

NEW for POWERMAC 6100, 7100, 8100

MaxPower G3 for 6100 210MHz w/512k Cache	\$499.00
MaxPower G3 for 6100 210MHz w/1 Mb Cache	\$799.00
MaxPower G3 for 7100 and 8100 210MHz w/512k Cache	\$899.00
MaxPower G3 for 7100 and 8100 240MHz w/512k Cache	\$799.00

CHECK OUT OUR WEBSITE FOR MORE APPLE BATTERIES!!!

CALL FOR NEW MODELS NOT LISTED

All products brand new & guaranteed • We buy excess inventory
Trademarks are registered with their respective companies.

L.A. TRADE

28225 Lockness Avenue • Torrance, CA 90501
CUSTOMER SERVICE & TECHNICAL: OPEN M-F, 9-4 PST

POWER COMPUTING

	8MEG	16 MEG	32MEG	64MEG
POWER 80, 100, 110, 120	34.00	49.00	89.00	149.00
POWER CENTER 120, 132, 150, 160, 180	34.00	49.00	89.00	149.00
POWER CURVE 601/120	34.00	49.00	89.00	149.00
POWER TOWER 160/180	34.00	49.00	89.00	149.00
POWER TOWER PRO 180, 200, 225	34.00	49.00	89.00	149.00
POWER WAVE 604/120	34.00	49.00	89.00	149.00
POWER WAVE 604/132, 150	34.00	49.00	89.00	149.00
POWER COMPUTING POWER BASE (EDO)	44.00	74.00	119.00	209.00

NO CHARGE FOR MAINTENANCE. AMEX, VISA OR DISCOVER. PURCHASE ORDERS ACCEPTED FROM FEBRUARY 2000. GOVERNMENT & INSTITUTIONAL: California orders add 8.25% sales tax. Refundable orders, or orders where parts are issued to a 20% restocking fee. We accept international orders shipped via UPS Air. AMEX, VISA orders welcome. Customers are expected to pay customs and "other" charges if shipped int'l. All credit card charges verified for fraudulent use. SOLELY NO REFUNDS AFTER 30 DAYS - EXCHANGES ONLY. If you receive defective merchandise we exchange only - no refunds. We accept MC, VISA, Discover, A/E, prepaid orders, purchase orders, wire transfer, C.O.D. (cashiers check) orders, cash & cashiers checks. Orders shipped by UPS. FEDEX must be signed for. *ALL MANUFACTURER PART #S ARE FOR REF. ONLY - MINIMUM ORDER \$40.00 - NO REFUNDS ON SHIPPING.

2GB Jaz® Drive



3-pack sold separately

Jaz® 2GB External Personal Storage Drive
 • Super-fast (8.7MB per second maximum sustained transfer rate)
 • New ultra SCSI interface
 • Comes with one 2GB Jaz disk

\$649.99 (BER JAZEXT2GIG)

Internal Jaz 2GB Drive
 (BER JAZINT2GIG) **\$549.99**
 Spare 2GB Disk (formatted for Mac)
 (BER MAC2GIGCART) **\$169.99**
 Spare 2GB 3-Pack (formatted for Mac)
 (BER MAC2GIGTRI) **\$449.99**

PNY Memory Upgrades

Get up to \$20 in Rebates from PNY! (expires 5/30)

16MB (2 x 64, 168 PIN, DIMM, non-parity)
\$49.99, after \$10 rebate (PNY 16MEG-05)

32MB (4 x 64, 168 PIN, DIMM, non-parity)
\$89.99, after \$10 rebate (PNY 32MEG-05)

16MB (for Power Mac G3 Tower/Desktop)
 (PNY PAPMG3128CS) **\$49.99**

32MB (for Power Mac G3 Tower/Desktop)
 (PNY PAPMG332CS) **\$89.99**

64MB (for Power Mac G3 Tower/Desktop)
 (PNY PAPMG364CS) **\$229.99**

128MB (Power Mac G3 Tower/Desktop)
 (PNY PAPMG3128CS) **\$399.99**

Monitors



Panasonic PanaSync™ 570
 17" Flat Square Color Monitor
 • 16" viewable image size • 1280 x 1024 Hi res • Up to 158Hz refresh rates • 0.27mm dot pitch • AGRAS™ coating • FREE Macintosh adapter from Panasonic • 100-240 volts

\$499.99 (PAN 570)

Panasonic PanaSync P15 15"
 (14" VHS) (PAN P15) **\$299.99**

Apple Multiple Scan 15AV 15" Display
 (13.75" VHS) (APP M4614LL/A) **\$399.99**

Apple Multiple Scan 720 20" Display
 (19" VHS) (APP M6151LL/A) **\$649.99**

J&R CORPORATE SALES BUSINESS LEASING:
No Money Down, No Payments for 30 Days!

- 1) Allows flexibility to add or upgrade equipment at any time
- 2) Conserves your capital
- 3) Credit decisions are quick and easy
- 4) Covers entire packages - equipment, software, service contracts, peripherals

*All lease payments are exclusive of applicable taxes. Minimum leasing payment is \$50 per month. All leases are subject to credit approval and require an administrative fee of \$49.95 to be billed on the first invoice. Leasing program administered by Dime Commercial Credit. Leases are Business Leases, 50 down, 36 month term with \$1.00 purchase option.

Call J&R Corporate Sales
1-800-221-3191 or 1-212-238-9080
 (\$1,400 Minimum Lease Amount)

J&R COMPUTER WORLD

One of America's Largest Authorized Apple Dealers

G3 Desktop Dependability!

Apple® Power Macintosh® G3/233 32MB/4GB/24xCD

• 233MHz PowerPC™ G3 • 32MB RAM • 4GB IDE hard drive • 64-bit graphics • 24x-speed CD-ROM drive • Built-in 10Base-T ethernet • Monitor sold separately

\$1699.99 (APP M6141LL/A)



Apple® Power Macintosh® G3/266 32MB/4GB/24xCD/100MB Zip™ Drive

• 266MHz PowerPC™ G3 • 32MB RAM • 4GB IDE hard drive • 24x-speed CD-ROM • 100MB Iomega Zip™ drive • Built-in 10Base-T ethernet • Monitor sold separately

\$1999.99 (APP M6202LL/A)



Apple® Power Macintosh® G3/266 32MB/6GB/24xCD/100MB Zip™ Drive

• 266MHz PowerPC™ G3 • 32MB RAM • 6GB IDE hard drive • 100MB Iomega Zip™ drive • 2MB VRAM • 24x-speed CD-ROM • Monitor required

\$2499.99 (APP M6142LL/A)



Apple® Power Macintosh® G3/233 32MB/4GB/24x CD

• 233MHz PowerPC™ G3 processor • 32MB RAM • 4GB hard drive • 24x-speed CD-ROM • Up to 56K fax modem • Monitor sold separately

\$1999.99 (APP M6431LL/A)



Apple® Power Macintosh® G3/266 128MB/4GB/24x CD

• 266MHz PowerPC™ G3 processor • 128MB RAM • 4GB hard drive • 24x-speed CD-ROM • Monitor sold separately

\$3799.99 (APP M6459LL/A)



PowerPC and the PowerPC logo are trademarks of International Business Machines Corporation, used under license therefrom. Apple, the Apple logo, Macintosh, Power Macintosh, PowerBook, Apple SuperDrive & AppleDesign are registered trademarks of Apple Computer, Inc. Zip drive is a trademark of Iomega Corporation. ©1998 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, LaserWriter, Macintosh, Power Macintosh, PowerBook, and QuickTime are registered trademarks of Apple Computer, Inc. All other trademarks are the property of their respective owners. All Apple products are designed to be accessible to individuals with disabilities. For more information in the U.S. only, call 1-800-541-3333 or TDD 1-800-433-4773.

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

Digital Cameras

New Low Price!



Panasonic PV-DC1000
 PalmCam™ Digital Camera
 • Fits in your palm, only 5.53 oz.
 • 640 x 480 high res. • 2MB memory
 • Stores up to 94 images • 1.8" TFT active-matrix LCD • PhotoDeluxe™ & EasyPhoto™ for Windows & Mac

\$249.99 (PAN PVDC1000)

Casio QV-200
 (CAS QV200) **\$379.99**

Olympus D-220L
 (OLM D220L) **\$499.99**

Panasonic PV-DC1580 **NEW!**
 (PAN PVDC1580) **\$699.99**

Mac Software



CyberStudio 2
 by GoLive Systems
 • Professional solution for designing and maintaining a Web site • Place images precisely • CD for Power Mac

\$289.99 (GOA CYBERSTUD-2)

Diablo by Davidson
 (DVM DIABLO-C) **\$39.99**

F/A-18 Hornet (2.01)
 by Graphic Simulations
 (GSM FA18KOREA-C) **\$39.99**

UMAX Scanners



UMAX Astra 610S
 30-Bit Color Scanner
 • 300 x 600 dpi single-pass • "Push Button" scanning • SCSI cable and interface, plus Adobe PhotoDeluxe, PageManager and OmniPage LE

\$129.99 after \$20 mail-in rebate
 (UMX AST610UODX) expires 5/31/98

Astra 1200S (with Photoshop 4.0)
 (UMX AST12MACPS) **\$499.99**
LIMITED QUANTITY while they last

PowerLook II Duo ADV (Photoshop 4.0)
 (UMX PWL2DUOADV) **\$1299.99**

Order Your FREE Catalogue Now!



Order Code: MW805

To Order Toll Free and Receive a Free Catalogue

800-221-8180

Overnight Delivery Available! 24 Hours, 7 Days, Anywhere in the USA or FAX us at 1-800-232-4432

MAIL ORDERS: J&R Computer World
 • 59-50 Queens Midtown Expressway • Maspeth, Queens NY 11378
 CALL 1-800-221-8180 for shipping information. DO NOT SEND CASH.
 Prices good until 5/31/98. Not responsible for typographical or pictorial errors. Some quantities may be limited. All merchandise brand-new, factory-fresh and 100% guaranteed!

FREE

Mac Multimedia MegaPac *cd-rom*

☐ YES! 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 _____

Macworld

- ☐ 1 year (12 issues) - SAVE 50% - \$30.00
☐ 2 years (24 issues) - SAVE 62% - \$45.00
☐ Payment enclosed. ☐ Bill me.



Annual newsstand price \$59.88. Mexico & Canada add US\$18 postage. Canadian GST included. All other countries add US\$70 postage.

Check us out on the Web —
<http://www.macworld.com>



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 66 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld®

Subscription Department
PO Box 54506
Boulder CO 80323-4506



LEASE FROM Digital Graphix

\$0 Down 100% Business Financing NO Payments for 90days!

9600/350
DTP Hi-End SOLUTION

PowerPC 9600/350 w/ 24x40
320MB RAM, 4GB HD, 1MB Cache
Internal Zip, Apple keyboard
Viewsonic 21" P810 monitor
IMS 8MB PCI video card
Microtek ScanMaker III/Trans/Photoshop
GCC 808 800dpi 11x17 Printer & Enet
Jaz 1.0GB Drive with 1 cartridge
Wacom 12x12 Graphics Tablet
Sony SDT-5000 DAT Tape Backup

9600/350 starting at \$3199!

Go Custom

PowerPC G3 266 DT w/ 24x40
96MB RAM, 4GB HD
Apple keyboard
IOmega Zip 100 w/ 1 cart
Viewsonic EA 771 17" AV monitor
Scanmaker V310 color scanner
6MB Video RAM
Epson Stylus Color 800 1440dpi
Inkjet printer
Wacom 6x8 Artz Graphics Tablet

G3-266D starting at \$1599!

PM G3-266D
VALUE DTP STATION

PowerPC 8600/300 w/ 24x40
160MB RAM, 4GB HD, 1MB Cache
Apple keyboard
Int IOmega Zip 100 w/ 1 cart
Viewsonic EA 771 17" AV monitor
Scanmaker V310 color scanner
ATI BMB PCI 3-D video card
GCC608 11x17, 600 dpi printer
w/ Ethernet connectors
Wacom 12x12 Graphics Tablet

8600/300 starting at \$2099!

8600/300
MidRange DTP STATION

9600/300 starting at \$2599!

60 Frames/Sec

PowerPC 9600/300MHz w/ 24x40
448MB RAM, 4GB HD
1MB Cache
Extended keyboard
Internal Zip 100 w/ 1 cart
Viewsonic V95 19" monitor
IMS 8MB PCI video card
TrueVision Targa PCI1000
Internal 18GB F/W Disk Array with
Adaptec SCSI Controller/Remis SW
Panasonic 4x8x CDR/1 cart/Toast SW

9600/300
REAL TIME VIDEO
CAPTURE SYSTEM

G3 266AV Tower
starting at \$2199!

G3 266 TOWER
3-D VIDEO/AUDIO
WORKSTATION

Lease System Specials

System Description	Price	Lease
PowerBook 1400CS 166/16MB/2GB/8xCD	\$1399	\$49
PowerBook 1400C 166/16MB/2GB/8xCD	\$1799	\$59
PowerBook 3400C 200/16MB/2GB/12xCD	\$2399	\$79
PowerBook G3 256/32MB/5GB/20xCD	\$3999	\$129
PowerMac 6500 250/32MB/4GB/24xCD/56k Modem	\$1299	\$42
PowerMac 6500 300/64MB/4GB/24xCD/Zip	\$1759	\$57
PowerMac G3 233/32MB/4GB/24xCD Desktop	\$1499	\$49
PowerMac G3 233/32MB/4GB/24xCD/56k MiniTower	\$1599	\$51
PowerMac G3 256/32MB/4GB/24xCD/Zip Desktop	\$1599	\$51
PowerMac G3 256/32MB/5GB/24xCD/Zip AV Tower	\$2199	\$71
PowerMac G3 256/128MB/4GB/24xCD/8MB/100BT	\$3299	\$105
PowerMac 8600 300/32MB/4GB/24xCD/Zip	\$2099	\$57
PowerMac 9600 300/64MB/4GB/24xCD/Zip/IMS 8MB	\$2599	\$84
PowerMac 9600 350/64MB/4GB/24xCD/Zip/IMS 8MB	\$3199	\$103

Lease Sale* Only a Few Left at these Prices!!

Memory

Size	SyDIMMS	SIMMS	G3 Dimm
4MB	N/A	\$23	N/A
8MB	\$35	\$27	N/A
16MB	\$49	\$49	\$69
32MB	\$79	\$79	\$79
64MB	\$149	\$179	\$199
128MB	\$419	NA	\$439

64 MB Only \$149
256K Cache Only \$29
Lifetime Warranty

JAZ 2GB Ext \$429!

JAZ 1GB Ext \$199!

JAZ 1GB Carts \$79

Monitors

Sony 100SE 15", 1280x1024, .25mm	\$327
ViewSonic 15 E655, 1024x768, .28mm	\$278
ViewSonic EA 771AV, 1280x1024, .28mm	\$489
ViewSonic 17GA, 1152x870, .27mm	\$557
Sony 200SE 17", 1024x768, .25mm	\$599
Sony 200SF 17", 1280x1024, .25mm	\$649
Sony 20" SF2, 1600x1200, .30mm	\$959
ViewSonic V95 19", 1600x1280, .26mm	\$819
ViewSonic G790 19", 1600x1200, .25mm	\$919
ViewSonic G800 20", 1600x1280, .28mm	\$989
ViewSonic P810 21", 1600x1200, .25mm	\$1089
ViewSonic PT815 21", 1600x1200, .25mm	\$1229
RasterOps MC801HR 21", 1600x1200, .22mm	\$1389

SyQuest & ZIP Drives

ZIP 100 External	\$119
ZIP 100 Plus External	\$178
SyJet 1.5GB External	\$229
SyQuest 200MB External	\$379

Optical & CDR Drives

IOmega Jaz 1GB External	\$199
IOmega Jaz2GB Ext., DG Jaz 2gb Ext	\$449/\$429
Ricoh 2x/2x/6x Rewrite CDR with Toast/cart	\$499
Jaz 1GB & 4x/8x CDR Toast/cart	\$799
Panasonic 4x/8x CDR with Toast/cart	\$499

Hard Drives

Description (All SCSI-3 Ultra)	Internal	External
Quantum 2.1GB 5400 rpm Stratus 9ms	\$199	\$269
Quantum 2.2GB 7200 rpm Viking 7.9ms	\$279	\$339
Quantum 2.6GB 5400 rpm Stratus 9ms	\$249	\$309
Quantum 4.3GB 5400 rpm Stratus 9ms	\$279	\$339
Quantum 4.5GB 7200 rpm Viking 7.9ms	\$359	\$419
Quantum 4.6GB 5400 rpm Stratus 9ms	\$389	\$449
Quantum 4.8GB 5400 rpm Stratus 9ms	\$489	\$549
Quantum 9.1GB 7200 rpm Atlas II 7.9ms	\$699	\$759
Seagate 4.5GB 7200 rpm Barracuda 4.7.9ms	\$539	\$599
Seagate 9GB 7200 rpm Barracuda 9.7.9ms	\$769	\$829
Seagate 4.5GB 10000 rpm Cheetah 7.9ms	\$589	\$649
Seagate 9.1GB 10000 rpm Cheetah 7.9ms	\$989	\$1049
Seagate 23GB 5400 rpm Elite 11ms	\$1769	\$1829

Removable Cartridges

JAZ 2GB	\$159
JAZ 1GB	\$79
Zip 100MB	\$11
SyJet 1.5	\$65
200MB	\$55
88MB	\$33
44MB	\$33

SyJet 1.5 Carts \$65

Optical Cartridges

74 MINUTE CD ROM RECORDABLE MEDIA \$12.99 BOX OF 10	
OEM 128MB	\$6.79
OEM 230MB	\$8.99
OEM 600/650MB	\$24.99
OEM 1.2/1.3GB	\$36.99

Tape Drives

Sony 4GB - 5200	\$769
Sony 8GB - 7000	\$899
Sony 8GB - 5000	\$799
Sony 24GB - 9000	\$1089
Sony AIT 50GB	\$2995

Scanners

LinoColor Jade Scanner 33bit	\$449
Agfa SnapScan 310 30bit/Color II	\$179
Agfa Arcus II/Transparency/Photoshop	\$1479
Agfa DuoScan/Transparency/Photoshop	\$3299
Epson Expression 636 Professional/Photoshop	\$1379
Microtek Scanmaker III/Trans/Photoshop	\$1319*
Microtek Scanmaker V310 30bit/Color II	\$115*
Microtek E6 Pro/Full Photoshop	\$459
Microtek Scanmaker 6400XL	\$919*

Laser Printers

Epson Stylus Color 3000, 17x22, Serial, Ink, 1440dpi	\$1739
Epson Stylus Color 800, 8.5x11, Serial, Ink, 1440dpi	\$339
GCC EL 1212, 1200dpi, 8.5x11, Enet, 120ppm	\$1379
GCC XL 608, 600dpi, 11x17, Ethernet, 8ppm	\$1799
GCC XL 616, 600dpi, 11x17, Ethernet, 16ppm	\$1999
GCC XL 808, 800dpi, 11x17, Ethernet, 8ppm	\$2499
GCC XL 1208, 1200dpi, 11x17, Ethernet, 8ppm	\$3099
GCC XL 1208SS, 1200dpi, 11x17, Ethernet, 8ppm	\$3999

Digital Graphix

Your Value Added Macintosh Source

310-783-1525 FAX
310-783-1515 INTERNATIONAL
20695 S. Western Ave #132
Torrance, CA 90501

800-680-9062

Circle 36 on reader service card

Order from 5:30am - 5:30pm M-F pst
http://www.DigitalGraphix.com

USA & CANADA

Prices subject to change without notice. Not responsible for typographical errors. Call for an RMA number before returning equipment. All returns are subject to a restocking fee. Returns must be in new condition and in original manufacturer's packaging. Shipping charges are non-refundable. *Lease prices listed are for leased systems only. All checks are cash for clearance. We reserve the right to refuse any sale to anyone for any reason.

APS HIGH-PERFORMANCE ULTRA SCSI DRIVES					
Model	Description	EL	Int.	SR 2000	Pro
APS Q 2000	Quantum Fireball ST, 2079MB, 5.4K	\$199 ⁹⁵	\$219 ⁹⁵	\$289 ⁹⁵	\$319 ⁹⁵
APS Q 3000	Quantum Fireball ST, 3118MB, 5.4K	\$229 ⁹⁵	\$249 ⁹⁵	\$319 ⁹⁵	\$349 ⁹⁵
APS Q 4000	Quantum Fireball ST, 4110MB, 5.4K	\$279 ⁹⁵	\$299 ⁹⁵	\$369 ⁹⁵	\$399 ⁹⁵
APS Q 6400	Quantum Fireball ST, 6236MB, 5.4K	\$359 ⁹⁵	\$379 ⁹⁵	\$449 ⁹⁵	\$479 ⁹⁵
APS Q 8000	Quantum Fireball ST, 8191MB, 5.4K	\$479 ⁹⁵	\$499 ⁹⁵	\$569 ⁹⁵	\$599 ⁹⁵
APS Q 4300	Quantum Atlas II, 4341MB, 7200 rpm	\$459 ⁹⁵	\$479 ⁹⁵	\$549 ⁹⁵	\$579 ⁹⁵
APS Q 9000	Quantum Atlas II, 8682MB, 7200 rpm	\$729 ⁹⁵	\$749 ⁹⁵	\$819 ⁹⁵	\$849 ⁹⁵
APS ST 2000	Seagate Barracuda, 2157MB, 7200 rpm	\$329 ⁹⁵	\$349 ⁹⁵	\$419 ⁹⁵	\$449 ⁹⁵
APS ST 4300	Seagate Barracuda, 4340MB, 7200 rpm	\$479 ⁹⁵	\$499 ⁹⁵	\$569 ⁹⁵	\$599 ⁹⁵
APS ST 4500	Seagate Cheetah, 4348MB, 10000 rpm	\$579 ⁹⁵	\$599 ⁹⁵	N/A	\$699 ⁹⁵
APS ST 9000	Seagate Barracuda, 8683MB, 7200 rpm	\$739 ⁹⁵	\$759 ⁹⁵	\$829 ⁹⁵	\$859 ⁹⁵
APS ST 9100	Seagate Cheetah, 8681MB, 10000 rpm	\$929 ⁹⁵	\$949 ⁹⁵	N/A	\$1,049 ⁹⁵

APS HIGH-PERFORMANCE ULTRA SCSI DRIVES			Full Height
Model	Description		
APS ST 23000	Seagate Elite 23, 22.1GB, 5400 rpm		\$1,799 ⁹⁵
APS ST 23000 W	Seagate Elite 23, 22.1GB, 5400 rpm		1,899 ⁹⁵

APS ULTRA WIDE SCSI DRIVES					
Model	Description	EL	Int.	SR 2000	Pro
APS Q 4300 W	Quantum Atlas II, 4341MB, 7200 rpm	\$479 ⁹⁵	\$499 ⁹⁵	\$569 ⁹⁵	\$599 ⁹⁵
APS Q 4500 W	Quantum Viking, 4345MB, 7200 rpm	\$559 ⁹⁵	\$579 ⁹⁵	\$649 ⁹⁵	\$679 ⁹⁵
APS Q 9000 W	Quantum Atlas II, 8682MB, 7200 rpm	\$759 ⁹⁵	\$779 ⁹⁵	\$849 ⁹⁵	\$879 ⁹⁵
APS ST 2000 W	Seagate Barracuda, 2157MB, 7200 rpm	\$349 ⁹⁵	\$369 ⁹⁵	\$439 ⁹⁵	\$469 ⁹⁵
APS ST 4300 W	Seagate Barracuda, 4340MB, 7200 rpm	\$499 ⁹⁵	\$519 ⁹⁵	\$589 ⁹⁵	\$619 ⁹⁵
APS ST 4500 W	Seagate Cheetah, 4348MB, 10,000 rpm	\$609 ⁹⁵	\$629 ⁹⁵	N/A	\$729 ⁹⁵
APS ST 9000 W	Seagate Barracuda, 8683MB, 7200 rpm	\$769 ⁹⁵	\$789 ⁹⁵	\$859 ⁹⁵	\$889 ⁹⁵
APS ST 9100 W	Seagate Cheetah, 8681MB, 10,000 rpm	\$949 ⁹⁵	\$969 ⁹⁵	N/A	\$1,069 ⁹⁵

APS IDE DRIVES			Internal
Model	Description		
APS Q 2000	Quantum Fireball ST, 2014MB, 5400 rpm		\$179 ⁹⁵
APS Q 3000	Quantum Fireball ST, 3118MB, 5400 rpm		199 ⁹⁵
APS Q 4000	Quantum Fireball ST, 4136MB, 5400 rpm		249 ⁹⁵
APS Q 6400	Quantum Fireball ST, 6236MB, 5400 rpm		329 ⁹⁵
APS Q 8000	Quantum Fireball ST, 8063MB, 5400 rpm		379 ⁹⁵

APS POWERBOOK STORAGE			Internal
Model	Description		
APS T 2000	Toshiba MK2103MAV, 2067MB, 4200 rpm IDE		\$299 ⁹⁵

APS REMOVABLE DRIVES				
Model	Description	SR 1000	SR 2000	Pro
APS SQ 5200	SyQuest 5200, 190MB	N/A	\$389 ⁹⁵	N/A
APS Jaz	(with 1 cartridge) 1GB	\$349 ⁹⁵	\$349 ⁹⁵	\$399 ⁹⁵
APS Jaz II	(with 1 cartridge) 2GB	Call	Call	Call

APS MO DRIVES				
Model	Description	SR 1000	SR 2000	Pro
APS 640 MO	Fujitsu M2513A2VN	N/A	\$399 ⁹⁵	\$429 ⁹⁵
APS 2.6GB MO	Sony SMO-F544, 2.4GB	N/A	\$1,669 ⁹⁵	N/A

APS CD-ROM DRIVES			External
Model	Description		
APS CD32	32X CD-ROM in Slimline Case		\$159 ⁹⁵
APS CD Changer	Nakamichi 5 Disc/16X CD-ROM, Pro Case only		\$299 ⁹⁵
APS CD-R Plus	2X record/6X read CD-R (Sony)		\$379 ⁹⁵
APS CD-R Pro	4X record/6X read CD-R in Pro Enclosure		\$529 ⁹⁵
APS CD-R Pro	4X record/6X read CD-R in Full Height Enclosure		\$729 ⁹⁵
APS CD-RW	2X record/6X read CD-RW in Pro Enclosure		\$529 ⁹⁵
APS CD-RW Pro	4X record/6X read/2X rewrite CD-RW, Pro Enclosure		\$599 ⁹⁵
APS Jaz/CD-R System	2X record/6X read CD-R		\$749 ⁹⁵
APS 2GB/CD-RW Sys.	Q 2000 Hard Drive & 2X record/6X read CD-RW		\$799 ⁹⁵

APS TAPE BACKUP SYSTEMS			
Model	Description	Internal	External
APS HyperQIC®	Travan 4 Conner QIC 3095, 8GB	\$299 ⁹⁵	\$349 ⁹⁵
APS HyperDAT®	DDS-2DC, 8GB	\$499 ⁹⁵	\$599 ⁹⁵
APS HyperDAT® Pro	DDS-2DC, 8GB	\$799 ⁹⁵	\$849 ⁹⁵
APS HyperDAT® III	DDS-2DC, 24GB	\$1,049 ⁹⁵	\$1,099 ⁹⁵
APS Mini Library	4mm DDS-2 AutoLoader, 64GB	N/A	\$2,399 ⁹⁵
APS DLT30	DLT 3000, 30GB	N/A	\$2,499 ⁹⁵
APS DLT40	DLT 4000, 40GB	N/A	\$2,899 ⁹⁵
APS DLT70	DLT 7000, 70GB	N/A	\$6,899 ⁹⁵
APS AIT*	8mm WDC, 50GB	N/A	\$2,899 ⁹⁵
APS DLI	4MM DDS-2 AutoLoader, 136GB	N/A	\$4,999 ⁹⁵

*See Adaptive PowerDomain 2940 Ultra Wide SCSI Host Adapter offer to gain maximum throughput.
Call for information about Windows 95 and Windows NT versions of these great drive products.

Prices in Red are Hot Deals! Order online @ <http://www.apstech.com>

Mac Backup ^{as low as} \$349⁹⁵!

APS HyperQIC®

The best value ever in a high performance tape backup system ever for Mac! The APS HyperQIC uses reliable, industry-standard Travan 4 tape cartridges to backup up to 8GB* of data on one tape. Includes Mac/PC/NT backup software HyperQIC Starter Kit.

(Includes three TR-4 cartridges, one drive cleaner kit) part # 106625 \$119.95
*Assumes 2:1 data compression

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.

\$599⁹⁵
APS Pro Enclosure

Save Big! on the APS HyperDAT®

- Up to 8GB on a single 120m DAT tape**
- Includes Mac/PC/NT backup software

Now just \$599.95 in the APS Pro enclosure!

**Assumes 2:1 data compression

120m DAT Starter Kit (includes five DAT tapes, one DAT head cleaner, one LabelOnce DAT starter kit, one Micro-Dat storage cube) part # 100590 \$99.95

APS JAZ II Call for Special Pricing

- Huge 2GB capacity
- Reads and writes 1GB Jaz disks
- Includes cartridge



APS CD 32

- 32X for fluid multimedia!
- Fastest CD-ROM drive ever from APS

*Slimline case does not include DX Term, but does come with block terminator.

\$159⁹⁵
Slimline case

ICE APS ECONOMY LINE (EL) DRIVES

- Perfect replacement drives
- No expensive extras that you don't need



APS Q 2000 EL	2079MB formatted, 5400 rpm Quantum mechanism	\$199 ⁹⁵
APS Q 3000 EL	3118MB formatted, 5400 rpm Quantum mechanism	\$229 ⁹⁵
APS Q 4000 EL	4136MB formatted, 5400 rpm Quantum mechanism	\$279 ⁹⁵
APS Q 6400 EL	6236MB formatted, 5400 rpm Quantum mechanism	\$359 ⁹⁵

The APS Economy Line of drives is intended as replacements for your current hard disk. They do not include brackets, cables or screws. Please keep your license for warranty purposes.

APS Q 4300 W

- Productivity boost for creatives
- Faster transfers with Ultra Wide SCSI



Shown in APS Pro Enclosure

APS CD-RW Pro \$599⁹⁵

- Work faster with 4x record, 2x rewrite & 6x read speeds
- Fastest rewritable CD technology available!



\$459⁹⁵
EL configuration

APS Q 4300

- Ideal for high-performance corporate applications
- 7200 rpm Ultra SCSI mechanism



Corporate Sales (800) 554-3941
International (816) 920-4109

APS Technologies • 6131 Dermans • Kansas City, MO 64120
Order from Our Online Catalog @ <http://www.apstech.com/store>

Check order status @ <http://www.apstech.com/status.html>



Call 800-285-0638 Today

Mac OS is a registered trademark of Apple Computer, Inc. APS and APS Technologies are registered trademarks of Alliance Peripheral Systems, Inc. Other brand or product names are registered trademarks or trademarks of their respective holders.
30-day money back satisfaction on all APS brand drives and accessories. Your risk is the cost of shipping.
Monitors and 3rd party products carry warranties from their respective manufacturers.
SCSI cables sold separately.
APS warranty is a pass-through of the medium manufacturer's warranty which will be serviced by APS for one year. APS warrants APS branded enclosures, brackets and power supplies for a period of one year from the date of purchase and will, at its discretion, replace or repair products found to be defective according to the specific terms of the warranty accompanying the product.
Refund orders subject to 20% restocking fee.
International customers must pay for all shipping charges.
Listed capacities are formatted.



CDW

BUY IT TODAY AND USE IT TOMORROW

97% of all credit-approved orders ship same day!

Power Mac G3

Authorized Catalog Reseller

Monitor sold separately

NEW LOW PRICES!

- 233MHz or 266MHz PowerPC™ G3 processor
- 66MHz system bus speed
- 32MB RAM standard
- 4GB or 6GB IDE hard drive
- 24X Max CD-ROM drive
- Omeka Zip drive (on select models)

As low as! **\$1597.87** CDW 99851

Virtual PC V2.0

For Power Macintosh

Connectix

- 25% to 40% faster performance
- Windows 98 ready
- Enhanced Direct X support
- Outstanding performance on G3 processors
- Integration with OS 8

Upgrade for Windows 95 **\$32.97** CDW 109338

For Windows 95 **\$139.21** CDW 107470

Computers

Apple® Power Macintosh® Series	
5500 225MHz PowerPC 32MB	
2GB 24X 10BT	1798.79
6500 250MHz PowerPC 32MB	
4GB 24X	1397.27
6500 275MHz PowerPC 32MB	
6GB 24X iomega Zip drive	1665.78
6500 275MHz PowerPC 48MB	
6GB 24X iomega Zip drive	1947.85
6500 300MHz PowerPC 64MB	
8GB 24X iomega Zip drive	2147.49
G3 233MHz PowerPC G3 32MB	
4GB 24X	1597.97
G3 233MHz PowerPC G3 32MB	
4GB 24X mini-tower	1898.47
G3 266MHz PowerPC G3 32MB	
4GB 24X iomega Zip drive	1898.27
G3 266MHz PowerPC G3 32MB 6GB	
24X iomega Zip drive mini-tower	2379.57
G3 266MHz PowerPC G3 128MB	
4GB 24X mini-tower	3595.86
Apple® Macintosh® PowerBook® Series	
1400c 166MHz PowerPC 603e	
16MB 2GB 11.3" AM 8X	1987.56
1400cs 166MHz PowerPC 603e	
16MB 1.3GB 11.3" DS 12X	1697.58
2400c 180MHz PowerPC 603e	
16MB 1.3GB 10.4" AM	1957.36
3400c 200MHz PowerPC 603e	
16MB 2GB 12.1" active 12X CD	3579.88
3400c 240MHz PowerPC 603e	
16MB 3GB 12.1" AM 12X	4229.27
G3 250MHz PowerPC G3 32MB	
5GB 12.1" AM 20X	5489.77
AM = active-matrix display	
DS = dual-scan display	

UMAX®	
SuperMac Series Desktops	
C500 240MHz PowerPC 603e	
24MB 3GB 24X	1295.00
C500a 240MHz PowerPC 603e	
24MB 3GB 24X 10BT	1395.00
J700 230MHz PowerPC 604e	
24MB 2GB 24X 10BT	1995.00
SuperMac Series Mini-towers	
C600LT 240MHz PowerPC 603e	
24MB 2GB 12X	1395.00
C600V 240MHz PowerPC 603e	
32MB 3GB 24X 10BT	1495.00
C600X 280MHz PowerPC 603e	
32MB 4GB 12X 10BT	1795.00

Handheld Computers

MessagePad 2100	747.36
eMate 300	789.67

Monitors

MultipleScan 15AV 15" 0.28mm	389.14
MultipleScan 20 17" 0.28mm	827.51
AppleVision 750 17" 0.25mm	819.22
AppleVision 850 20" 0.26mm	1577.46
AppleVision 850AV 20" 0.26mm	1714.27

Monitors

MAG	
DJ530 15" 0.28mm	255.77
DJ700 17" 0.28mm	515.93
DJ800 19" 0.26mm	788.84
DJ920 21" 0.28mm	1207.20
PHILIPS MAGNAVOX	
105S 15" 0.28mm	187.78
107S 17" 0.28mm	349.55
NEC	
A500 15" 0.28mm	267.18
E500 15" 0.25mm	336.52
A700 17" 0.28mm	469.11
E700 17" 0.25mm	668.17
P750 17" 0.25mm	755.48
E1100 21" 0.28mm	1059.80
P1150 21" 0.28mm	1188.57
SONY	
100ES 15" 0.25mm	327.70
200ES 17" 0.25mm	605.80
200PS 17" 0.25mm	819.53
400PS 19" 0.27mm	1039.08
20SF2 20" 0.30mm	956.97
ViewSonic®	
G771 17" 0.27mm	449.47
G773 17" 0.26mm	469.00
GS771 17" 0.27mm	469.00
G790 19" 0.26mm	865.83
G800 20" 0.28mm	889.87
G810 21" 0.25mm	1089.70
P775 17" 0.25mm	555.20
PT775 17" 0.25mm	668.48
P810 21" 0.25mm	1216.46
PT813 21" 0.28mm	1367.81
P815 21" 0.25mm	1364.32

Video Boards

Nexus GA 6MB PCI	495.61
PC Card w/RT11	79.67
Xclaim VR 4MB PCI	239.68

Communications

Megahertz 33.6 Ethernet 10BT	299.35
PC Card w/RT11	224.51
Courier i-modem	339.28

U.S. Robotics

Sportster 33.6 external	119.99
Sportster 56K x2 fax/modem external	179.38

TeiePort 56K x2 external	155.27
TeiePort 56K K56flex external	149.11
TeiePort 56K PLUS Mac OS 8	168.15
K56flex external	168.15
TeiePort 56K PLUS Mac OS 8	168.15
x2 external	168.15
56K bps fax/modem PC Card	236.79
56K bps fax/modem/Ethernet PC Card	347.92

Microsoft

Office 98 Macintosh Edition



Office 98 Macintosh Edition features Microsoft® Word 98, Microsoft Excel 98, Microsoft PowerPoint® 98, Microsoft Outlook™ Express and Microsoft Internet Explorer

Save any Office document as HTML or add hyperlinks to other Office or HTML files on your computer across corporate networks or even on the Internet

Transfer documents easily between Office 98 Macintosh Edition and Office 97 for Windows—without any conversion

Upgrade **\$258.94** CDW 103487

Full version **\$447.97** CDW 103486

Data Storage

Hi-Vai SounTastic 16X CD Kit	
Hi-Vai SounTastic 16X CD Kit external	219.97
Hi-Vai SounTastic 24X CD Kit external	179.64
CD-Recording system external	389.02
iomega	
Zip drive 100MB external	139.95
ZipPlus 100MB external	199.95
100MB Zip disk 3-pack	49.95
Jaz drive 1GB external	299.95
Jaz drive 2GB external	549.95
Jaz drive 2GB external	649.95
1GB Jaz disk 3-pack	299.95

LACIE

24X CD w/FM tuner external	179.00
32X CD external	199.00
4X8 CD-Recordable external	499.00
SCSI-3 internal	259.00
3.2GB Quantum ST Ultra	299.00
4.3GB Quantum ST Ultra	359.00
SCSI-3 internal	469.00
6.4GB Quantum ST Ultra	469.00
SCSI-3 internal	829.00
9.1GB Quantum Ultra SCSI-3 internal	429.00
3GB Apple drive Ultra SCSI-3 external	429.00
4GB Apple drive Ultra SCSI-3 external	499.00

Quantum

2.1GB Fireball SE Ultra SCSI-3	219.85
3.2GB Fireball SE Ultra SCSI-3	256.15
4.3GB Fireball SE Ultra SCSI-3	299.73
6.4GB Fireball SE Ultra SCSI-3	375.70
8.4GB Fireball SE Ultra SCSI-3	495.58

SYQUEST

SyJet 1.5GB	299.99
SyJet 1.5GB cartridge	79.99

Scanners

EPSON®

Action Scanning System II	279.59
Expression 636 executive scanner	799.00
Expression 636 Artist scanner	999.00
Expression 636 Professional scanner	1399.00
Expression 836XL scanner	2499.00

MICROTEK

ScanMaker E3 Plus scanner	145.58
ScanMaker V600 scanner	279.16
ScanMaker E6 Standard scanner	279.74
ScanMaker E6 Professional scanner	529.76

BUY WITH CONFIDENCE

CDW® IS A NASDAQ TRADED COMPANY

TICKER SYMBOL: CDWC D & B rated 8A1 Duns 10-762-7952



Credit card charges are not submitted until time of shipment. For your protection, we ship only to your credit card's verified billing address. Freight is calculated as the carrier's actual freight charge plus insurance and packaging material. The cost of insurance is 0.35% (0.0035) of the order total. Packaging materials will not exceed \$4.00 for single package shipments, \$6.00 for multi-package shipments. Before returning any product, you must obtain an RMA number. Non-defective returns are subject to a restocking fee. Software, chips and other electronic components are not returnable. Allow 10 business days for shipping when paying by personal check. All pricing subject to change. For all prices, products and offers, CDW reserves the right to make adjustments due to changing market conditions, product discontinuation, manufacturer price changes, errors in advertisements or other extenuating circumstances. All trademarks and registered trademarks are the sole property of their respective owners.

Call today!

Scanners

Polaroid

SprintScan 35LE film scanner	795.00
SprintScan 35ES film scanner	1239.98
SprintScan 35+ film scanner	1799.04

UMAX

Astra 610S flatbed scanner	148.65
Astra 1200S flatbed scanner	244.88
w/Full Adobe PhotoDeluxe	244.88
PowerLook II Duo Advance flatbed scanner	1219.33
Mirage IIS flatbed scanner	2995.00
w/MagicScan software	

Printers

Apple

LaserWriter 8500	1914.61
------------------	---------

EPSON®

Stylus Color 600	249.00
Stylus Color 800	349.00
Stylus Color 1520	799.00
Stylus Color 3000	1999.00
Stylus Photo	399.00

HEWLETT PACKARD

HP DeskJet 340 portable ink jet printer	265.65
HP DeskJet 1600CM printer	1919.09
HP LaserJet GMP printer	877.26
HP LaserJet 4000 N printer	1464.88
HP LaserJet 4000se printer	1

PRODUCT INDEX

Category	Page No.	Category	Page No.
Business Operations	138-139	Peripheral Products	143-144
Bar Code		Magnetic Media	
Inventory Management		Cd Rom	
Print Utility		Services	164-165
Video/Display		Color Printing	
Communications/		Data Recovery	
Networking	143	Digital Production	
Cross Platform		Repair	
Modems		Systems & Peripherals	144-161
Education/		Account Managers	800.825.4237
Entertainment	139-141	Spencer Frasher.....	212.503.5864
Discount Software		sfrasher@zd.com	
Graphics	139	Michelle LeWinter...212.503.5122	
Clip Art		mlewine@zd.com	
Memory & Upgrades	161-163	Kristin Newman.....212.503.5862	
Memory Upgrade		knewman @zd.com	
Digital Advertising Coordinator:		Jessica Turko.....212.503.5140	
Brian Mullin	415.243.3521	jturko@zd.com	
brian_mullin@macworld.com		Sales Manager:	
		Monifa Kelly.....212.503.5155	
		mkelly@zd.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
SALES, RENTALS, & LEASES • MONEY BACK GUARANTEE.**

**TRUSTWORTHY
TECHNICAL
GUIDANCE
AND SUPPORT**

**QUICK
DELIVERY**

**MONEY-BACK
GUARANTEE**

Epson
CTX
nView
In Focus

**CALL
PANELIGHT FOR
OUR
FREE CATALOG:
1-800-726-3599.**

**MON.-FRI., 6:30AM-5:30PM P.S.T.
24-HR. FAX: 415-986-3817
OR E-MAIL: SALES@PANELIGHT.COM**

HTTP://WWW.PANELIGHT.COM

**PANELIGHT DISPLAY SYSTEMS, INC.,
P.O. BOX 190940,
SAN FRANCISCO, CA 94119.
OR CALL 415-772-5800.**

**TREMENDOUS
SELECTION OF
ALL LEADING
PROJECTORS**

**SALES, LEASES
OR RENTALS**

**DISCOUNT
PRICES**

Toshiba
Polaroid
Proxima
Panasonic



**CALL THE EXPERTS
AT PANELIGHT
DISPLAY SYSTEMS, INC.**

CIRCLE 420 ON READER SERVICE CARD

PrintChef- "it's not printing magic, it's printing science..."

Use our automatic booklet maker, or design your own and watch as your application adjusts to the new mini-paper size!

Let me power up your printing!

Automatic miniatures simply choose a layout

Paper control that you wouldn't believe possible

Head-to-toe & reversed printing

Paper thickness control for proper booklets

Toner control at the page or object level!

See why adding the "printChef" button to your print dialog will change the way you print forever!

- New paper sizes
- Toner & ink-jet control
- Color/gray watermarks
- Any bar code model
- "Variable data" printing
- "Variable image" printing
- Preview any print
- Serialize any print
- Electronic signatures
- Front-to-back & range printing
- Booklets with "page creep"
- Accumulate print jobs into one
- Flash print PostScript 10x faster
- Merge a database with a recipe
- Design your own multi-ups
- Full or partial label layouts
- Print logging, security, & reports
- Letterheads, brochures, etc.
- Two cover pages
- Banners & murals
- Import EPS & PICT
- 38 text commands
- You can move, skew, rotate, colorize, clip, scale, & duplicate each object & page to your design...

Street priced at \$60 ...so that everyone can make their printer sizzle right now!

**To boost the printing power of any application,
call (800) 648-6840
or try our demo at www.mindgate.com**

60-day money-back guarantee

List Price: Base unit \$95
Net. \$15-\$25/unit
Worldwide: (931) 937-6800
Fax Orders: (931) 937-6801



MindGate® Technologies, Inc.
164 Oliver Smith Road
Firmville, TN 37735-9335

Order Direct
VISA
MasterCard
Discover
or thru
800-255-6227

printChef is a print extension that sits between any application & any printer driver... it uses Print Recipes that you design to control any application's output... MindGate, printChef & their logos are registered trademarks. Fill-in-the-blanks is a trademark, and "it's not printing magic... it's printing science" is a trademark of MindGate Technologies, Inc.

CIRCLE 419 ON READER SERVICE CARD

BAR CODE SOLUTIONS

- LABELING SOFTWARE
- BAR CODE FONTS
- SCANNERS/LASERS
- GRAPHIC UTILITIES

FREE EXPERT CONSULTATION

FREE LIFETIME TECHNICAL SUPPORT

MONEY-BACK GUARANTEE

UPC/EAN, CODE 39, ITF, POSTNET, 2-D

International Bar Code Expertise
300,000 Customers Worldwide

Bear Rock TECHNOLOGIES

800-232-7625
530-672-0244 FAX: 530-672-1103

www.bearrock.com

Visit Our Website At:

"This is the best product of its kind, and it's reasonably priced too."
- MacUser on 'Transfer For Macintosh'

CIRCLE 422 ON READER SERVICE CARD

Macworld SHOPPER

"A Macworld never goes by without me checking to compare prices. I always look to see if what I need is there."
—Owner,
Computer Consultants

Macworld
SHOPPER

**POINT OF SALE
INVENTORY CONTROL**

- Retail
- Rentals
- Service
- Manufacturing
- Multi Location

Bar Code/Magnetic Stripe Readers
Receipt Printers • Cash Drawers
Credit Card Auth. & Deposit Software
Download Demos and Interactive Catalog
at our Web Site: <http://www.posdirect.com>
call, fax, or e-mail for a FREE CATALOG
(800) 622-7670 sales@posdirect.com
(618) 985-8237 TEL • (618) 985-3014 FAX
Dealer Inquiries Welcome
30 day MBG

P.O.S. DIRECT

CIRCLE 421 ON READER SERVICE CARD

Inventory Management • Bar Code Business Operations
Discount Software Education/Entertainment
Clip Art Graphics

Attn: Students-Teachers-Schools

ArchCAD 5.0	\$99	Japan.LangK	\$125
Authorware 4	739	Kai's PowerT.	79
CodaFinale97	245	KPT Bryce 3D	115
CorelDRAW 6	129	MiniCAD 7	315
Debab.Toolbox	279	MS FrontPage	74
Director 6	339	MS Office 4.21	198
Dreamweaver	169	MS Word 6.01	99
Electric Image	1329	Norton Utilities	65
Eye Candy 3.0	74	Painter 5.0	205
FileMaker Pro	135	Studio Pro 2.1	545
Final Draft 4.1	145		
Flash 2.0	145		
Form-Z 2.92	Call		

1-888-416-4555
Call for Catalog!

We accept Purchase Orders from schools.
Call for Adobe, Microsoft & QuarkXpress!

Acc Software Express Inc.
666 Anderson Ave. #3
Cliffside Park, NJ 07010
Tel: 201-541-4349 Fax: 201-541-5334

**New Barcode Tools
For FileMaker Pro!**

One Stop Shopping with
Friendly Support
from the Experts

Mobile Simple Fast Accurate

Newton® Walk-About™
Mac-BarcodeProLabel Software
SmartLaser/SmartScanner/SmartPen
Call for Literature/Free Demo Disk

The Mac-Barcode Co.
800-733-7592
<http://www.mac-barcode.com>

Bar Code Headquarters



- 30 Day \$ Back Guarantee
- Free Shipping in USA
- Toll Free Tech Support

WORTHINGTON
DATA SOLUTIONS

- Portable Batch Readers
- Cordless Interactive RF Bar Code Readers
- ADB Bar Code Readers
- Wand, Laser, CCD, Magstripe or Slot Badge
- PostScript Bar Code Fonts

1-800-345-4220

Or Call 408-458-9938

Website: www.barcodehq.com



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

SNX www.snx.com Tel: (800) 619-0299 Fax: (718) 768-3997
(formerly SYNEX)

CIRCLE 423 ON READER SERVICE CARD

STUDENTS, TEACHERS, SCHOOLS SAVE UP TO 80%

Image
ELECTRONIC
EDU-SOFT



315.00
**Diehl Graphsoft
MiniCAD 7**

Azimuth 2.5...179
Blueprint 5...149

**We'll Beat ANY
Advertised Price!!**

Adobe, Microsoft, Lotus, & Borland products available.

4th Dimension 6.0	249	FileMaker Pro 4.0	139	NetObjects Fusion 2.0	149
Authorware 4.0	739	Final Draft 4.1	145	Nisus Writer 5.0.1	85
Canvas 5.0.3	179	Flash 97	245	OmniPage Pro 8.0	329
Claris HomePage 3.0	59	Flash 2.0	145	PageTools 2.0	69
Claris Works 5.0	79	Fractal 3D Suite 2.0	299	Phototools 2.0	89
Cliff Notes Studyware	19	Fractal Detailer 1.0	129	PreFlight Pro	279
CodeWarrior Pro 2.0	119	Fractal Expression	99	QuickKeys 3.5.2	69
Conflict Catcher 4.0	59	Fractal Painter 5.0	219	QX-Tools 2.0	69
CorelDRAW Suite 6.0	165	Fractal Poser 2.0	79	Roy Dream Studio 5.0	129
CyberStudio 2.0.1	179	FreeHand 8.0	149	Roy Dream 3D	69
Debabelizer Toolbox	219	Infini-D 4.0	279	Softwindows 95 5.0	199
Director 6 w/E-Doc	339	Kai's Power Tools 3.0	79	Strata Media Point 1.x	179
Director MMS 6	675	KPT Bryce 3D 3.0	115	Strata Studio Pro 2.1	549
Director MMS Upgd	399	KPT Vector Effects	99	Strata Videoshop	79
Dreamweaver	149	LightWave 3D 5.5	799	Total Xaos Bundle	119
Electric Image Broadcast	1329	LivePicture 2.6	199	Umax Astra 6105	149
Encore 4.2	279	Logomotion 2.1	65	Wacom ArtPad 4x5	129
EndNote Plus 2.x Stu.	99	Mathematica 3.0 Stu.	149	Wacom ArtZ II 6x8	285
Epson Photo Printer	389	Mathview	99	Wacom ArtZ II 12x12	399
Eye Candy 3.0	75	Mask Pro	199	WordPerfect 3.5.1	39

WebSite: www.ElectronicImage.com • Fax: (510) 798-2464 • FREE Catalog

TOLL FREE 1-888-3-EDU-SOFT

CIRCLE 425 ON READER SERVICE CARD

SOFTWARE SALE 1-800-258-0297

Microsoft Office	\$299
Microsoft Word 5.0/6.0.1	\$80/135
MS Excel/Powerpoint (each)	\$155
Adobe Photoshop/Pagemaker	CALL
Adobe Illustrator/Aftereffect	CALL
MetaCreations Detailer	\$130
MetaCreations Expression	\$130
MetaCreations Painter 5.0	\$235
MetaCreations Kai's PowerTools	\$90
MetaCreations Bryce 3D	\$135
Infini-D 4	\$290
Daneba Canvas 5.0	\$225
Macromedia Freehand	\$210
Freehand Graphic Studio 7.0	\$290
Filemaker Pro 4	\$150

T.I.N.

FAX 1-800-260-3988
Call 9AM to 4PM PST. PRICE SUBJECT TO
CHANGE WITHOUT NOTICE. LIMITED STOCK.
ALL TRADEMARKS ARE PROPERTY OF THEIR
RESPECTIVE OWNERS.

STUDENTS!

Save up to 75% OFF Popular Software!

Call for a FREE
Student Software Guide:
(800) 874-9001

Adobe • Microsoft • Autodesk
Kinexix • Corel • Macromedia
MetaCreations • Wacom
Symantec • Extensis • More!

www.JourneyEd.com

JOURNEY
Education Marketing

CALL FOR A FREE CATALOG: (800) 874-9001

LifeART Professional Medical Clip Art



www.lifeart.com **1-800-543-3278**

Student - Teacher - School Discounts!

3D HotText 1.0	\$99
3D PopArt	\$29
4D 6.0	\$299
Adam Comprehensive Student Ed	\$119
Agfa SnapScan 310	\$199
Agfa StudioStar w/Photoshop LE	\$769
Amapi Studio 3.0.3	\$125
Andromeda Series 3 or 4	\$75
Andromeda Shadow Filter	\$75
Anubis Utility	\$49
Art Dabbler 2.1	\$39
Art Z II 12x12 Ser Tablet	\$399
Art Z II 6x8 ADB Tablet	\$285
Arts & Sound Bites V1	\$59
Astound 3.0	\$99
Aurora 2	\$159
Authorware 4.0 Edoc	\$399
AutoCAD R12 w/Ame h	\$199
BBEdit 4.5.1	\$79
Berserk 1.3	\$159
BeyondPress 3.0	\$349
CADtools 1.1	\$99
Canvas 5.0.3	\$179
Chromatic	\$79
Cinema 4D 4.0 Student	\$529
ClearVideo 1.2	\$229
Coda 2.0	\$99
Coda Finale 97	\$269
Color It! 3.2	\$39
ColorDrive 1.5.3	\$89
ColorExchange 1.1	\$399
Composer's Mosaic 1.5	\$249
Conflict Catcher 4.0	\$59
CorelDRAW Suite 6	\$169
Crickit Graph III 1.5.3	\$79
Cubase Audio XTVST 3.5	\$399
Cubase VST 3.5	\$199
Cyclonist 1.0	\$249
Datadesk 6.0+	\$499
DeBabelizer 3.0	\$299
DeltaGraph 4.0	\$249
DenebaCAD 1.0.2	\$269
DesignWorkshop 1.7	\$199
Detailer 1.0	\$129
Director 6 Mult Studio	\$679
DiskFit Pro 1.1	\$49
Dramatica Pro 3.0	\$199
EPS Invigorator 1.5	\$299
Elastic Reality 3.0	\$1149
Encore 4.1.1	\$279
EndNote Plus 2.2 w/EndLink	\$165
Enhance 4.0	\$129
Epson Expression 836XL	\$2349
Epson Perfection 600 Scan	\$229
Epson Stylus 1520 Color Printer	\$769
Epson Stylus 3000 Color Printer	\$1899
Epson Stylus Photo Color Printer	\$379
Eudora Pro 4.0	\$35
Expression 1.0	\$99
Eye Candy 3.0 After Effects	\$349
FastTrack Schedule 5.0	\$139
FileGuard 3.0.8	\$119
Flash 2.0	\$149
Flo' 2.6.3	\$69
Fontographer 4.1.3	\$129
Form Z 3.0	\$899
Hard Disk Toolkit 2.5	\$125
HotMetal Pro 3.0	\$85
Hollywood FX 3.0.5	\$359
HomePage 3.0	\$59
HyperStudio 3.1	\$119
ImageAXS	\$39
InfiniD 4.0	\$329
Inspiration 5.0 Higher ED	\$79
Intelligence 3.0	\$69
Interactor 1.1	\$149
Iomega Jaz 2GB Ext SCSI	\$619
Iomega ZipPlus 100 Ext SCSI/Par	\$199
JMP 3.2	\$249
JudsonRosebush Wside Designs	\$39
Kai's Photo Soap 1.0	\$39
Kai's Power Tools 3.0.2	\$85
KaleidaGraph 3.0	\$109
Life Forms 2.1	\$199
Live Picture 2.6.1	\$199

WE WILL BEAT ANY ADVERTISED PRICE * LATEST VERSION & FULL PACKAGES

\$599

Photo Design

Illustration

Page Layout

Market-Leading Page Layout Software

Market-Leading Illustration Software

Market-Leading Photo Design Software

From the world's leading desktop publishing software manufacturer... 3 market leading DTP Tools

DeskTop Publishing Bundle

\$269

Boris FX 3.1

Video Effects for Premiere

\$139

FileMaker Pro 4.0

#1 Relational Database

\$149

Final Draft 4.1

Professional Screenwriting Software

\$149

Dreamweaver 1.0

Designing Professional Web Pages

\$59

Virex 5.8

AntiVirus Program

\$149

NetObjects Fusion 3.0

Designing, Building & Updating Web Sites

\$179

CyberStudio 2.0.1

Website Building Software

\$149

Creator2

Desktop Publishing & Layout

\$119

CodeWarrior Pro 2

C/C++ Programming

\$79

DAVE 2.0

Shares files & Printers between your Mac & PC.

\$89

Test Strip 2.0

Accurate way to Correct Color

\$89

PhotoTools 2.0

Photoshop Plug-In

Call for FREE Catalog!
(800) 831-2295
Includes Complete Price List & Free Product Info.

**SAVE DAY SHIPPING ON MOST ITEMS.
**ADOBE, SYMANTEC & MICROSOFT PRODUCTS AVAILABLE TO QUALIFIED STUDENTS.
**TEACHERS & SCHOOLS.
**SCHOOL PURCHASE ORDERS WELCOME.
**NO SURCHARGE ON CREDIT CARDS.
**IBM & MAC PRODUCTS AVAILABLE.

*Visit our NEW Web Site!!
<http://www.swsonline.com>

The
SOFTWARE
Source

1-800-831-2295

1750 Brielle Ave, Unit A-2
Ocean, NJ 07712
PHONE (732) 695-2100
FAX (732) 695-9371
E-MAIL: SPTSWS@AOL.COM

Priority Code: 3086

CIRCLE 427 ON READER SERVICE CARD

Student - Teacher - School Discounts!

WE WILL BEAT ANY ADVERTISED PRICE * LATEST VERSION & FULL PACKAGES

\$249



Final Effects Complete
60 Powerful Filters for Adobe After Effects

\$339



Epson Stylus 800
Color Inkjet
High performance
1440x720 dpi Printing

NEW

\$119



Bryce 3D
3D Terrain And Animation

NEW VERSION

\$1349



ElectricImage BROADCAST
Hi-Speed Rendering Version 2.8

\$349



Director 6 E-Doc
Leading Tool for Multimedia and the Web

\$79



Eye Candy 3.0.1
Special Effects for Photoshop

NEW!

\$149



FreeHand 8
Graphics Application

NEW!

\$79



CHROMATICA
Revolutionary Tools for Photoshop
EdgeWizard
Create Wickedly Perfect Edges

\$339



MiniCad 7.0.1
2D/3D Cad Software

\$119



Total Xaos
-Includes Paint Alchemy 2.0,
Terrazzo 2.0 & Typecaster

NEW!

\$429



CineLook 1.0 Broadcast
Make Video look like Film!

NEW!

\$79



DOUBLER PACK
Includes Ram Doubler 2
& Speed Doubler 8

CALL



LightWave 3D 5.5
Modeling & Animation

Call for FREE Catalog!
(800) 831-2295
Includes Complete Price List & Free Product Info.

****SAME DAY SHIPPING ON MOST ITEMS.**
****ADOBE, SYMANTEC & MICROSOFT PRODUCTS AVAILABLE TO QUALIFIED STUDENTS, TEACHERS & SCHOOLS.**
****SCHOOL PURCHASE ORDERS WELCOME.**
****NO SURCHARGE ON CREDIT CARDS.**
****IBM & MAC PRODUCTS AVAILABLE.**

Visit our **NEW** Web Site!!
<http://www.swsonline.com>

Logic Audio 3.0	\$449
LogoMotion 2.1	\$79
M.Y.O.B 7.5 Plus w/Pay	\$90
MTropolis 1.1	\$549
Mac Academy Tutorial Videos	\$35
MacLink+ Translator Pro 9.7	\$95
MagicMask	\$79
MarkzTools 6.2	\$65
Mask Pro 1.0	\$199
Master Tracks Pro 6.0	\$69
MasterClips 150,000	\$59
MathType 3.5	\$99
Mathematica 3.0 Student	\$149
Matlab 5.0 Student	\$99
Media Cleaner Pro 2.0	\$249
Metro 3.5	\$129
Movie Magic Budgeting	\$329
MovieWorks Interactive 4.0	\$79
MusicShop 2.0.1	\$75
Myrmidon 2.0	\$35
Netscape Communicator Pro 4.0	\$45
Nisus Writer 5.1	\$85
Now Up To Date & Contact 3.6.5	\$79
ObjectDancer 1.1	\$199
OmniPage Pro 8.0	\$329
OttoPaths 1.0	\$79
Matlab 5.0 Student	\$99
Overture 2.0.3	\$249
PC MACLAN 6.2	\$149
PM2Q 5.4	\$49
Page/Edges 3.0	\$135
PageMaker Fraemz PS Deluxe	\$129
Painter 5.0	\$219
Photo/Graphic Edges Vol 1,2 or 3	\$135
PhotoFrame 1.0	\$89
PhotoVista	\$79
Plaid & Stripe 1.1	\$399
Portfolio 3.0	\$69
Poser 2.0	\$79
PosterWorks 4.0	\$249
PowerMoves 1	\$99
PowerPrint 4.0	\$89
Presenter 3D 3.6	\$995
Private File	\$35
QXEffects 3.0	\$89
QuickKeys 3.5.2r1	\$85
QuickTime VR Authoring Studio	\$299
RayDream Studio 5.0	\$129
Retrospect 4.0	\$109
Screen Caffeine Pro 2.2	\$75
Sculpt 3D 4.2	\$219
SoftWindows 95 5.0	\$189
SoundEdit 16+ Deck II	\$249
Spell Catcher 1.5	\$49
Sportster 56K External	\$209
Spring Cleaning 2.0	\$35
Squizzl 3.0	\$99
StatView 5.0 Student	\$99
Studio VisionPro 3.5.4	CALL
StudioPro 2.1.1	\$549
Stuffit Deluxe 4.5	\$55
StyleScript 3.6	\$89
SuperCard 3.0	\$129
System 8.1 Software	\$85
Terra Forma Regional 1.2 or 3	\$129
Textissimo 2.0	\$99
The Teacher's Tool Kit	\$69
Topdown Flowcharter 4.5	\$155
Trackman Marble	\$85
TurboCAD 2D/3D 3.0	\$79
TypeShop Pro	\$129
Typo/Graphic Edges 3.0	\$69
Umax Astra 1200S w/Photo Del	\$249
Umax Astra 610S w/PhotoDeluxe	\$149
Vector Lathe 1.0	\$109
VideoShop 3D 4.0	\$149
Virtual PC 2.0	\$149
VirusScan 3.0	\$49
Vision 3D 5.0	\$129
Wacom Artist Dream 6x8	\$399
WebSTAR 2.1	\$329
WebSpice 1.0	\$55
WildRiverSSK 1.1	\$85
Word Cross 2.0	\$39
WordPerfect 3.5.1	\$69
World Construction Set 3.0	\$575

The
SOFTWARE
Source

1-800-831-2295

1750 Brielle Ave, Unit A-2
Ocean, NJ 07712
PHONE (732) 695-2100
FAX (732) 695-9371
E-MAIL: SFTSWS@AOL.COM

Priority Code: 3086

Apple G3 266MHz
MiniTower
As Low As
\$2459

The Lowest Finance Rate Available FREE Software SuperBundle - \$3500 Value

Software SuperBundle - Director, Adobe
Premiere, Illustrator, PageMaker, Photoshop,
LivePicture, Omni page Professional, DOS
Mouter 95 Free with this Ultimate Workstation.

FULL-LINE AUTHORIZED SERVICE CENTER - MAC & PC
EQUIPMENT REPAIR, DATA RECOVERY, SHORT-TERM
RENTAL, LOANER PROGRAM AND POWERPC PROCESSOR
- 120/132/150/180/225/233/250/300/350 MHZ
200MHZ UPGRADE AVAILABLE AS LOW AS \$199.

SUPERBUNDLE!
\$349
PER MONTH



Power Macintosh G3 Ultimate Graphics Workstation

- PowerPC G3/266MHz or PowerTower Pro 250MHz MP
- Internal 24x CD-ROM
- **416 MB RAM**
- 18GB internal RAID Disk
- Extended keyboard
- **\$1489** Radius PrecisionColor 21" Color - 1600X1200 0.25mm Color monitor
- **\$429** Twin-Turbo -128bit Graphic Engine, 1600x1200, w/8MB Graphic Engine
- **\$1349** Agfa Arcus II w/ Trans, 36-bit Scanner

- **\$899** External combo drive combo w/Jaz drive, ZIP, SQ200MB w/Cart.
- **\$649** Apple LaserWriter 600dpi PostScript printer 4/600 w/one cartridge and Cables
- **\$89** Active SCSI terminator, One 25/50 SCSI cable, five 50/50 cables
- **\$199** UPS Battery Back-Up
- **\$199** Apple QuickDraw 3D PCI Accelerator Card - 12 X Faster
- Image Solutions Extended Services

Adobe Specials - PageMill 2 - \$89 (MAC & Win.)	
Adobe Photoshop 4.0 /Retail	\$299/\$325
Adobe Photoshop 3.0.5/LE	\$199/\$99
Adobe Illustrator 5.5/7.0	\$199/\$289
Adobe PageMaker V6.0/V6.5	\$199/\$329
Adobe Premiere LE/4.2	\$99/\$329
AfterEffects/Product. Bndle	\$479/\$1689
Persuasion V3/Dimension3	\$189/\$125
Acrobat V3.0/Type-on-Call	\$149/\$39
FrameMakerV5/Streamline4	\$469/\$125
Adobe PhotoDeluxe/ATM	\$45/\$59

MacroMedia sales - Director 5 - \$189 (MAC & Win.)	
Authorware 3/Inte. Studio	\$489/\$979
Authorware 4/Inte. Studio	\$1529/\$2529
BackStage / Dreamweaver	\$189/\$249
Director5/Multimedia Studio	\$189/\$289
Director 5 - 10 User Licence	\$489
Director6/Multimedia Studio	\$589/\$749
Freehand 7/Graphics Studio	\$289/\$349
Fontographer V4/Flash 2	\$199/\$249
Macromedia xRes / Ex. 3D	\$69/\$69
SoundEdit 16/+ DECK II	\$189/\$249

Microsoft sales - Office V4.2.1 - \$149 (MAC & Win.)	
Microsoft Office4.2.1/98/Pro	\$199/\$289/\$329
Microsoft Word 6.0.1/Excell	V5 \$199/\$199
M.S. Project v4/FrontPage	\$249/\$99
PowerPoint 4/Works 4	\$199/\$99

MetaCreation - Infini-D4 - \$459 (MAC & Win.)	
F.D. 3D STE/ Bryce 3D	\$329/\$159
F.D. Detailer / Expression	\$249/\$119
F.D. Painter V3/4/5	\$129/\$179/\$239
FD Poser v2/Dabbler V2	\$115/\$38
Kai's Power Tool V2/3/SE	\$49/\$119/\$69
Ray Dream 3D/Studio	\$85/\$229

Monitor & Display Card

DSC 15"/17" Color	\$249/\$395
DSC 19"/21" Color	\$799/\$1049
SONY 17"/19" Color	\$319/\$619
ViewSonic 17"/19"	\$479/\$879
ViewSonic 20"/21"	\$1039/\$1179
Radius17"/21" Color	\$639/\$1589
ATI XCLAIM 3D 4/8MB	\$179/\$239
IMS 4MB/8MB 3D	\$285/\$445

PrinterSTY1500\$199

EpsonStylus3000 \$Lowest
Apple Laser 4/600 \$589
Apple 12/640 Plus \$2149
GCC XL1208, 11x17\$3869
Apple12/600 Color \$3589*
Wacom Tablet - \$139
6X8 W/Painter 5 \$385
12X12 W/Painter 5\$569

Jaz w/ Cart. \$279



Photoshop \$99!



Illustrator \$1189!



Adobe Acrobat \$149!



FileMaker \$69!



Optical \$29!



Director 5 ONLY \$99 w/ \$1000 PURCHASE



Jaz \$79!



Ext. H/D, DAT Tape, MO, SyQ & CDR Devices

(Minus \$39 for Internal Drive)

	Ext.	Turbo
42MB/230MB/540MB /750MB	\$89/\$129/\$149/\$199	+\$25
1GB/2GB/3.2GB/4.1GB	\$189/\$249/\$305/\$359	+\$25
6.4GB/8.4GB/9.1GB	\$449/\$629/\$899	+\$25
7200rpm 4.5GB IBM/Quantum/Seagate	\$519/\$529/\$599	+\$29
Seagate/Quantum/Fuji 8.0GB 7200rpm	\$589	+\$49
SONY DAT 4000/5000/7000	\$679/\$779/\$879	+\$89
DLT Tape Drive 30GB/40GB	\$2649/\$3149	+\$99
ExtraByte 5GB Tape Dr.	\$1199	\$1249
SyQuest 270/200MB Ext. Drive	\$299/\$339	+\$25
SyQuest EZ135/ EZ230	\$109/\$145	+\$25
Panasonic 650MB M.O. Dr.	\$699	\$749
SONY 1.3GB M.O. Drive	\$989	\$1099
Mitsubishi 4.6GB M.O.	\$979	+\$99
Olympus 230MB/2.6GB M.O. Drive	\$309/\$1649	+\$99
Fujitsu 230/640 MB M.O. Drive	\$469/\$599	+\$49
Philips/Ricoh Rewritable CDR 6X/2X	\$509/\$529	+\$89
SONY CDR 6X/2X w/Toast	\$379	\$429
Yamaha CDR 6X/4X w/Toast	\$339	\$399
Ext. Jaz/Zip & DiskArrays		
IOmega Zip ext. Dr.	\$135	Turbo \$155
Jaz ext. Dr. 1GB/2GB	\$289/\$549	+\$25
Jaz + CDR ext. Dr w/SW	\$779	\$989
SyJet 1.5GB Dr. w/2X cart.	\$385	\$429
4GB DiskArray	\$589	\$649
8GB F&W DiskArray	\$989	\$1089
16GB F&W DiskArray	\$1949	\$2099
36GB F&W DiskArray	\$3989	\$4099

Scanner: Polaroid 35LE - \$739

Epson 836/636	\$2449/\$689
LineColor JADEII /SAPHIR\$445/\$1379	
Microtek V300/E3/E6	\$135/\$145/\$219*
UMAX Astra 610 /1200	\$125/\$245
UMAX PowerLook III/3000	\$CALL/\$CALL
Agfa StudioStar / Arcus II	\$729/\$1229
Nikon CoolScan / Super	\$875/\$1599

DIRECTOR 5 ONLY \$99 w/ \$1000 PURCHASE

Memory

	30 pin	72 pin	168 pin
4MB	\$25	\$19	-
8MB	\$37	\$27	\$27
16MB	\$35	\$35	\$35
32MB	-	\$69	\$69
64MB	-	-	\$139

Digital Camera

Kodak D-220L 2MB	\$479
Olympus D-600L 4MB	\$1279
Polaroid PDC-2000	\$1469
SONY DSC-F1 LCD	\$479

Software Specials - MAC & Win.

Apple Mac OS 7.6.1/8	\$49/\$79
AppleShare V4/IP 5	\$489/\$719
Audiomedia III: PCI Audio I/O Card	\$689
ACT!V2.8/AutoCAD R12	\$135/\$289
BB Edit / Boris FX 3	\$89/\$229
ColorDrive/Canvas 5	\$59/\$349
Caere OmniPage Pro/Direct	\$89/\$39
Claris Works / Internet Con.	\$89/\$29
CorelDRAW 6/CyberStudio2	\$289/\$249
Corel Stock Photo/HomePage	\$849/\$59
DOS Mouter '95/Here & Now	\$49/\$89
Dantz Retrospect 4/ Remote	\$99/\$149
Extensis MaskPro/PowerSuite	\$269/\$169
Extensis PhotoTools/Portfolio	\$109/\$89
Extensis Intelligence/Pro Tools	\$89/\$689
Extensis QX-Effects3/Tools2	\$115/\$89
Extensis Preflight Designer/Pro	\$59/\$329
FWB H/D or CD ToolKits	\$29/Bundled
FileMaker Pro V4/V2.1	\$159/\$79
FlightCheck/Final EffectAP	\$349/\$139
Language Kits/Chinese/Japanese	\$149
Language Kits/Arabic/Cyrillic	\$89/\$89
Live Picture 2.1/SE/2.6	\$109/\$139/\$179
M.Y.O.B 7/ NisusWriter	\$79/\$79
Norton Utilities V3.2/SAM V4	\$79/\$45
QuarkExpress V3.3.2/4	\$635/\$695
Quicken 7/RAM Doubler II	\$29/\$39
SpeedDoubler8/Stuffit	\$45/\$39
SilverFast 3/SoftWindows Tr.	\$139/\$149
StrataStudioPro 2.1/SuitCase 3	\$635/\$58
Virex V5.8/ Virtual PC	\$58/\$45
Vector Tools/ Effect	\$89/\$99
WebPainter/ WordPerfect 3.5	\$89/\$79
Xerox TextBridge V3/Pro 8	\$29/\$89

CD-R Dr. S/W & Accessories

SONY 2X/8X Ext. Dr.w/Toast Pro	\$349
Mitsubishi 2X/2X/6X Ext. W/Toast	\$489
Yamaha 4X/2X/8X Ext. W/Toast	\$679
AstarteToast Pro. 3/CD-COPY	\$89/\$55
Astarte CD-DA / M-Pack	\$239/\$289
CD-Labeling: Stomper Kits & S/W	\$55
Picasso CD Color Printer W/Media	\$1185

lomega
1.0GB Jaz \$79*
100MB Zip \$11*



\$11!

800-352-3420

Fax: 310-782-5974

Email: imagesol@earthlink.net

http://www.imagesolution.com

385 Van Ness Ave. #110 • Torrance, CA 90501



Order from 6 to 9 weekdays, weekends
from 9 to 9. 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.



Image
Solutions

AVM 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

(888) 433-6066 / (954) 458-5886
<http://www.advance.org/avm/index.html>
 401 N.W. 10 Terrace Hallandale, FL 33009

56K Fax/Modem for DUOs

PowerBooks, Newtons, Pilots.

Desktops,

- ADB Powered
- Optional battery
- ITU Standard
- Fresh ROM

\$149

(30 days \$ Back guarantee)

<http://www.a3j.com.tw/>

Tel: 909-869-9305; 888-GoToA3J

e-mail: a3j@earthlink.net

reference:

http://www.zdnet.com/macweek/mw_1146/op_decade.html

Dealer Wanted!!



More Serial Ports for Your Mac!

Booth 3888

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

SX-2 Only \$229

Your Satisfaction is Guaranteed

- 30 day money back guarantee
- 5 year warranty
- SX-2 just \$229 SX-4 only \$329
- Free FedEx 2 day shipping

Call 800-986-9146 to Order

Order from FedEx: 7am-9pm M-F (CST)

Authorization #: 135 • Source code: 25J

KEYSPAN

(510) 222-0131 www.keyspan.com



High Speed, High Quality, Low Prices

4x/2x/6x \$498

CD-RW

Internal Yamaha Drive/Includes
Adaptec Toast & 1 CD-RW



4x/8x \$388

CD-R

Internal Panasonic Drive/Includes
Adaptec Toast & 10 CD-R



CD-R & CD-RW

Blank Media

Mitsui, Sony, TDK & Verbatim



MEDIA SUPPLY

610-458-9100

Fax: 610-458-9464

CD-R Copiers

Starting at:

\$2498

Tower Systems up to 9
drives to spindle-
based automation!
Weekly Specials!



Sure our prices are great, but our service is even better!

800-944-4237 www.mediasupply.com



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 36 users on the local area network.

Other products: Fast Ethernet PCI adapters, Hubs, LAN switches and more....

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 drown your networking budget!

www.miramarsys.com

1-800-862-2526



CIRCLE 424 ON READER SERVICE CARD

COMPU.D 1-800-929-9333
International, Inc. www.compu-d.com

PowerMacs

9600/200MP	\$2195
32-4GB, 12xCD	
G3/233	32-4GB, 24xCD \$1645
G3/266	Desktop 32-4GB, 24xCD, Zip \$1895
G3/266	Tower 32-6GB, 24xCD, Zip \$2395
G3/266	Tower 128-4GB, 24xCD \$3495
9600/350	64-4GB, 24xCD \$3295
9600/300	64-4GB, 24xCD, Zip \$2695
9600/233	32-4GB, 12xCD \$1995
8600/300	32-4GB, 24xCD, Zip \$2195
4400/200DOS	32-2GB, 12xCD \$1295
Apple DOS Card	f/all system! \$495

G3/250 MHz
32/5GB, CD \$3895

3400c/240 MHz
16/3GB \$2895

1400c/166 MHz
16/2GB, CD \$1845

1400cs/166 MHz
16/1.3GB, CD \$1545

Best Deals on all Memory

Sales: (818) 787-3282 **Fax: (818) 787-5555**
Visit our Web Site for Additional Product Information & Current Price List. e-mail: csales@compu-d.com
6741 Van Nuys Blvd., Van Nuys, CA 91405

PowerBooks

G3/250 MHz	160-5GB, 20xCD \$4595
3400c/200	16-2GB, CD, 10B-T \$2595
2400c/180	16-1.3GB \$1765
1400c/166	32-2GB, 8xCD, 33.6 \$1995
Duo2300c	8-750 & 40-2.1GB \$995/1395

Printers & Displays

LaserWriter 16/600 PS	\$1095
12/640 PS 12ppm, 600 DPI	\$995
Apple 1705/750 17" Display	\$485/685
Apple Vision 850/850AV	\$1395/1695

Deals of the Month

5M/5MP	\$1345/595
5SIMX	\$2995
4MV	\$2295
4000N/TN	\$1369/1475
EPSON 800 Clr. Printer	\$335
EPSON 3000 Clr. Printer	\$1665
Adobe Photoshop 4.0	\$379
"PageMaker 6.5	\$299
"Illustrator 7.0	\$259
MS Office 98 MAC	\$299
MetaCreation Detailer	\$189
Apple MAC OS 8.1	\$95

All prices are based on C.O.D. order & subject to change!

MACS & POWERBOOKS WANTED

TOP \$\$\$ PAID FAST!

MAC Solutions

Any Quantity
Trade Ups Welcome
FedEx check delivery
We Buy, Sell & Trade New & Used Macs

1933 Wilshire Bl.
W. Los Angeles, CA 90025
www.macsolutions.com

(800)80-WE-BUY
Tel: (310) 966-4444 Fax: (310) 966-4433

Mac POWER
Sales & Service, Inc.

**BUY • SELL • TRADE
UPGRADE • REPAIR**

New • Used • Refurbished

- Powerbooks
- PowerMacs
- Performs
- Quadrax
- MacII-LC
- Monitors
- Printers
- Peripherals
- Ram
- Parts

Call now for best prices!

888-275-POWER
Fax: 408-448-6132
San Jose, California, 95123

CD-ROM PRODUCTION

1000 Retail-Ready Stamped CDs
Includes two color discs, four color glossy insert & tray cards, jewel case, and poly wrap. Complete turnkey — just send a CD-R and art files! Call for details.

CD-R Gold™
by Catalytic

- Easy to use labeling kits
- CD-R silk screening service
- Short run CD-R duplication
- 4.1Gb/hour standalone duper

CD-R media as low as \$1.49

Your CD-ROM Production Source™
http://www.catalytic.com

935 Sierra Vista Avenue • Mountain View, CA 94043
Telephone: 650-961-4649 Fax: 650-962-5333

800-255-4020

AMC ADVANCED MULTIMEDIA CONCEPTS

YAMAHA CRW4260

It's three drives in one!

Get the world's fastest CD-ROM reader, CD-R recorder and CD-RW rewriter. You can write and rewrite your data over and over, then record it onto CD-R at 4x speed. It also writes, erases and rewrites various data at 2x speed plus reads at 6x speed.

\$499.

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!

Mitsui-Gold CD-R 25-pack includes shipping \$49.99
Mitsui-Gold CD-R 100-pack **CALL US!**

FREE CD-R Media!
Request your **FREE** CD-R online!
www.amc-direct.com/freecd

888.616.4589
www.mwm.amc-direct.com

CUSTOM SILKSCREENING & CD DUPLICATION SERVICES AVAILABLE!

Customize your Recordable CD's! AMC can provide your company with custom silk-screened recordable CD's and CD duplication!

Call AMC today for a complete design kit and information packet.

CD PRINTERS

AMC 720dpi Color CD Printer	\$849.
Fargo Color CD Printer	\$1,295.

CD RECORDERS

Plasmon 4x8 Int. Recorder	\$399.
Plasmon 4x8 Ext. Recorder	\$489.

CD DUPLICATORS

CD-4004 Duplicator	starting at: \$2,599.
CD-2601 Duplicator	starting at: \$4,995.

P.O. Box 3456 • Redmond, WA 98073-3456 • Fax: 425.861.8391 • www.mwm.amc-direct.com

MacBYTE

NO PAYMENT FOR
6 MONTHS!

BUY • SELL • TRADE

• CASH FOR MACS

• NEW & USED MACS

• WITH WARRANTIES

• FEDEX OVERNIGHT SHIPPING

Visa/Mastercard/Amex/Discover

Diners Club/COD

Local Area On-Site Consulting

800-432-2983

4223 Glencoe Ave., Suite C200

Marina del Rey, CA 90292

FAX: 310-448-4494

E-MAIL: MacByte@aol.com

CIRCLE 411 ON READER SERVICE CARD

Best Prices! Lifetime Warranty!

DIMMs

32mb \$ 64 168 pin 64mb \$123

SIMMs

16mb \$ 31 72 pin 32mb \$ 60

All prices are subject to change. Limited to stock on hand.

www.macsolutions.com

(800)873-3RAM

Tel:(310) 966-4444 Fax:(310) 966-4433

CIRCLE 410 ON READER SERVICE CARD

FAST CASH

www.mactraders.com

For ALL Macs, Memory & Peripherals — Working or not

TOP DOLLAR PAID

Mac Traders (800)990-0995

(310) 576-2466 Mon-Fri. 9 AM-6 PM Sat. 10 AM-4 PM (P.S.T.) Fax: (310) 394-7323
1511 Lincoln Blvd. (bet. Broadway & Colorado), Santa Monica CA. 90401

DIMMs

16MB 32MB 64MB 128MB
\$39 \$64 \$159 \$329

SIMMs

8MB 16MB 32MB 64MB
\$15 \$32 \$62 \$189

G3 - RAM

32MB 64MB 128MB
\$69 \$189 \$419

G3 - VRAM

4MB 8MB
\$44 \$69

LIFETIME WARRANTY
Prices are subject to change
fax 714-438-3994



MAC & PC 17481 MT. CLIFFWOOD CIRCLE, FOUNTAIN VALLEY, CA 92708

Quantum Drives	INT.	EXT.	IDE
2.1GB Stratus, 5400 10ms	\$222	\$272	\$169
2.1GBw Atlas2, 7200 8ms	\$254	\$334	
3.2GB Stratus, 5400 10ms	\$264	\$314	\$194
4.3GB Stratus, 5400 10ms	\$292	\$342	\$222
4.5GB Atlas2, 7200 8ms	\$492	\$642	
6.4GB Stratus, 5400 10ms	\$392	\$442	\$292
9.1GB Atlas2, 7200 8ms	\$772	\$822	

CALL FOR POWERBOOK MEMORY! ALSO LASER & LAPTOP MEMORY. PLUS MORE.

888-699-7199



HAWKE BUSINESS SYSTEMS
A Division of the CTS Service Group
Flemington, NJ 08522

(800) 875-2610
Fax - (908) 782-7027
Email - MacHawke@AOL.COM

Visit Our Web Site - www.MacHawke.com - for Full Listing

6 Month Parts and Labor Warranty

Classic 4/40 w/ K&M - \$149.00	Classic II 4/80 w/ K&M \$299.00	Se/30 8/80 w/ K&M - \$299.00
PB 145 8/80 \$399.00	PB 170 8/160 - \$549.00	PB 180c 14/320 - \$799.00
Mac IISI 5/80 with Extended Keyboard, Mouse and Apple Color Monitor - \$249.00	Mac IICx 8/160 with Extended Keyboard, Mouse and Apple Color Monitor - \$349.00	Centris 650 8/250 with Extended Keyboard, Mouse and Apple Color Monitor - \$525.00
Quadra 650 8/250 with Extended Keyboard, Mouse and Apple Color Monitor - \$599.00	Quadra 630 8/250 with Extended Keyboard, Mouse and Apple Color Monitor - \$649.00	Quadra 800 8/250 with Extended Keyboard, Mouse and Apple Color Monitor - \$749.00
PowerMac 6100/60 16/250/CD W/ Keyboard, Mouse & Apple Color Monitor - \$799.00	PowerMac 7100/66 16/500/CD W/ Keyboard, Mouse & 15" Color Monitor - \$899.00	Apple Portrait Mon - \$149.00
Apple 16" Color Mon. \$299.00	Apple 17" Multiscan \$449.00	

CIRCLE 403 ON READER SERVICE CARD

does your computer HUNGER for more DATA STORAGE?

NEW 2GB!

CD-Recorders

AVD Panasonic 4X/8X CD Recorder
int: \$429 ext: \$479

Other AVD Kits

	int.	ext.
Yamaha 4X/6X CD-Recorder	\$499	\$549
Teac 4X/12X CD-Recorder	\$499	\$549
Yamaha 4X/2X/6X CDRW	\$549	\$599

Recorder Duos

Extreme Panasonic 4X/8X CDR & your choice of Jaz drive or SyJet drive in one unit! **\$829**

Other Extremes

Yamaha 4X/6X + JAZ or SyJET	\$899
Teac 4X/12X + JAZ or SyJET	\$899
Yamaha 4X/2X/6X CDRW + JAZ or SyJET	\$949

CD-R Blanks

Mitsui GOLD & Verbatim BLUE. Printable, Spindle, CD-RW tool As Low As **\$1.79**

Data Storage

Imega Jaz 2GB + Cartridge!
int: \$449 ext: \$499

Other Storage Kits

	int.	ext.
Jaz 1GB + Cartridge	\$279	\$329
SyJet 1.5GB + Cartridge	\$299	\$379
Jaz 1GB + 3 Cartridges	\$419	\$469

CD Duplication

Multidrive Duplication Systems

Mediastore Easy CD-2-CD Duplicator	\$999
MediaFORM CD-2-CD Duplicator	\$2699
MediaFORM 4600 6-CD Duplicator	\$6999

Autoloader Duplication Systems

MediaFORM 50-CD Duplicator	\$5999
Champion 50-CD Duplicator	\$5999
< Champion 150-CD Duplicator	\$6999

DVD-Recordable

Now record your own 3.95GB DVD ROMs
ext: \$call

- Includes 5 DVD-R Blanks
- Includes DVD premastering software
- A must for every DVD software developer

Ad Code: BB-TGS

MEDIASTORE

www.mediastore.com

ORDER TOLL FREE! 800.555.5551

open M-F: 7 a.m. - 6 p.m. (PST) • intl ph. 714-974-5551 • fax. 714-279-1690

POWERMAC G3

266 Mhz/32/6GB/24XCD/Zip/AV/Mini T.

\$2289 /Lease \$35**POWERMAC 9600**

350Mhz 604e/64/4GB/24XCD

\$3349 /Lease \$123**POWERMAC G3**

233 Mhz/32/4GB/24XCD

Desktop

\$1595 /Lease \$60

INNOVATIVE COMPUTER & NETWORKING, INC.

**APPLE ORIGINAL
24XCD-ROM****\$189****POWERMAC 8600**

300Mhz 32/4GB/24XCD/L2

\$2295 /Lease \$35**POWERMAC G3**

233 Mhz/32/4GB/24XCD/Mod/Mini Tower

\$1889 /Lease \$71**POWERMAC G3**

266 Mhz/32/4GB/24XCD/Zip

Desktop

\$1895 /Lease \$71**POWERMACHS****G3**

266Mhz MiniTower 128/4GB/24xCD/AV ...\$3399

266Mhz MiniTower 32/6GB/24xCD/Zip/AV ...\$2289

266Mhz Desktop 32/4GB/24xCD/Zip ...\$1895

233Mhz Desktop 32/4GB/24xCD ...\$1595

233Mhz MiniTower 32/4GB/24xCD/Mod ...\$1889

9600

350Mhz 604e/64/4GB/24xCD ...\$3349

300Mhz 604e/64/4GB/24xCD ...\$2798

200 Mhz MP604e/32/4GB/12xCD/L2Cache ...\$2599

200 Mhz 604e/32/4GB/12xCD/L2Cache ...\$2099

8600

300Mhz 604e/32/4GB/24XCD/L2 ...\$2295

250Mhz 604e/32/4GB/24XCD/L2 ...\$2049

7300

200 Mhz 604e 32/2GB/12xCD/L2 ...\$1490*

180Mhz 604e 16/2GB/12xCD/L2 Cache ...\$1290*

6500

300 Mhz 64/6GB/24XCD/L2/ZIP/56.6 Mod ...\$2149

275Mhz 48/6GB/24XCD/L2/ZIP/56.6 Mod ...\$1949

275Mhz 32/6GB/24XCD/L2/ZIP/56.6 Mod ...\$1749

250Mhz 32/4GB/24XCD/ZIP/56.6 Mod ...\$1449

225 Mhz 32/3GB/12XCD/L2/33.6 ...\$1229

4400

200Mhz 16/2GB/CD ...\$1199

200Mhz 32/2GB/12XCD/KB/DOS ...\$1279

PERFORMAS

6400 200MHz/16/1.6GB/CD/KB ...\$998

6360 160MHz/16/1GB/CD/KB ...\$799*

6205 75MHz/8/1GB/CD/KB ...\$629*

UPGRADES

WITH ORIGINAL APPLE LOGIC BOARD

PM 8500 LOGIC BOARD UPGRADE

FROM Q800, Q840AV, PM 8100 TO 8500 ...\$995

PM 7600 LOGIC BOARD UPGRADE

FROM PM 7200 TO 7600 ...\$599

PM 5200/6200 Logic Board UPGRADE

FROM Q630, PF630 ...\$299

Workgroup Server 9150/80 L.B. Upgrade

FROM 950, 900 ...\$599

DUO UPGRADE 200 Series To 2300 ...\$629

200MHz Processor Upgrade ...\$239

Prices Subject to Change Without Notice

All Prices reflect 3% Cash Discount * * Refurbished

Upgrade your**7200 To 7600 \$559**

Apple Original Upgrade



Independent Parts Distributor

Over 15000 different Apple parts in stock

Next day delivery on all exchange parts.

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/16/1.3GB/CD ...\$Call****2400c 180 Mhz/16/1.3GB ...\$1949****1400cs 133 Mhz /16/1.3GB/CD ...\$1779****1400c 166 Mhz/16/2GB/CD ...\$1895****DUO 2300c 100Mhz/20/1GB/Mod* ...\$1429****5300c 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**

FOR CURRENT PRICES VISIT OUR WEB SITE AT:

<http://www.icni.com>

CALL TOLL FREE

1.888.505.2211

Fax:(310) 445-6611 Tel:(310) 445-6600

FAX TOLL FREE FROM JAPAN: 00-31-114211

2045-B S. Barrington Ave. LA, CA 90025

Lease Price based on fair market value, 36 Months

MONITORS

APPLE VISION 850 ...\$1449

APPLE 20" Multi ...\$1099

APPLE VISION 750 ...\$669

APPLE VISION 750 AV\$799

APPLE 1710 AV ...\$779

APPLE 1705 Multi ...\$435*

APPLE 15" AV Multi ...\$329/\$309*

NEC E500/E700 ...\$379-659

NEC 21" P1150/E1100 ...\$1389-1299

SONY 15" 100ES/15"100GS ...\$339-369

SONY 17" 200ES/17"200GS ...\$598-659

SONY 20" 300SF/20"SE2 ...\$1169-1869

VIEWSONIC 15"GS/GA ...\$319-339

VIEWSONIC 17"GA/PT770 ...\$549-639

VIEWSONIC 17"PT775/EA771 ...\$589-499

VIEWSONIC 20" P810/ P815 ...\$1149-1289

OPTIQUEST 15" Q53-E655 ...\$249/\$269

OPTIQUEST 17" V775-V773 ...\$519/\$495

OPTIQUEST 20" Q100/ 19" V95 ...\$999-789

RASTEROPS MC175 (17") ...\$749

RASTEROPS MC7515 (19") ...\$899

RASTEROPS MC801U-R (21") ...\$1399

RASTEROPS MC6215/MC6315 17" \$559/\$679

**PRINTERS**

APPLE LaserWriter COLOR 12/660 ...\$3699

APPLE LaserWriter 12/640 ...\$998

APPLE LaserWriter 8500 ...\$1879

APPLE LW 16/600 ...\$1289

APPLE LW 4/600 ...\$649

APPLE SW Color 2500 ...\$210*

APPLE SW Color 4500 ...\$349

APPLE SW Color 6500 ...\$459

GCC XL 808 ...\$2425

EPSON Stylus 600 COLOR ...\$249

EPSON Stylus 800 COLOR ...\$329

**SCANNER**

AGFA Arcus II Transp/Full Photoshop ...\$1489

UMAX ASTRA 1200S - Photo D/Full Photo. ...\$289/\$459

UMAX ASTRA 610S / Photo Delux. ...\$159

CALL FOR PRICES ON OTHER MODELS

APPLE PARTS & ACCESSORIES

APPLE 166MHz Pentium Dos Card ...\$629

Apple 166Mhz for 4400 ...\$189

Original Apple BATTERY For PB 3400 ...\$139

Original Apple 24xCD-ROM ...\$189

Apple Parts Catalog ...Call

voice: 510-689-9488 fax: 510-689-9487

PRICES & QUANTITIES SUBJECT TO CHANGE

Place Your Orders OnLine!

1-888-447-3728 • MacResQ • www.macresq.com

Toll Free

PM 6100

DOS

cards

486dx66,

Dos 6.2

\$59

Mac OS

PARTS, PARTS, PARTS!!

CD 300i+ (tray) internal	\$49
CD 600i (tray) internal	\$79
CD 1200i (tray) internal	\$99
CD 1800i (tray) internal	\$199
mounting kits OR external cases avail.	
Manual inject floppies (661-0121)exch	\$49
Auto inject floppies (661-0474)exch	\$79
PB 100 & 500 series floppies-exch	\$89

Mac OS 7.6 \$18.99
CD ROM

APPLE MONITORS

13" RGB Display	\$149
14" Performa Plus	\$189
14" Multi-scan	\$229
15" B-Stock Multi-scan	\$199
15" Multi-scan	\$279
16" RGB Display	\$249
17" Multi-scan	\$499
1710 Multi-scan	\$599
1710 AV Multi-scan	\$699
21" Color Display	\$499

Duo 230 12/12014.4

\$199

Duo 280 32/24014.4

\$499

Duo Dock I

\$149
(w/duo purchase)

External Floppy & Adapter

\$99
(w/duo purchase)

POWER SUPPLIES (EXCH. ONLY)

LC thru Q 605	\$19
Mac II cx / ci / Q 700	\$49
Q 800 / PM 8100	\$99
PERF. 630 thru 6200	\$69
PERF. 6400	\$89
Duo Dock	\$69
Q 900 / 950	\$99
PM 7100	\$69
PM 6100	\$89
II SI	\$49

Apple Color

LW 12/660

\$2499



w/NEW Access. Kit

MR
Mac-Res-Q.

PowerBook Screen Repair...only at MacResQ!

We can repair: scratched screens, bad pixels, lines, & dead screens- priced from **\$199**

call for more DETAILS!

25% re-stocking fee. ALL ITEMS REFURBISHED UNLESS NOTED AS NEW • All Parts Sold With a 90 Day MacResQ Exchange Warranty • Exch. Required For ALL Power Supplies • All Major Credit Cards With NO Surcharge •

CIRCLE 408 ON READER SERVICE CARD

G3 PowerMacs

G3/233 G3/266/Zip

\$1550 \$1799

32/4G/24xCD Mac/PC in one!

A Fresh New Place

www.mactica.com

**Bundle
RealPC**

**9600/300
750 17"
\$3499**
SAVE \$150+

For Fresh New Macs

**G3/233
LG 17"
\$1999**
LIMITED QTY!

Power Mac

G3/266M 32/6G/24xCD/Zip	\$2299
G3/266 32/4G/24xCD/Zip	\$1799
G3/233 32/4G/24xCD	\$1550
9600/300 64/4G/24xCD	\$2799
8600/250 32/4G/24xCD	\$2049
(above w/ internal Zip)	+\$105
7300/200 32/2G/12xCD	\$1450

PowerBook

G3/250 32/5G/20xCD	\$4299
3400c/240 16/3G/12xCD	\$3199
1400c/166 16/2G/CD	\$1749
Apple 33.6k PCMCIA	+\$139

Competitive pricing. Check for latest price.
Credit cards only 2.5% extra. Attractive volume discount. Intl and resellers welcome.
sales@mactica.com • 650-742-9782

Monitor

20" 850	\$1399
17" 750	\$720

Ethernet Card

10/100Base PCI	\$39/\$79
----------------	-----------

Motorola Clone

604e/200 Tower	\$1349
• Loaded 64/4G/24x/512K2L2/v4	
• Identical to StarMax 4000	
• 1 year warranty	

CPU Upgrade

604e/233	\$349
604e/200MP	\$449

LaserWriter

12/640PS	\$999
Toner	\$110

MACTICA
1-888-666-5147

COMPUTER REVELATIONS

NEW & USED BOUGHT & SOLD
Quadra 650s \$199.00

All G3s in stock!
POWERMAC

7300/180	\$1599
7300/200	CALL
8600/200/300	CALL
9600/200/300/350	CALL
7200/7600/9500/9500	CALL

PRINTERS

LWRITER 12/640	CALL
LWRITER 4/600	\$889
HP 6MP	CALL
HP 1600 C/PS	CALL
HP 4MV	\$2699
STYLEWRITER 1500/2500	CALL

POWERBOOK

3400	CALL
1400	\$2299
1400C/117	CALL
1400C/133	CALL

UMAX / SUPERMAC

S90L	CALL
S90D	CALL

SCANNERS

VISTA/S6E SOHO	\$279
POWERLOOK II	\$1829
EXPRESSION 636	\$1389
AFGA SNAPSCAN	\$329
AFGA ARCUS II	\$1589

MONITORS

APPLE 1705	\$695
CPD200SX	\$689
PRECISION. 21"SR	\$3299
CPD 100SX	\$379

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

331E DANTE COURT HOLBROOK NY 11741

CIRCLE 402 ON READER SERVICE CARD

Mac Sales

www.macs4sale.com

Laptops

Powerbook 170	4/40	\$449
Powerbook 160	4/80	\$469
Powerbook 180	4/80	\$599
Duo 230	4/80	\$379
Duo 280c	12/320	\$699

Save on Duo & Dock Bundles

Monitors

16" RGB	\$299
14" Color	\$179
14" Touch	\$189
14" AV	\$199
13" RGB	\$159

Desktops

Mac IICx	4/80	\$99
Mac LC	4/40	\$129
Quadra 700	8/80	\$299
Quadra 840av	8/230	\$479

Laser Printers

Laserwriter IIINT	\$199
Select 300	\$199
Select 310	\$249
Pro 600	\$649
Pro 630	\$799

1-888-MACSALE
Buy • Sell • Repair • Parts

1-888-622-7253

Prices represent a Cash Discount.
Products are Used / Refurbished unless noted.

CIRCLE 418 ON READER SERVICE CARD

USED MACINTOSH!



- ★ We match buyers and sellers of used MAC equipment!
- ★ All MAC models available; SE to POWER PC.
- ★ All hardware is tested and includes a limited warranty.
- ★ Qualifying School, Gov't and Fortune 1000 POs Welcome
- ★ We also specialize in used trade-ins

The Computer Exchange

800-304-4639

www.compexch.com

Customer Service

Ph: 404-315-8518
Fax: 404-898-0304
2100 Cheshire Bridge Rd. Ste E Atlanta, GA

CIRCLE 418 ON READER SERVICE CARD

MacGlobal

SYSTEMS AND PERIPHERALS • SALES AND SERVICE

Performs	PowerBooks
410/466/476 Call	520 4/160 \$850
550 5/160 \$700	520C 12/240/192 \$1195

580 5/500/CD \$800	540C 4/320 \$1,395
631 8/500/CD \$550	5300 8/500 \$995

Quadrads

6200 8/1G/CD \$675	630 8/250 Call
5200 8/500/CD \$995	650/800/840/950 Call

Power Macs

7200 8/500 Call	
7500 16/500 Call	
8500 16/500 Call	

Printers

Style II \$185.00	
Stylew 1200 \$175	
Laser 300 \$299	
Laser 320 \$490	
Laser 4/600 Call	

Monitors

14" Color \$195	
15" App. Multi. \$265	
17" App Multi. \$450	
20" GS \$540	

**WE REPAIR
MACS!**

TOP DOLLAR paid for memory, PowerBooks and CPUs!

[800] 722-8864

Phone: [408] 265-6653

Fax: [408] 265-6660

MacGlobal

CIRCLE 407 ON READER SERVICE CARD



Macintosh Systems & Peripherals

Guaranteed Low Prices • Huge Inventory

Pricing, Product Spec's and Specials at www.digicore.com



*** 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

Storage Products

Iomega Zip Drive	135
Iomega Jazz Drive 1GB	365
Iomega Jazz Drive 2GB	479
Syquest Syjet 1.5 GB	379
La Cie 2.1 External	239
La Cie 4.3 AV External	299
Seagate Hawk 2 GB	229
Quantum 4.5 Atlas	449
Seagate 9 GB Barricuda	799
La Cie 9GB AV External	799
LaCie 18GB RAID Array	1950
Atto Express PCI Wide	349
JackHammer PCI Wide	369

PRINTERS

Apple SW 6500	459
Apple LW 4-600	745
Apple LW 12-640	1275
Apple LW 8500 (20 ppm)	1899
Apple Color LW 12-660	4450
Epson Color Stylus 600	285
Epson Color Stylus 800	399
Epson Color Stylus 1520	739
Epson Color Stylus 3000	1769
Epson Color Stylus Pro XL	1389
Hewlett Packard 870CSI	389
Hewlett Packard 6MP	855
Hewlett Packard 4000N	1350
Hewlett Packard 5M	1499
Hewlett Packard 4MV	2395
Tektronix Phaser 140/350	925/2765
Tektronix Phaser 550	8099

Video / Graphics

TwinTurbo - 4 / 8 Meg	299 / 499
#9 Imagine 128 8 Meg	549
Xclaim VR - 2 / 4 Meg	199 / 299
ThunderPower 30/1600	829
Miomotion DC20	599
Miomotion DC30	675
Targa 1000 / 2000	1575 / 2085
Targa 2000 PRO	2475
VideoVision Studio 2.0	2099

RCD & Optical Drives

Fujitsu Dynamo 640	489
FWB Hammer Dat 8000	1199
Olympus 2.6 Power MO	1699
Pinnacle Vertex 2.6	995
Pinnacle Apex 4.6	1425
VST 230 MB PB1400	425
Yamaha CD 4X6 w/Toast	699

POWERBOOKS POWERMACS



Targus Carry Case	\$39
Leather Carry Case	\$65
33.6 Fax Modem Pcmci	\$139
10BT Ethernet Pcmci	\$99
56k Fax Modem Pcmci	\$265
56k Modem/Ether Pcmci	\$345



We Will
Custom Configure
Any System to Your
Specifications
and ship it with in 24 Hours

G3 PowerMacs

G3/233, DT 32-4G - 24xCD	1499
G3/266, DT 32-4G - 24x - Zip	1739
G3/233, MT 32-4G - 24xCD-Mdm	1739
G3/266 AV, MT 32-6G - 24x - Zip	2173
G3/266AV,MT 128-UW6G-24x-Zip	3299

PowerMacs

6500/225, 32-3 GB - 12x-33.6	1200
6500/250, 32-4 GB - 24x- 56k	1300
6500/275, 32-6-24xCD-56k-Zip	1600
6500/300, 64-6-24xCD-56k-Zip	1750
7300/200, 32-2-12xCD	1500
8600/300, 32-4GB - 24xCD - Zip	2300
9600/300, 64-4GB - 24xCD - Zip	3000
9600/350, 64-4GB - 24xCD - Zip	3450

Custom Config. Examples

G3/233, DT 32-4G - 24xCD-56K	1649
G3/233, DT 32-4G - 24x - Zip	1639
G3/266, DT 64-4G - 24x - Zip	1824
G3/266 AV, MT 64-6G - 24x - Zip	2348
G3/266 AV, MT 32-6G - 24x - Jaz	2398
7300/200, 64-2GB - 12xCD-Zip	1720
8600/300,128-4G-24x-8Mvram-Jaz	2820
9600/300, 0-0	2525
9600/350,192-9GAV-4x6CDR-Jaz	5215

MEMORY UPGRADES

TECHWORKS - LIFE TIME WARRANTY	
16 Meg Dimms & Simms 60ns	49
32 Meg Dimms & Simms 60ns	79
64 Meg Dimms	145
32 Sgram for G3	85
64 Sgram for G3	175
128 Sgram 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 16 / 32 / 48	99 / 175 / 285
PB 3400 64 / 128 Modules	279 / 535

Call For Unlisted Items
Over 2500 Macintosh
Products Available

Leasing

On Approved Credit to...

Business and Individuals

Small Business
Internet Solution



only
\$2199

\$74
per mo.

G3/233 Mhz 32 Megs Ram
2G HD, 24xCD, E-net
15" AV Display, Ext. Keyboard & Mouse
56.6 k Fax Modem, Netscape Ver. 3.0
Microsoft Office Ver. 4.2.1
Internet Connection Kit, Mac OS 8.0

Home-Work
and Fun!!

\$1799

\$59
per mo.

6500/225 32 Megs Ram, 4G HD, 24xCD
15" AV Display, Ext. Keyboard & Mouse
Epson Stylus 600 Color Printer, 56.6 Fax Modem
Internet Connection Kit, Claris Works
Touchbase / Date Book Pro, Encyclopedia
3-D Atlas, Dictionary, Mayo Family Health
Clip Art, 3-D Accelerated Games, and much more!

Graphics Station

G3 Speed Demon
w/Adobe Bundle

\$4989



\$168
per mo.

G3/266 AV 64 Megs Ram, 6 Ultra Wide HD
24xCD Player, ATI 6 MB & 8 Meg Video
Iomega Zip Drive, Apple 17" AV Display
Apple Extended Keyboard & Mouse
Adobe Photoshop 4.0, Adobe PageMaker 6.5
Adobe Illustrator 7.0

Cyber Shop & Product Info at...
www.digicore.com



Order Toll Free

800-858-4622

International & Dealers

818-785-2800

24 Hour Fax

818-785-3100

15500 ERWIN ST. VAN NUYS CA 91411

36 Month Lease w/Purchase Option

\$2500	\$4000	\$8000	\$15,000	\$25,000
\$85	\$136	\$267	\$496	\$825

Sale
Price
Your
Cost

GE ON-SITE WARRANTY 2nd - 4th Year

\$700 - \$1200	\$1201 - \$2000	\$3001 - \$4000	\$4001 - \$5000
\$119	\$149	\$209	\$239



IXMICRO
TWIN TURBO
8MB \$349
4MB \$189



WESTERN
DIGITAL
2GB HARD
DISK \$199!



CUSTOM CONFIGURATIONS

a division of BASEONE computers.

LEASING PLANS AVAILABLE



AWESOME NEW LOOK AND FEATURES!

WWW.MACBASE.COM

ONLINE DETAILED SYSTEM CONFIGURATION, ADVISE MODULE, ACCURATE AND UP TO DATE PRICING, KILLER INTERFACE.

604E
6 PCI 1MB CACHE
CD UPGRADABLE
3 DIMM SLOTS
8 HD BAYS



POWER
PTP 225E
96/2G/24XCD
\$1999*



POWERBOOK
3400/200MHZ
16/2G/12XCD
NO MDM \$2759



POWER
COMPUTING
24" COLOR
\$2599



6360/160MHZ
16/1.2G/CD/MDM
KEYBOARD \$799*



6400/180MHZ
16/1.6G/CD/MDM
KEYBOARD \$899*

POWERMAC

Performa 6205/75	8/1G/CD	649*
Performa 6230/75	16/1G/CD/TV	689*
Performa 6260/160	16/1G/CD	799*
Performa 6400/180	16/1.6G/CD	899*
4400/200	16/2G/8XCD	1199
4400/200	SMALL BUSINESS	1499
4400/200	PC COMPATIBLE	1259
6500/225	32/3G/12X/MDM/HM	1299
6500/275	48/6G/24X/ZIP/OFF	1989
6500/300	48/4G/CD/ZIP	2119
7300/180	16/2GB/CD	1299
7300/180	DOS 32M/16D/2GB	1799
7300/200	32/2GB/CD	1499
8600/250	32/4G/24XCD/ZIP	2239
8600/300	32/4GB/24XCD	2179
8600/300	32/4GB/24XCD/ZI	2299
9600/200	32/4GB/CD	2149
9600/300	64/4GB/24XCD	2829
9600/300	64/4GB/24XCD/ZIP	2979
9600/350	64/4GB/24XCD	3549
9600/350	64/4GB/24XCD/ZIP	3699
G3 DT/233	32/4G/24XCD	1599
G3 DT/266	32/4G/24X/ZIP	1869
G3 MT/266	32/6G/24X/ZIP/AV	2299
G3 MT/233	32/4G/4UW/24X	1869
G3 MT/266	128/4G UW/24X	3559
PowerWave 132/604	16/1G/CD	999*
PTP225/604e	96/2G/24XCD	1999*
PTP200/604e	96/2G/24XCD	1799*
PCP240/604e	64/2G/16XCD	2099*

POWERBOOK

DUO DOCK II PLUS	399
DVO 2400C 16/1.3G	1899
1400C/166 16/1GB/CD	1899
5300C/100 16/1.1GB	1199*
3400C/200 16/2G/12X/NOMD	2759
3400C/200 16/2G/12XCD/MDM	2999
3400C/240 16/3G/12X/NOMD	3159
3400C/240 16/3G/12XCD/MDM	3399
G3/250 32/5G/20XCD/NOMDM	4599
G3/250 32/5G/20XCD/MDM	5099
3400/5300 BATTERY	129/139
8XCD FOR 1400	189
6XCD FOR 3400	149
8BIT VIDEO FOR 1400	159
ACTION 33.6 PCMCIA	149
GLOBAL VILLAGE 56.6K PCMCIA	259

STORAGE

WesternDigital 2.1G SCSI (3.5in)	199
SEAGATE 4.3GB Barracuda (3.5in)	339
SEAGATE 9.1GB Barracuda (3.5in)	799
SEAGATE 23GB Elite (5.25in)	1799
EZQuest JAZ 1GB External	339
EZQuest JAZ 2GB External	549
EZQuest 2X2K6 CRW External	449
EZQuest 2X6 CDR External	399
EZQuest 9GB UW RAID	1399
OMEGA ZIP/JAZ Xternal	149/379
OMEGA ZIP/JAZ Internal	129/309

PRINTERS

Apple SW 1500 /2500	149*/219*
SW 4500/6500	349/459
Apple LW 12/640	999
Apple LW 16/600 REF	1159
Apple LW 16/600	1439
Apple LW 8500/20 (20PPM)	2299
Apple LW COLOR 12/660	3699
EPSON STYLUS 600/800	269/369
EPSON STYLUS 1520/3000	779/1699
HP 870CXI / 6MP	479/869
HP 5M / 4MV	1529/2299
HP 4000	1579

MONITORS

POWER 17 INCH NEW	499
POWER 24 INCH TRINITRON!	2799
Apple 15" / 15AV	259*/299*
Apple 15AV 15" NEW	339
Apple 17" 17"	599
AppleVision 750 / 750AV	799/949
Apple 850 20" / 850AV	1449/1799
NEC A500/A700/M700	329/579/759
NEC P1150 20"	1689
Sony 100SX/300SF	
299/1199	
Sony 100ES/200ES	349/589
Sony 100GS/200GS	379/639
Sony 200PS/400PS	799/1199
VIEWSONIC V773/ G810	489/1099

SCANNERS

UMAX Astra 610S	169
UMAX Astra 1200s - PhotoDelux	279
UMAX Astra 1200s - Full Photoshop	479
UMAX PowerLook II - Full Photo	1299
UMAX Mirage IIse - PhotoPerfect	3299
UMAX PowerLook III - Full Photo	3399
UMAX Mirage II - Full Photo	7999
AGFA SnapScan 310 - ColorIt/OCR	249
AGFA StudioStar - Full Photo	879
AGFA StudioStar - PhotoShop le	749
AGFA Arcus II - Full Photo	1549
AGFA DUOSCAN - Full Photo	3050
Microtek Scanmaker V300	199
Microtek Scanmaker III Full Photo	1399
Microtek Scanmaker E6 Std	489
Epson ES-1000C	585
Epson Expression 636 Executive	735

SOFTWARE

ADOBE PHOTOSHOP 4.0	329
ADOBE ILLUSTRATOR 7.0	329
ADOBE Pagemaker	329
ADOBE AFTEREFFECT Production	1279
QUICKEN 7.0	29
MACROMEDIA FREEHAND	249
MACROMEDIA DIRECTOR 5.0	759
MICROSOFT OFFICE	249
QUARK EXPRESS	699
APPLE MAGIC COLLECTION CD	29

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



Dealers inquiries welcome. Returns subject to restocking fee. Prices reflect C.O.D. or CASH and are subject to change without notice. P.O.'s subject to approval.



MANUFACTURER'S WAREHOUSE SALE!

**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!



- 20 inch at 17 inch price!!!!
 - 19 inch viewable screen area
 - Industrial grade design for longer tube life and less interference
- Quantities Limited!!

TRUCKLOAD SALE!!!

20" COLOR MONITORS

20" Sony Trinitron	\$699
20" Multi-Resolution	\$899
Radius PrecisionColor 20v	\$Call
Radius Intellicolor 20	from \$1099

21" COLOR MONITORS

SuperMac 21" Color Display	from \$999!
Ikegami 21" Diamondtron NEW!	\$1299
Radius PrecisionView 21	\$1399
Radius 21" PressViews	from \$1459

17 INCH COLOR MONITOR

SuperMac 17 Multi-Scan	\$399!
Radius PrecisionColor 17	\$599
Portrait Display Labs 1700 NEW!	from \$799

15 INCH MONITORS

PrecisionColor Pivot	\$399
Radius 15" Pivot, Color & Grayscale	from \$199

GRAYSCALE MONITORS

Two Page Grayscale	from \$499!
Radius Full Page Display	\$299
21" Grayscale Display NEW!	\$599

NEC, Sony, Mitsubishi, Viewsonic, Apple Monitors Also Available!!

DIGITAL VIDEO

VideoVision Studio

VideoVision Telecast	from \$899
----------------------	------------

VideoVision Studio Array

Video Spigot Cards	from \$999
--------------------	------------

Video Spigot Power & Pro AV

• Spigot II Tape, Spigot Nubus, LC & IISI	from \$799
---	------------

• FULL MOTION, full screen capture and playback

VIDEOVISION

Available in Nubus and PCI

- Broadcast quality video output
- Proven Non-Linear Video editing technology

was \$2999

\$899!

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

GRAPHICS 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	from \$99
20" 1024 X 768 Resolution	from \$299
21" 1152 X 870 Resolution	from \$399
Thunder II Series w/DSP acceleration	from \$399
PhotoEngine	from \$199

PCI CARDS

IMS Twin Turbo	from \$199
Thunder 30	from \$499
ThunderColor 30	from \$999
ThunderPower 30	from \$Call

PRINTERS

Apple LaserWriter 8ppm	\$199
Apple LaserWriter IIxt 8ppm	\$299
Apple LaserWriter NTR	\$899
• 4ppm, Local Talk, 2 paper trays	
Apple LaserWriter 4/600PS	\$499
• 4ppm, 600dpi, Postscript Level 2	
Apple LaserWriter Select 360	\$599
• 10ppm, 600dpi, Postscript Level 2	
Apple LaserWriter Pro 630	\$899
• 8ppm, 600dpi, Local Talk/Ethernet, Postscript Level 2	
Apple LaserWriter Pro 600	\$699
• 8ppm, 600dpi, Local Talk	
QMS 825	\$399
• 8ppm, Local Talk/Ethernet, Postscript Level 2, Dual paper trays	
QMS 860 Hammerhead (600dpi tabloid) NEW!	\$1599
• 16ppm, Local Talk/Ethernet, Postscript Level 2	
QMS PS 1700	\$699
• 17ppm, Local Talk/Ethernet, Postscript Level 2	
SuperMac Proof Positive	\$1999
• Dye-Sublimation Printer, Photo-Realistic	
• Available as Full Page Or Tabloid	

*With Qualifying Monitor or Video Card Purchase

COMPUTERS

APPLE

PowerMac G3/266MT	\$2699*
PowerMac 8500 32mb/2gb/8xcd	\$1599*
PowerMac 6500/300 64mb/4gb/12xcd	\$2199*
PowerMac 8600/300 32mb/4gb/24xcd	\$2499*
PowerMac 9600/300 64mb/4gb/24xcd/Zip Drive	\$2799*

UMAX

SuperMac C500 Series	\$849*
SuperMac C600 Series	\$1099*
SuperMac J700 Series	\$1399*
SuperMac S900 Series	\$1899*

MOTOROLA

StarMax 3000 603e processor	\$Call
Desktop and Minitowers available	
StarMax 4000 604e processor	\$Call
Desktop and Minitowers available	

* with purchase of qualifying in stock monitor or video card

Complete Systems

PowerMac G3 & 20" Trinitron	only \$2799
• 233MHz & 266MHz Processors Available	

PowerMac 8500 & 20" Trinitron	only \$2199
• 32/2gb/8xcd 24bit Color card	

Mac Ilvx , 17" Color Monitor and P/S Printer	only \$995
--	------------

Accelerated Graphics Workstation

PowerMac 81/110 32mb/2GB/8xcd	only \$1795
• 20" Color Monitor	
• 24bit Color Card	

Mac Ilcx

- 4mb/160 HardDrive
- 15" Grayscale Pivot
- Color Monitors Available

\$295!



DIGITAL WORKSTATION

Complete Package!!

\$2399!

- PowerMac 81/110
- 32/2GB/8XCD
- 17" Color Monitor
- VideoVision Studio 2.5.1
- Adobe Premiere



4YEAR EXTENDED WARRANTIES AVAILABLE ON MOST PRODUCTS

CRA Systems, Inc. www.crasystems.com 800-375-9000



CRA Systems, Inc. 300 South 13th St., Waco, TX 76701 Monday thru Friday 9AM to 7PM CST Saturday 10AM-4PM Sales Dept. Only
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 CPU's are Factory Recertified unless otherwise stated. Call for latest pricing & availability on NEW Options.





Incredible G3 Prices!

Shop Us Online at WWW.APPLEMACNET.COM

Computers

Apple Powermac G3

- 233MHz/Desktop
- 32MB SDRAM
- 4GB Hard Disk
- 24XCD/ 512kL2
- 2MB SGRAM

\$1,599

Power Mac G3 Series

G3-233MHz Desktop

- 32MB / 4GB / 24XCD / 2MB VRAM / 512k L2.....\$1,599

G3-233MHz Miniotower

- 32MB/4GB/24XCD/56k Modem/2MB VR/ATI 64bit.....\$1,849

G3-266MHz Desktop

- 32MB/4GB/24XCD/Zip Drive/Ethernet/2MB VR.....\$1,849

G3-266MHz Miniotower

- 32MB/6GB/24XCD/Zip Drive/Ethernet/2MB VR.....\$2,299

Power Mac 6500 series

- 250MHz 32MB/4GB/24XCD/56kMdm/Zip drive.....Call
- 250MHz 48MB/4GB/24XCD/56kMdm/Zip drive.....Call
- 300MHz 64MB/4GB/24XCD/56kMdm/Zip drive.....Call

PowerBook

G3-250MHz

- 32MB/5GB/20XCD/33.6k modem.....\$4,489
- 1400c •166MHz/16MB/2GB/8XCD/128 k.....Call
- 2400c •180MHz/16MB/2GB/8XCD/128 k.....Call
- 3400c •200MHz/16MB/2GB/12XCD/33.6.....Call
- 3400c •240MHz/16MB/3GB/12XCD/33.6.....Call

PDA

- Message Pad 2100 162MHz 8MB/8MB ROM/4MB.....\$689
- Message Pad2100 162MHz 5MB/8MB w/keyboard.....\$769

Blowout Deals

Apple 7250 Server

- 120MHz/16MB/2GB/8XCD/256k
- Workgroup solutions CD

\$ 999

Brand New Products

•W/ Internet solutions CD for only **\$1,099**

Performa 6360 +

041 Viewsonic Monitor

- 160MHz/16MB/1.2GB/12XCD
- 28.8mm/Software Bundle

for only **\$999**

•Performa 6360/160MHz Without The Monitor

\$ 799

Both models include Mouse & Keyboard!

Modems

Supra 56e

\$135

End the World Wide Wait!

Apple

- Video Phone.....\$239

Farallon

- Netopia™ 412 ISDN Modem.....\$299
- Netopia™ 440 Internet Router.....\$799

Global Village

- V56Kbps Teleport K56 Flex ext. Fax/Mod.....\$149
- V56Kbps Teleport K56 X2 ext. Fax/Mod.....\$149
- 56Kbps PC card K56 flex (powerbook).....\$279
- 56Kbps PC card Ethernet (powerbook).....\$349

Supra

- VSupra Express 56e V/Fax/Modem.....\$135
- VSupra Express 56e SP Fax/Modem.....\$145

3COM/US Robotics

- VSPORTer 56k(2X tech.) Fax/Modem.....\$139
- VSPORTer 56k(2X tech.) Voice Fax/Mod.....\$149
- 33.6 k PC Card (powerbook) up to 56k.....\$179
- ISDN 128Kbps PC Card (powerbook).....\$499
- 3COM Impact IQ (ISDN modem).....call

Memory

32MB

SIMMS/DIMMS

For Only **\$69**

32MB

SDRAM For Apple G3s

For Only **\$79**

Lifetime Warranty

SIMMS	DIMMS
16MB \$37	32MB \$69
32MB \$69	64MB \$139
Powerbook	128MB \$379
1400 3400 G3	
32MB \$99 \$99 \$99	G3 Memory
48MB \$169 \$169 \$169	32MB \$79
64MB \$189 \$189 \$189	64MB \$169
128MB \$399 \$399 \$399	128MB \$379
4MB G3 VRAM \$69	

Monitors

Optquest V773

17" Display

- 0.26mm dot pitch
- 1,280 x 1,024 max.resol.
- OnView® Controls
- PC & Mac compatible
- 3 year limited warranty

\$ 499

ViewSonic

Apple		
Multiscan 720 17"	.....\$639	
Multiscan 750AV 17"	.....\$879	
Multiscan 850 20"	.....\$1,499	
Multiscan 850AV 20"	.....\$1,659	
Nec		
MultiSync LCD2000 20"	.....\$7,599	
Sony		
CPD-100 ES 15"	.....\$339	
CPD-200 ES 17"	.....\$599	
CPD-100 GS 15"	.....\$369	
CPD-200 GS 17"	.....\$689	
CPD-400 PS 19"	.....\$1,169	
GDM-SE2T 20"	.....\$1,579	
GDM-500 PS 21"	.....\$1,759	

Viewsonic	
E641 14"	.....\$209
E655 15"	.....\$289
15G5 15" (graphic series).....	\$339
15G4 15" AV (graphic series).....	\$369
17G4 17" AV.....	\$619
G1770 17" (graphic series).....	\$629
17PS 17" (Pro series).....	\$699
G800 20" (graphic series).....	\$1,029
P810 21" (Pro series).....	\$1,399
29G4 29" (Pro series).....	\$2,199

Hifachi/Rasterops	
MC6215 17"	.....\$659
MC 6315 17"	.....\$759
MC7515 19"	.....\$1,099
MC20 20"	.....\$1,399
MC 801 21"	.....\$1,799
MC801HR 21"	.....\$2,199
Mitsubishi	
17" Diamond Pro 67TXV.....	\$639
17" Diamond Pro 87TXV.....	\$689
17" Diamond Pro 700.....	\$839
20" Diamond Scan 20M.....	\$1,299
20" Diamond Scan 20LP.....	\$1,349
21" Diamond Pro 91TXM.....	\$1,379
21" Diamond Pro 1000.....	\$1,699
40" Plasma Leonardo presentation.....	CALL
33" Megaview 29 presentation.....	\$2,399
33" Megaview 33 presentation.....	\$3,599
37" Megaview 37 Plus present.....	\$4,999

Radius	
PrecisionView 21".....	\$1,799
PressView 17SR 17".....	\$1,799
PressView 21SR 21".....	\$2,999

Call for other models

Printers

QMS Magicolor 2CX

- Up to 2400 x 600 dpi.
- 24MB RAM
- 16ppm b&w
- 4ppm Color
- Full Color Legal Size
- Ethernet ready
- Transparency sensor

\$3,399

Apple		
Laserwriter 4/600.....	\$659	
Laserwriter 12/640.....	\$1,199	
Epson		
Stylus 600.....	\$249	
Stylus 800.....	\$399	
Stylus 820.....	Call	
Stylus Photo.....	\$399	
Stylus Color 1520.....	\$699	
Stylus 3000 w/ postscript.....	\$1,699	
HP		
DeskJet 1600CM.....	\$1,579	
DeskJet 870cse.....	\$379	
LaserJet 6Lse.....	\$429	
LaserJet 6MP.....	\$849	
LaserJet 4MV.....	\$2,359	
LaserJet 5M 12ppm 600X600.....	Call	
QMS		
Magicolor 2 EX (4ppm full color).....	\$4,399	

Scanners

Agfa		
SnapScan 310.....	\$195	
SnapScan 600.....	\$379	
StudioStar (Photoshop full).....	\$749	
StudioStar (Photoshop LE).....	\$699	
Arcus II w/transp. adapter.....	\$1,299	
Agfa DuoScan.....	\$3,099	
Epson		
Expression 636 Artist.....	\$979	
Expression 636 Professional.....	\$1,299	
Expression 836 XL (12X17).....	\$2,299	
836 XL transparency adapter.....	\$499	
Umax		
Astra 610S.....	\$159	
Astra 1200S.....	\$259	
Power Look 2000.....	\$2,399	
Power Look II (Photoshop).....	\$1,299	
Power Look III (Photoshop).....	\$3,299	
Microtek		
ScanMaker E3.....	\$149	
ScanMaker V300.....	\$129	
35T 35MM Slide.....	\$699	
ScanMaker E6 standard.....	\$269	
Nikon		
NS 1000 super CoolScan film scan.....	\$1,729	
Polaroid		
Sprint Scan 35/LE 35mm scanner.....	\$769	

Storage

Iomega		
Zip drive w/ 1 cartridge.....	\$129	
Zip 100MB cart. (10-pack).....	\$125	
Zip Plus drive(6 soft. pack.).....	\$195	
100MB Zip cartridge.....	\$13	
Jaz Drive w/ 1 cartridge.....	\$369	
1GB Jaz Cartridge.....	\$77	
2GB Jaz Drive.....	\$589	
2GB Jaz Cartridge.....	\$129	
Lacie		
2x/6x CDR.....	\$389	
4x/6x CDR.....	\$549	
2X/6XCD-Rewritable.....	\$659	
CD-ROM R/RW		
Teac 24X ext. CD-ROM(MAC).....	\$175	
Teac 4X12 Int. CD-Recordable.....	\$479	
Philips Omniviewer 2X/6XCDRW.....	\$559	
Ricoh int. 2X/6XCDRW (SCSI).....	\$389	

Starting at **\$95**

Photo DV™.....\$439

Mini DV™.....\$439

Edit DV™.....\$699

FireWire Technology

Camcorder not included! *MiniDV™ upgrade!

Software

QuarkXpress 4.0

- Improved Interface
- Bézier text paths
- Near 3D perspectives
- Shape Merging
- Long document production

\$679

Adobe Systems		
After Effects 3.1 (full version).....	\$389	
PageMaker 6.5 (full version).....	\$399	
PageMaker 6.5 (upgrade).....	\$89	
Photoshop 4.0 (full version).....	\$399	
Illustrator 7.0 (full version).....	\$349	
Illustrator 7.0 (upgrade).....	\$109	
FrameMaker 5 (full version).....	\$489	
Streamline 4.0 (full version).....	\$129	
Alien Skin Eye Candy 3.0.....	\$120	
Altamira Group		
Genuine Fractals 1.0.....	\$149	
Andromeda Soft.		
Series 4, Techtures 1.0 (velociraptor).....	\$115	
Artel Software		
Boris Effects 3.0.....	\$399	
Artifice		
Design Workshop 1.5.....	\$569	
Asound		
Asound 3.0.....	\$126	
Avian System		
Full Pixel Search 2.0.....	\$264	
Bentley Systems		
Microstation 95.....	\$3,699	
Chroma Graphics		
Chromatica.....	\$139	
Deneba		
Canvas 5.0.....	\$379	

DigiEffects		
Aurix 2.0 (full version).....	\$249	
Berserk 1.3 (full version).....	\$249	
Cyclonist 1.0 (particle-generation soft).....	\$429	
Cineloop 1.0 (makes film-like videos).....	\$599	
ElectricImage		
broadcast 2.7.5.....	\$2,399	
Engineered Soft.		
Power CADD 3.0.....	\$649	
Extensis		
MaskPro 1.0 (photoshop plug-in).....	\$289	
PreFlight Pro 1.0.....	\$389	

Fractal Design		
Detailer (Paints 3D models).....	\$294	
Expression 1.0 (object-oriented drawing).....	\$294	
Painter 5.0 (full version).....	\$269	
Painter 5.0 (upgrade).....	\$94	
Poser2.0 (human-models in 3D).....	\$129	

Graphsoft		
MiniCad 7.0.....	\$539	
Blueprint 5.....	\$189	
Knoll soft.		
Lens Flare Pack 1.5.....	\$139	

Macromedia		
Extreme 3D 2.0 (3D-design, print, animation).....	\$349	
Free Hand V7.0 (full version).....	\$299	
Free Hand V7.0 (upgrade).....	\$195	
Macromedia Flash (full version).....	\$189	
Fontographer (full version).....	\$299	
Director 6 multimedia studio (full version).....	\$899	
Director 6 multimedia studio (upgrade).....	\$459	
Director 6 (upgrade).....	\$369	

MetaCreations		
Bryce 3D (landscape/terrain editor).....	\$165	
Infini-D 4.0(3D/Animation/mocler).....	\$399	
Infini-D 4.0 (upgrade).....	\$149	
Kai's Power Tools.....	\$119	
Final Effects AP 1.0 (particle-generation).....	\$189	
KPT Final Effects 3.0.1 (effects collection).....	\$659	
Studio Effects 1.0 (3D particle-generator).....	\$659	
M.M.M. Soft. HoloDozo 1.0.....	\$129	
Microsoft Office 4.2.1 (full version).....	\$299	
Pixelan soft. Video SpiceRack 1.0.....	\$174	
Terran int. Media Cleaner Pro 2.0.1.....	\$279	
The Valis Group Movie Flow 2.0.2.....	\$619	

Strata		
Strata Studio Pro 2.1 (3D/animat.).....	\$899	
Strata Studio Pro 2.1 (upgrade).....	\$289	
MediaPaint (profess. painting tool).....	\$299	
VideoShop (drag and drop clip making).....	\$199	
Vision 3D (intep. 3D soft. pack.).....	\$209	
Vertigo Technology Hot Text 1.0.....	\$144	
Vivid Details TestStrip 1.1.....	\$139	

Wolfman Research		
Mathematica 3.0 (math-notation).....	\$1,199	
Networking Software		
PC MAC LAN 6.1.....	\$155	
Cyber Gauge 2.0 (bandwidth monitoring).....	\$137	
Soft Router 4.0 (workgroup Net access).....	\$194	
Timbuktu Pro 3.0.....	\$125	

Over 15,000 titles to choose from

CALL 1-800-404-9976

All Prices are cash discounted. Prices & product availability subject to change without notice - Any merchandise returned is subject to a restocking fee.



800-689-3933

Service (310) 671-4444

Fax (310) 671-9565

LA

computer center

Monitors



HITACHI
3 year warranty

RASTEROPS
MC7515 19" .22DP
1600X1200 Monitor
\$829.



Mc 620 17" .28dp 1152X870	459.
Mc 6315 17" .22dp 1280X1024	599.
Mc 7515 19" .22dp 1600X1200	829.
Mc 801 21" .22dp 1600X1200	1149.
Mc 801HR 21" .22dp 1600X1280	1299.

SONY

Sony 100ES/GS	329./359.
Sony 200ES 17"	589.
Sony 200GS/PS	639./789.
Sony 400PS	1099.
Sony 300SF 20"	1069.
Sony 20SE II 20"	1599.
Sony 500PS	1599.

- Corporate Accounts Welcome
- Business Leasing Available
- Reseller Inquiries Welcome
- Fortune 1000, University, School, & Government Purchase Orders Accepted
- We Also carry Toshiba, Compaq, IBM notebooks.

Scanners

Agfa Arcus II Full Photo Shop	1299.
Agfa Arcus II Solo	1199.
Agfa StudioStar w/LE Photo	699.
Agfa SnapScan 600	389.
Umax Astra 610S w/Photo Dlx.	149.
Umax Astra 1200S w/Photo Dlx.	269.
Umax Astra 1200S w/Photo Full	449.
UmaxPowerlook III w/Photo Full	1249.
UmaxPowerlook III w/Photo Full	CALL.
Umax Powerlook 2000	3350.
Umax Powerlook 3000	CALL.
Microtek Mirage II SE w/Trans. Adapter	3699.
Microtek Scanmaker V310	149.
Microtek Scanmaker III Full Photo/Trs. Ada.	1349.

newer tech
MAXpower G3 for 61XX
MAXpower G3 210MHz 750 512K B0@ 165MHz 449.
MAXpower G3 240MHz 750 1MB B0@ 160MHz 649.
MAXpower G3 for 61XX, 7100 & 8100 Processors
MAXpower G3 210MHz 750 512K B0@ 165MHz 549.
MAXpower G3 240MHz 750 1MB B0@ 160MHz 749.
MAXpower G3 for 7300, 7500, 7600, 8550, etc.
MAXpower G3 220MHz 750 512K B0@ 110MHz 599.
MAXpower G3 250MHz 750 512K B0@ 125MHz 649.
MAXpower G3 266MHz 750 1MB B0@ 133MHz 949.
MAXpower G3 275MHz 750 1MB B0@ 183MHz 1199.
MAXpower G3 275MHz 750 1MB B0@ 275MHz 2049.

WE SHIP WORLDWIDE
NEXT DAY SHIPPING
SAME DAY SHIPPING

Prices subject to change without notice • All Prices reflect cash discount • * reflects Factory refurbished units

Monitors

A500 15" 1280x1024 .28dp	399.
E500 15" 1280x1024 .25dp	349.
A700 17" 1280x1024 .28dp	569.
P750 17" 1600x1200 .25dp	779.
P1150 21" 1600x1200 .28dp	1329.
E1100 21" 1600x1200 .25dp	1189.
XP371 .39" 1024x768 .85dp	CALL.
1100XP	CALL.

radius

Precision View 21" 1599.
Pressview 21" SR w/o calibrator 2699.
Pressview 21" SR w/calibrator 2999.
Photo DV PCI w/Firewire Card 369.
Thunder Power 30/1920 649.
Thunder TX 1152 899.
Colomatch Daylight 2299.
Precision Color 24/1600 PCI 479.
Video Vision 2.0 w/After Effects 2299.

ViewSonic

G71 17" 1280x1024 .28dp	399.
G773 17" 1024x768 .26dp	499.
EA771 17" 1024x768 w/keys 28dp	449.
G771 17" 1024x768 .27dp	479.
17GA 17" 1280x1024 .27dp	529.
P775 17" 1600x1200 .25dp	549.
P775 17" 1600x1200 .25dp	599.
P815 21" 1600x1200 .25dp	1249.
G810 21" 1600x1200 .28dp	999.
P810 21" 1600x1200 .25dp	1099.
PJ800 LCD Projector	3999.

Apple Monitors

Apple 15" AV	329.
Apple 1705 17"	549.
Apple 720 17"	CALL.
Apple 750 17"	799.
Apple 750 AV 17"	899.
Apple 850 20"	1399.
Apple 850 AV 20"	1749.

Apple Processors

Apple 132 MHz 604e	129.
Apple 150 MHz 604e	199.
Apple 200 MHz 604e	299.
Apple 233 MHz 604e	449.



MAXpower G3 for 61XX	449.
MAXpower G3 210MHz 750 512K B0@ 165MHz	649.
MAXpower G3 for 61XX, 7100 & 8100 Processors	549.
MAXpower G3 210MHz 750 512K B0@ 165MHz	749.
MAXpower G3 240MHz 750 1MB B0@ 160MHz	599.
MAXpower G3 for 7300, 7500, 7600, 8550, etc.	649.
MAXpower G3 220MHz 750 512K B0@ 110MHz	949.
MAXpower G3 250MHz 750 512K B0@ 125MHz	1199.
MAXpower G3 266MHz 750 1MB B0@ 133MHz	2049.
MAXpower G3 275MHz 750 1MB B0@ 183MHz	
MAXpower G3 275MHz 750 1MB B0@ 275MHz	

zip

AnZ 4x5	129.
AnZ 6x8	279.
AnZ 12x12	379.
AnZ 12x15	599.

Tektronix

Phaser 140 COLOR	949.
Phaser 350 COLOR	2599.
Phaser 360 COLOR	3799.
Phaser 380 COLOR	7699.
Phaser 550 COLOR	2699.
Phaser 560 COLOR	3999.

PHILIPS/MAGNAVOX 4 YEAR ON SITE WARRANTY!

ASK YOUR SALES REP REGARDING EXTENDED ON-SITE WARRANTY ON NEW AND REFURBISHED PRODUCTS. THE ON-SITE WARRANTY BEGINS 31 DAYS AFTER THE INVOICE DATE IN MOST SITUATIONS.

\$701 to \$1200	\$1201 to \$2000	\$2001 to \$3000	\$3001 to \$4000	\$4001 to \$5000	\$5001 to \$7500	\$7501 to \$10000	\$10001 to \$15000
\$157.99	\$185.99	\$207.99	\$261.99	\$291.99	\$343.99	\$431.99	\$552.99

Macintosh PowerMac's



4400/200 DOS
32MB
256K
12xCD
DOS Card
\$1299

G3 233MHz
32MB
4GB
24xCD
Desktop
\$1599

G3 266MT 128/4GB Wide /24x/8MB Video	3399.
G3 266MT 32/6GB/24x/512K/Zip	2299.
G3 266DT 32/4GB/24x/Zip	1799.
9600/350 64/4GB/24x/CD	3299.
9600/300 64/4GB/24x/CD	2699.
9600/300 64/4GB/24x/Zip	2899.
9600/233 32/4G/12x/CD	2299.
9600/200 32/4G/12x/CD	1999.
9600/200 0x/CD	1599.
9600/200MP 32/4G/12x/CD	2499.
9500/150* 16/2G/4x/CD	CALL.
8600/300 64/4G/24x/CD	2099.
8600/300 64/4G/24x/Zip	2299.
8600/250 32/4GB/24x	2099.
8600/200 32/2G/CD	1899.
8500/180* 32/2G/8x/CD	CALL.
8500/150* 16/2G/CD	CALL.
7600/132* 16/1 2G/CD	CALL.
7300/180 32/2G/CD/KBRD.	1399.
7300/180 16/2G/12x/CD/KBRD.	1399.
7300/180 32/2G/8x/DOS Compatible P166	1899.
7200/120* 16/1 2G/4x/CD/DOS	1099.
7200/120* 16/1 2G/CD	1049.
4400/200* 16/2G/8x/CD/KBR.	CALL.
4400/200 32/2GB/12/DOS COMP.	CALL.
6500/225 32/3G/12x/Home	1299.
6500/250 32/4GB/CD/56K	1599.
6500/275 32/6G/CD/56K/Zip	1999.
6500/300 64/4G/CD/56K/Zip	1999.

Macintosh Performas

Monitor sold Separately



6360/120* 16/1 2G/CD	CALL.
6400/200* 16/2 4G/8CD/VE	CALL.
6400/200 16/2 4G/8x/CD	CALL.*
6400/180 16/1 6G/8x/CD	CALL.*
64033D0S* 12/500/CD/DOS	CALL.
6300/120* 16/1 2G/4x/CD/TV	CALL.
6320/120 16/1 2G/4x/CD/TV	CALL.
6200/75* 8/1 2G/4x/CD	CALL.
6200/75* 8/1 2G/4x/CD	CALL.
5400/120* 16/1 6x/CD/15" built in	CALL.
5200/75* 8/800/CD	CALL.
LC580 8/800	CALL.

VST

Powerbook Batteries for 1400,5300,190	119.
Zip 100MB For 5300 & 150	289.
Charger for 1400 w/AC adapter	129.
Charger for 1400 battery & Apple ac Adapt.	229.
3400 Mobility Bundle (Charger, AC & Bat)	329.
3400 Apple Li-Ion Battery	149.
Auto Adapter for 3400, 1400 & G3	95.
Power Adapter 3400,5300,G3 & 190	149.
Charger 3400,5300,G3 & 190	149.
Apple AC Adapter 3400 & 1400	65.

Powerbook
3400, 1400
G3, & 5300
\$289

WACOM

ArtZ 4x5	129.
ArtZ 6x8	279.
ArtZ 12x12	379.
ArtZ 12x15	599.

Tektronix

Phaser 140 COLOR	949.
Phaser 350 COLOR	2599.
Phaser 360 COLOR	3799.
Phaser 380 COLOR	7699.
Phaser 550 COLOR	2699.
Phaser 560 COLOR	3999.

Macintosh Powerbooks



1400c/166
16MB
2GB
CD
\$1749

3400c/240
16MB
3GB
12xCD
\$3099

C: Active Color, CS: Passive Color	4299.
G3 250MHz 32/5GB/24X/MODEM	4499.
1400cs 133MHz 16/1 3G/CD	CALL.
1400cs 166MHz 16/1 3G/CD	1599.
1400c 133MHz 16/1 G/CD	1899.
1400c 166MHz 16/2 G/CD	2099.
3400c 180MHz 16/1 3G/CD	2499.
3400c 200MHz 16/2 G/CD	2699.
3400c 200MHz 16/2 G/CD/Modem	3199.
3400c 240MHz 16/3 G/CD/Modem	1899.
2400c 180MHz 16/1 2GB/	CALL.
5300cs 32/1G	1099.
5300cs 16/750	899.
5300cs 8/750	1099.
5300cs/100* 16/750/14.4 Modem	999.
540c 4/320 Used	CALL.
520c 4/240	CALL.
520 4/240	CALL.
DUO250* 12/200/Modem	799.
DUO280* 12/240/Modem	999.
Ultimate* 12/240	799.

Ultimate Rez
8MB Video
Card
\$549



Ultimate Rez 8MB	549.
4MB Twin Turbo Video Card	249.
8MB Twin Turbo Video Card	399.
Pro Rez 4MB (upgradable to 8MB)	299.
Pro Rez 4MB Upgrade	89.
Mac Rocket w/4MB SGRAM	89.
Turbo TV	89.

Fax Modems

GV 56K Teletext Fax	169.
GV 56K Teletext X2	149.
GV 56K PCMCIA	249.
GV 56K Platinum Pro + Ethernet	349.
GV 19.2 Mercury PB 500 Series	99.
GV 14.4 Gold PCMCIA	79.
Powerport Platinum 33.6	229.

Robotics

Sportster 56K	189.
Sportster 56K PCMCIA	249.
Sportster 33.6K	139.

Macintosh Workgroup Servers

Monitor sold Separately

9650/350 64/4G/20X/Dat Apple Share	CALL.
9650/233 64/4G/12x/Apple Share	CALL.
9650/233 48/4G/12x/Internet Ready	CALL.
8550/200 32/2G/CD/Apple Share	CALL.
8550/200 32/2G/CD/Apple Share/Dat	CALL.
7350/180 48/4G/12x/Apple Share	CALL.
7350/180 48/4G/12x/Internet Ready	CALL.
7350/180 48/4G/12x	CALL.
7250/120 16/1 2G/CD/Networking	CALL.

Powerbook Hard Drives

1.4GB Toshiba 1403MAV 12ms	179.
2.1GB Toshiba 2104MAV 12ms	229.
3 GB Toshiba 3205MAV Slim 12ms	349.

iomega

Jaz 2GB Drive External SCSI	629.
Jaz Drive Internal SCSI	289.
Jaz Drive External SCSI	369.
Zip Drive Internal SCSI	149.
Zip Drive External SCSI	139.
Zip Drive Plus SCSI & Parallel	189.
iomega BUZ	1599.
3/5 Pack Jaz Cartridges	239/369.
1/10 Pack Zip Cartridges	13/129.
Single Cartridges for Jaz	65.

Internal Hard Drives

Quantum Viking 4.5GB Ultra SCSI 3.5	289.
Quantum Atlas 2.1GB SCSI 3.5	249.
Quantum Stream 2.1GB SCSI 3.5	219.
Quantum Stream 4.5GB SCSI 3.5	329.
Quantum Atlas II 4.5 Ultra SCSI AV 3.5	479.
Quantum Atlas II 4.5 Ultra Wide SCSI AV 3.5	499.
Quantum Atlas II 9.1 Ultra SCSI AV 3.5	779.
Quantum Atlas II 9.1 Ultra Wide SCSI AV 3.5	799.
Seagate Cheetah 4.3 Ultra SCSI AV 10000RPM	599.
Seagate Cheetah 4.3 Ultra W SCSI AV 10000RPM	549.
Seagate ST34371W 4.3GB Ultra SCSI 3.5 AV	999.
Seagate ST34371W 4.3GB Ultra SCSI Wide 3.5 AV	1049.
Seagate Cheetah 1.0GB Ultra W SCSI AV 10000RPM	1099.

Printers

HP DeskJet 340	299.
HP DeskJet 820CX/870CX	279./399.
HP LaserJet 6L/6P/6X	385./729.
HP LaserJet 6MP/5M	849./1399.
HP LaserJet 55N	949./1199.
HP LaserJet 4V/4MV	1699./2399.
HP LaserJet 5MX	3399.
HP OfficeJet 590/1150C Pro	599./939.
HP 4000 N	1399.
HP 4000 TN	1499.
EPSON	
Epson Stylus Color 600/800	239./349.
Epson Stylus Color 3000	1699.
Epson Stylus Photo	369.
Apple	
Apple Laser 12/640	999.
HP LaserJet 4V/4MV	1199.
Apple Laser 8500	1899.
GV 14.4 Gold PCMCIA	CALL.
Apple StyleWriter 1500	299.
Apple StyleWriter 2200	239.
Apple StyleWriter 4100	339.
Apple StyleWriter 4500	CALL.
Apple StyleWriter 6500	279.
Color Portable 2200	

ON SALE NOW!!!!

EPSON Stylus Pro XL

Prints up to 12.5" x 18" Full bleed. 720x720dpi Photo quality color printing with Microdot Technology.

(Comparable to Epson Stylus 3000)

1800-533-9005

E-MAIL US AT: COMPAMER@aol.com
 (310) 446-1771 10435 Santa Monica Blvd
 FAX Bids
 (310) 475-7744 LA, CA 90025
 We are open on Saturday!

COMPU AMERICA

"The Computer Specialist"

Check out our WEB!!!

UPDATED DAILY!!!
 Online Ordering
 Stock/Availability
 Color Photos
 Complete Specs
 Shipping Estimates
 International Sales
 Credit/COD/Leasing
 No Wait! No hold!
 Completely Accurate!

[HTTP://WWW.COMPU-AMERICA.COM](http://www.compu-america.com)

Government, University, and Fortune 1000 P.O.'s are welcome! International Orders Please call (310) 446-1771

We Ship worldwide with **FedEx** We Welcome   

SPECIAL!

PowerMac G3/233DT

233MHz G3
 32MRAM/4G/24XCD
 MOUSE/KEYBOARD

\$1599

SPECIAL!

PowerBook G3/266DT

226MHz G3
 32/4GIG/24XCD
 KEYBOARD/ZIP DRIVE

\$1799

SPECIAL!

PowerBook 1400C/166

166MHz 603e
 16/2G/8XCD

\$1749

SPECIAL!

PowerBook 5300CS

603E/100MHZ
 16/750HD
 PASSIVE COLOR

\$899

NEW G3 POWERMACS!

G3/266MT 128/4G/24X/8MV	3399
G3/266MT 32/6G/24XCD/ZIP	2299
G3/266DT 32/4G/24XCD/ZIP	1799
G3/233MT 32/4G/24X/MD	1799
G3/233DT 32/4G/24XCD	1599

NEW POWERMACS!

9600/350 64/4G/24X	3299
9600/300 64/4G/24X	2999
9600/200MP32/4GIG/CD	2699
9600/233 32/4GIG/CD	2499
9600/200 32/4GIG/CD	2299
9600/300 32/4GIG/CD	2099
8800/250 32/4G/24X	1999
8800/200 32/2G/24X	1899
7300/PEN 32/2GIG/CD	1699
7300/200 32/4GIG/CD	CALL
7300/180 16/2GIG/CD	CALL
6500/300 64/6G/24X/ZIP/5	1999
6500/275 32/6G/24X/ZIP/5	1599
6500/250 32/4G/24X/56K	1299
6500/225 32/3G/24X/33.6	CALL
4400/200 16/2G/CD/KEY	1099
4400/200 32/2G/CD/PEN	1299
7200/120 16/1G/CD	999*

Apple Printers

SW 2200	299
SW 4100	239
SW 4500	339
SW 6500	CALL
Apple LW 8500	1899
Apple LW 12/600/PS	999
Apple LW 16/640PS	1199/999*
Apple LW 12/660PSC	3499

APPLE Monitors

Apple MS 15AV	349
Apple 1705 17"	479
Apple 720 17"	CALL
Apple 750	679
Apple 750 AV	779
Apple Multiscan 850 20"	1399
Apple Multiscan 850AV	1699

SONY

Sony 100ES/100GS	329/359
Sony 200ES/200GS	589/639
Sony 200PS 17"	789
Sony 400PS 19"	1099
Sony 300SF 20"	1089
Sony 20SEI	1089
Sony 500PS 21"	1599

VST

1400/5300/190 Batteries	119
5300/190 Zip Drive	319
1400 Charger w/AC Adap.	129
1400 Charger w/ Apple Adap.	229
3400 Apple Li-Ion Battery	149
3400/5300/190/G3 Charger	149
3400/1400 AC Adapter	65
Adapters for 3400/5300/190/G3	
Auto Power	95
Charger/Battery/Adapter Bundles	149
3400	329

NEW G3 POWERBOOKS

G3/250MZ 32/5G/20CD/ETH 4299	
G3/250MZ 32/5G/20CD/MD 4499	

POWERBOOKS

3400C/240 16/3G/12XCD/M	3199
3400C/240 16/3G/12XCD	3099
3400C/200 16/2G/12XCD/M	2899
3400C/200 16/2G/12XCD	2699
3400C/180 16/1.2G/12XCD	2499
3400C/180 16/1.3G	2399
2400C/180 16/1.3G	1899
1400C/166 16/2G/CD	1749
1400CS/166 16/2G/CD	1599
1400C/133 16/1G/CD	1599
1400CS/133 16/1G/CD	CALL
5300C/100 8/500	1099*
5300CS/100 8/750	899*
DUO DOCK	429

PERFORMAS

6400/200V 16/2.4G/CD	CALL
6400/200 16/2.4G/CD	CALL
6400/180 16/1G/CD	CALL
6360/160 16/1.2G/8XCD	CALL

WorkGroup Servers

7350/180 48/4G/CD/SHA	CALL
7350/180 48/4G/CD/INT	CALL
7350/180 48/4G/CD	CALL
9650/233 64/4G/CD/SHA	CALL
9650/233 64/4G/CD/INTER	CALL
9650/233 64/4G/CD/DAT	CALL

SOFTWARE SPECIALS

ADOBE PHOTOSHOP	329
ADOBE PREMIER	349
ADOBE ILLUSTRATOR	249
ADOBE Pagemaker	249
MACROMEDIA FREEHAND	249
MICROSOFT ACCESS	199
MICROSOFT WORD	179
MICROSOFT EXCEL	179
MICROSOFT POWERPOINT	249
MICROSOFT OFFICE	249
QUARK XPRESS	639

GLOBAL VILLAGE

Global Village Plat 56k	149
Global Village Gold II PCM 14.4	49
Global Village Gold II 14.4EXT	49
Global Village 56.6 PCMCIA	249
Global Village 56.6 ETH/PCM	349

Tektronix

PHASER 140	949
PHASER 300X	4999
PHASER 350 COLOR LASER	2999
PHASER 380	7899
PHASER 450	6099
PHASER 480X	14495
PHASER 550 COLOR LASER	3999
PHASER 600WIDE FORMAT	11999

adaptec

Remus V1.4 RAID Software 475
 AHA-2940UW PCI 295
 AHA-2940UW Mac Kit 395
 AHA-3940UW Mac Kit Dual 595
 AHA-3940UW Dual Channel 795

UMAX

VISTA Astra 610-LE 149
 VISTA Astra 1200-LE 249
 VISTA Astra 1200-PRO 449
 POWERLOOK III CALL
 POWERLOOK 3000 CALL
 MIRAGE IISE W/TRANS CALL

MINOLTA

DIMAGE V 549
 DIMAGE SCAN 649
 QUICKSCAN 35 CALL

AGFA

SNAPSCAN 310 199
 SNAPSCAN 600 389
 SNAPSCAN 600 ART LINE 529
 STUDIO STAR 799
 ARCUS II 1299
 EPHOTO 1208 CALL

WACOM

ARTZ II 4 X 5 139
 ARTZ II 6 X 8 289
 ARTZ II 12 X 12 389
 ARTZ II 12 X 18 669

HEWLETT PACKARD

55IMX 3399
 4000TN 1479
 4000N 1379
 51M/5M 1299/1399
 51M 549*
 61M 849
 4MV 2399

Seagate

Cheetah 4.3G SCSI/Wide 599/699
 Cheetah 9.1G SCSI/Wide 999/1099
 Barracuda 2.2G SCSI/Wide 399/429
 Barracuda 4.5G SCSI/Wide 549/599
 Barracuda 9.1G SCSI/Wide 799/829
 Elite 23G SCSI/Wide 1799/1899

Processor Upgrades

APPLE POWERMAC 132MHZ 99
 APPLE POWERMAC 150 MHZ 149
 APPLE POWERMAC 200MHZ 249
 APPLE POWERMAC 233MHZ 399

ViewSonic

VIEWSONIC EA771 449
 VIEWSONIC Q71 17" 399
 VIEWSONIC G771 17" 479
 VIEWSONIC G773 17" 499
 VIEWSONIC G775 599
 VIEWSONIC G790 799
 VIEWSONIC G810 979
 VIEWSONIC 29GA 2099
 VIEWSONIC P775 549
 VIEWSONIC PT775 599
 VIEWSONIC P810 1099
 VIEWSONIC P815 1249
 VIEWSONIC PT813 1199
 VIEWSONIC PJ800 3999
 VIEWSONIC OPTIQUEST V775 499
 VIEWSONIC OPTIQUEST Q100 899
 VIEWSONIC WVPAN VPA138 2199
 VIEWSONIC WVPAN VPA150 2499

ixmicro

ULTIMATE REZ 8MB 529
 PRO REZ 4MB 279
 MAC ROCKET 4MB 239
 TWIN TURBO 8 MEG PCI 399
 TWIN TURBO 4 MEG PCI 249
 TWIN TURBO TURBO TV 89

newer technology

MaxPowr G3 250 999
 MaxPowr G3 266+ 1849
 MaxPowr Pro G3 275/183 1299
 MaxPowr Pro G3 275/275 2029
 MaxPowr Citation 200mhz 339
 MaxPowr Citation 233mhz 429
 Bookendz 500 Series 115
 Bookendz 500 with Ethernet 139
 Bookendz 5300/190 149
 Bookendz 1400 149
 Bookendz 3400 149
 NuPowr 183 for 1400 449
 NuPowr 183 for 1500 669

Quantum

AtlasII 2.2G SCSI/Wide 245/265
 AtlasII 4.5G SCSI/Wide 505/549
 AtlasII 9.1G SCSI/Wide 699/799
 Stratus 3.2G/4.3G 255/299
 Stratus 6.4G/8.4G 399/499
 EXTERNAL CASE 79

NEC

NEC M500 15" 389
 NEC M700 17" 699
 NEC P750 17" 779
 NEC E700 669
 NEC E1100 21" 999
 NEC P1150 21" 1099

LinoColor

ZIP DRIVE 100 MEG 139
 ZIP DRIVE PLUS 189
 JAZZ DRIVE 1GIG/2GIG CALL
 ZIP CART 10 PACK 109
 JAZZ CART 79
 IOMEGA BUZ 189
 VST PB 3400 ZIP DRIVE 329

GCC TECHNOLOGIES

GCC ELITE XL-608 1699
 GCC ELITE XL-1212 1399
 GCC ELITE XL-616 2099
 GCC ELITE XL-808 2399
 GCC ELITE XL-1208 2999
 GCC ELITE XL-1208 PLATE 3999

RASTEROPS

SUPERSCAN MC-620 449
 SUPERSCAN MC-6315 549
 SUPERSCAN MC-7515 829
 SUPERSCAN MC-801 1149
 SUPERSCAN MC-801-HR 1299

EPSON

STYLUS COLOR 600 239
 STYLUS COLOR 800 329
 STYLUS COLOR PHOTO 369
 STYLUS COLOR 1520 739
 STYLUS COLOR 3000 1699
 EXPRESSION/636/EXEC 729
 EXPRESSION/636/ART 929
 EXPRESSION/636/PRO 1249

All prices are cash discounted. Prices subject to change without notice. Not responsible for typos. An asterisk "*" denotes refurbished product.

SUPER SAVINGS

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!

**62%
OFF**



- ☐ 2 years • SAVE 62% • Just \$45.00 for 24 issues!
- ☐ 1 year • SAVE 50% • Just \$30.00 for 12 issues!

NAME _____ (PLEASE PRINT) _____ 5SQX8

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.

Check us out on the Web —
<http://www.macworld.com>



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 66 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

Macworld®

Subscription Department
PO Box 54506
Boulder CO 80323-4506



Power 120 0/0/0 (U)

\$399

16/800/12x \$599
*Includes Keyboard & Mouse

PowerBase 240Mhz Upgrade 99.00

12X CD ROM
Bootable

\$89
External
*Includes Cables & Interch CD SW

32x Toshiba CD ROM (N) 139.00
32x Toshiba External CD ROM 139.00
1.2 GB Performa IDE Hard Drive 199.00
4GB Seagate Hawk, SCSI 199.00
Mac Ili 1/0 89.00 Mac LC 4/40 129.00
Ili NuBus Adapter 29.00 LC II 4/40 169.00
Mac IliX 0/0 69.00 SE 4/120 99.00
Mac Ili 0/0 99.00 C650 16/240 299.00
Ili 32k Cache 19.00 Q650 16/240 399.00

Mac Ili 8/80 Package (U)
13" Color Mtr
Mouse, Ext. Keyboard
MS Works 2.0 OR Photoshop 2.5

Mac OS 8.0 complete upgrade
or
System 7.6CD
\$49.99
\$24.99

We accept...
School & Gov't POs

PowerON computer services • 4323 Anthony Ct. #1 • Rocklin, CA 95677

www.poweron.net

Prices subject to change without notice.
All Prices include 3% cash discount

PowerMAC 6100-60 16/240

\$499

*Includes Keyboard & Mouse
w/ Apple 14" AV Trinitron \$699
6100 DOS Upgrade Kit (N) 99.00

Apple 17"
MultiScan (R)
Trinitron™

\$399

Apple 15" MultiScan Mtr (R) 229.00
20" Color Monitors from 449.00
Apple 20" Two Page Display (U) 99.00
Apple 14" Color Plus Mtr (U) 189.00
Apple 13" RGB Trinitron Mtr (U) 159.00
Single Button Mouse, Mac ADB (N) 16.50
Extended Keyboard, Mac ADB (N) 29.00
Apple LaserWriter IInt w/Toner (U) 199.00
Apple Personal LW NTR Upgrade (N) 69.00

28.8 bps External Modem (N)
Mac or PC
includes Cables

Hewlett-Packard 5MP (R)
6ppm, 600dpi
includes Toner

\$499

BUY/SELL
LEASE

800-673-6227

Prices subject to change without notice.
All Prices include 3% cash discount

COMPUTER DISCOUNTERS

WE WILL SAVE YOU MONEY - THE TOTAL HARDWARE SOURCE!! NEW, REFURBISHED and DEMO EQUIPMENT IN STOCK.
MAC PRINTERS, COMPUTERS & POWERBOOKS IN STOCK NAME BRAND PENTIUM SYSTEMS from \$899 to \$1995

WE BUY USED/DISCONTINUED MAC HARDWARE!

MACINTOSH SPECIALS

POWERBOOKS

PowerBooks 100/500/5300/Duo.....Call\$\$\$

100 Series.....\$350-\$650

Global Village PB PC Card 14.4 Fax modem...\$39

Radius Thunder PC 30/1152 & 1600... \$199/199

66040 PROCESSOR MACS

CENTRIS 610/650.....\$259/299

QUADRA 650 8/230.....\$350

QUADRA 840AV 16/500/CD.....\$695

QUADRA 950 16/250.....\$395

POWERPC PROCESSOR MACS

PowerMac 7100/80 8/250.....\$595

PowerMac 8100/100 16/1GB/CD.....\$799

PowerMac 6100/60 16/250

w/14" Apple Monitor.....\$599

LASERWRITERS

HP Laserjet 5MP.....\$499

HP 4MV/5M/55IMX.....\$1695/1395/2395

Laserwriter IInt.....\$185

DEC Laser 1152 PS/2 2MB.....\$199

MONITORS

SPECIAL - MAC MONITORS

HP A2094A 20" Sony Trinitron 1152 x 870

@75HZ MPR II.....\$399

8383 Leesburg Pike, Vienna, VA 22180
10543 Ewing Road, Beltsville, MD 20705
Tel: (301) 595-0500 Fax: (301) 595-5112

Toll Free # (800) 964-1886
www.computerdiscounters.wt.com

PACIFIC
COMPUTER EXCHANGE

Used Macs Priced to Move

Cash paid
for your
Mac via
Fed Ex!

800.790.3881

We buy and
sell used Macs!

SPECIAL!
Media Vision
Refurbished
2X External
CD ROM
\$ 69
NEW!!
14.4 Internal
Modem for
Powerbook
100 Series
\$ 49

CIRCLE 415 ON READER SERVICE CARD

POWERBOOK PRODUCTS

We can install your PowerBook upgrade, Call for details!

IDE PowerBook Drives SCSI PowerBook Drives

For use in PB 3400, 3400, 1400, 5300, 160, 150 & Duo 3300
1.6 GB IBM \$ 189 3yr
2.1 GB TOSHIBA \$ 209 3yr
3.0 GB IBM \$ 289 3yr
4.0 GB IBM \$ 479 2yr
5.0 GB IBM \$ 579 2yr
For use in PB 500 Series, Duo 200 Series, PB140-180c (except 150)
810 MB TOSHIBA \$ 399 3yr
1.0 GB APPLE/IBM \$ 399 1yr
MadsonLine AC adapter
for PB 3400, G3, 2400 & 1400
only \$85
half the size/weight of Apple's adapter!

Don't Trash your old drive!
Use our PC-card IDE case and save your money!
ONLY \$129

All MCE PowerBook hard drives carry a 30 day Money Back Guarantee &
ship with Torx Tool, if needed, illustrated installation manual,
Anti-static wrist strap. SCSI Drives ship w/ Drive7 Utility Software.

newer tech

NUpower 1400/183 \$ 479
VIEWpower 1400 (16-bit video) \$ 189
NUpower 500/183c (OMB) \$ 679
NUpower 500/167 (OMB) \$ 499

MCE powerUP 500/183c (32MB) Bundle

Includes: NUpower 500/183c (OMB), 32MB module

& Toshiba 810 MB 2.5" SCSI HD \$ 1149

ADB Flexlight - Great for dark lecture halls,
planes, cars or in the field \$29 weekly

Kritter Cam \$249

CapSure Card \$129

640x480, 30fps

Video for 3400/2400/G3

See our complete line of PowerBook Products & Upgrades at
www.PowerBook1.com

1-800-5000-MAC • 714-458-0800 • fax 714-458-1803

30 Hughes Suite 203 • Irvine, CA • 92618

Visa / MC / AmEx / Discover / P.O.'s

MediaGuide

WE GUARANTEE THE BEST PRICES! Prices Listed Reflect a 3% Cash Discount

BUY/SELL/TRADE

OLDER MACS POWERBOOKS

Mac Plus 1/0.....\$49 SE 4/20.....\$59 PB 140 4/40.....\$299 PB 170 8/80.....\$499

SE/30 8/80.....\$149 Classic 4/40.....\$119 Powerbook 180 8/160/14.4.....\$699

Mac II 4/40/Video.....\$69 LC 10/40.....\$119 Powerbook Duo's.....from \$199

IliX 8/40/Video.....\$99 Ili 5/40.....\$99 Powerbook 520 12/160/19.2.....\$799

Ili 8/80.....\$149 IliX 8/160.....\$179 Powerbook 520c 12/240/19.2.....\$949

Powerbook 540c 12/320/19.2.....\$1099

Ask about our bundle specials

for Ili, IliX, or Ili's.....from only \$249!

MONITORS & PRINTERS

Apple 12" Mono.....\$89 Apple 12" RGB.....\$119

Apple 13" RGB.....\$149 Apple 14".....\$179

Apple 15" MS.....\$299 Apple 16" RGB.....\$349

Apple 17" MS.....\$499 Apple 20" MS.....\$899

Imagewriter II.....\$99 Laserwriter.....\$99

Laserwriter IInt.....\$199 LW IIntx.....\$249

Laserwriter IIf.....\$299 LW IIf.....\$399

HOT SPECIALS

Powerbook 5300c 8/500.....\$1099

Powerbook 5300c 16/750.....\$1199

Powerbook 5300ce 32/1gig.....\$1399

Duo 280c 40/1gig/14.4.....\$799

Add a Duo Dock for only \$99 !!

Logic boards, Power supplies, RAM — CALL!

Parts, Accessories, other CPUs — CALL!

Many other Power Macs in stock.....CALL!!

Call toll free: (800) 463-0686

Fax: (303) 571-5020 • Local & Int'l: (303) 571-1900

Hours: M-F 8-6, SAT 10-5 MST • 777 N. Santa Fe Dr., Denver, CO 80204

E-mail: Sales@MediaGuide.com • http://www.mediaguide.com

CIRCLE 413 ON READER SERVICE CARD

CALL THE MAC EXPERTS!

Your one-stop source for everything Macintosh. Complete solutions and expert advice our specialty!

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 time sale. After all, over half our business comes from repeat and referred customers!
- We have competitive prices on over 20,000 Macintosh items.
- We load over 160 megabytes of useful software on every computer.
- Every Mac system is thoroughly bench tested, and 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—for tech, sales and management.
- We answer the phone: "how can we help you?" not "may I take your order?"
- We live in Oregon, where there is no sales tax and the people are friendly and polite!
- Even customized systems usually ship within 24-48 hours.
- We usually approve government and corporate purchase orders the same day.
- We take trade-ins, and we sell every type of quality Macintosh possible.
- All we do is Macintosh—our company is run entirely on Macs.

Them

- They sell 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 PM15T 25 mm dot pitch—up to 1280x1024	\$349
Model PM17T 25 mm dot pitch—up to 1280x1024	\$649
Model PM17TE+ 25 mm dot pitch—up to 1600x1280	\$849
Model PM20T 30 mm dot pitch—up to 1600x1280	\$1199
Model PM20T+ 25 mm dot pitch!	\$1499

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!

MacUser Labs Reviews: "Four Mice! A PowerMax 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!"



Package 52W984

Factory Refurbished Performa 5200 w/16 Mb RAM, 500 Mb hard drive, built-in color display, video in, Mac CD bundle with Atlas, games, dictionaries & many more. Only \$899, or just \$38 per month!



Extra CDs!

Save on complete packages!

Package G3W984

PowerMac G3 233 desktop, 96 mb RAM, 15" Color Display, Quickbooks 3.0 software, deluxe APC surge protector. Only \$2149, or just \$88 per month!



Quickbooks!

Package 73W984

PowerMac 7300/180 with 40 Mb of Mac RAM, 2 Gb hard drive, 12x CD Rom, 15" Color Monitor, Dabblar 2 CD, APC Pro Surge Protector. All this for only \$1899, or just \$76 per month!



Dabblar!

Pictures may not match monitor in package

*Only while supplies last

Package 62W984

Factory Refurbished Performa 6230 w/16 Mb RAM, 1 gig drive, 15" color display, Apple Color StyleWriter 1500, 97 Groliers encyclopedia. Only \$1099, or just \$44 per month!



Groliers!

Package 96W984

PowerMac 9600: 300 MHz with 96 Mb RAM, 4 gig drive, 24x CD, 17" color display, internal 1 Gb Jaz drive, Macromedia Director 5.0. Only \$3999, or just \$157 per month!



Director!

Package G6W984

PowerMac G3 Tower: 266 MHz w/96 Mb RAM, 6 gig drive, 24x CD, internal Zip drive, 17" color display, Microsoft Office 4.2.1 CD, deluxe APC surge protector. Only \$3348, or just \$149 per month!



MS Office!

POWERMAX HARD DRIVE BLOWOUT!

You won't find better prices on complete external subsystems of this quality! Also call for a quote on our super-fast custom arrays!

External 2 Gigabyte.....	\$219!
IBM Mechanism	
External 4 Gigabyte.....	\$299!
Seagate Mechanism	
External 9 Gigabyte.....	\$699!
Fujitsu Mechanism- 7200 RPM!	
External 1 Gig Jaz Drive	\$319!
Complete With Cartridge	

4 Gigabytes for only \$299!

Prices only while supplies last!

Trade Up with PowerMax!

Or accelerate your Mac with one of our many upgrades!

MaxPowr G3 250MHz w/512 Cache/125.....	\$1048
MaxPowr G3 275MHz w/1 Mb Cache/183.....	\$1188
MaxPowr G3 275MHz w/1 Mb Cache/275.....	\$2088

200 MHz Upgrade
Boards- only \$219!
233 MHz Upgrade
Boards- only \$299!

newer technology:

Call for the absolute lowest prices and immediate delivery on over 20,000 Mac products!

We can build you a complete system for under \$800!

Customizable Mac Systems

PowerMac 7300/180 16 Ram/12x/KB	\$1219
PowerMac G3 233 32/24x CD/KB	\$1555
PowerMac G3 266 32/24x CD/Zip/KB	\$1847
PowerMac G3 Twr 266 32/24x Zip/KB	\$2334
PowerMac 8600/250 32 Ram/24x CD	\$Call!
PowerMac 8600/300 32 Ram/24x CD	\$2220
PowerMac 9600/300 64 Ram/24x CD	\$2649
PowerMac 9600/350 64 Ram/24x CD	\$3488

Factory Configured Mac Systems

PowerMac 6400/180 16/1.6/CD	\$999
PowerMac 6400/200 16/1.6 w/ethernet!	\$1119
PowerMac 6500/250 32/4000/24x/56.6	\$1448
PowerMac 6500/275 32/6000/24x/56.6	\$1748
PowerMac 6500/275 48/6000/24x/56.6	\$2048
PowerMac 6500/300 64/6000/24x/56.6	\$2248
PowerMac G3 233 32/4000/24x CD	\$1655
PowerMac G3 233 Tower 32/4000/24x CD	\$1947
PowerMac G3 266 32/4000/24x CD/Zip	\$1947
PowerMac G3 Twr 266 32/6000/24x/Zip	\$2434
PowerMac G3 Twr 266 128/4000/Ethernet	\$3699

Closeouts on factory refurbished!

Performa 6220 75MHz 16/Gig/CD	\$679
Performa 6360/160 16/1.2/CD	\$849
PowerMac 5215 8/1 Gb/CD all in one w/disp	\$899
Motorola StarMax 4000/200 16/1.2/CD	\$949
Performa 6400/200 16/1.6/CD	\$1049
PowerMac 7600/132 16/1.2/CD	\$1188

*Brought to new condition with a 90 day factory warranty

Powerbooks—Your complete source!

Ref Powerbook 5300CS/100 8/750	\$929
Powerbook 1400CS/166 16/1.3/CD	\$1699
Powerbook 1400C/133 16/1.3/CD	\$1748
Powerbook 1400C/166 16/2 Gb/CD	\$1888
Powerbook 2400C/180 16/1.3/CD	\$1988
Powerbook 3400 series price drop!	\$Call!
PowerComputing Closeouts!!!	
PowerBase 200 16/2 Gb/CD	\$988
PowerBase 240 16/1.2 Gb/CD	\$1088
PowerBase 240 16/2 Gb/CD	\$1148

And Umax SuperMac: we stock all models!

POWER MAX
Knowledge is Power

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.

We accept educational and corporate purchase orders, and are experts in financing for virtually any size business!



**Great Deals on all
MAC Products**

CALL



DATA



radius

NEC



UMAX

SONY

EPSON

800-345-1234

Sales: (310) 398-3300

Micro Computer Inc.

3847 Grandview Blvd.
Los Angeles, CA 90006

www.datamicro.com

e-mail: datamicro@earthlink.com

fax: (310) 391-2488

PowerMacs

G3/266 32/6GB/CD/Zip/AV	\$2395
G3/266 32/4GB/CD/Zip	\$1895
G3/223 32/4GB/CD	\$1685
9600/350 64/4GB/CD/Zip	\$3399
9600/300 64/4GB/CD	\$2849
8600/300 32/4GB/CD	\$2289
8600/250 32/4GB/CD/Zip	\$2089
7600, 8500, 9500 Series	CALL
7300/200 32/2GB/CD	\$1499
7300/180 16/2GB/CD	\$1289
7200/120 16/1GB/CD	\$1149
6500/300 32/4GB/CD/Zip	\$1889
6500/225 32/3GB/CD	\$1289
4400/200 16/2GB/CD	\$1195
6100/DOS 16/500/CD	\$899
6100/66 8/500/CD	\$699

PowerBooks

G3/250 32/5GB/CD	\$4249
3400c/240 16/3GB/CD	\$3149
3400c/200 16/2GB/CD	\$2489
3400c/180 16/1GB/CD	CALL
1400c/166 16/2GB/CD	\$1849
1400cs/133 16/1GB/CD	\$1695
2300c 20/1GB/Modem	\$1299
2300c 8/750MB	\$999
5300c 16/1GB	\$1275
5300cs 8/750MB	\$899



Displays

Apple 20" Color	\$1495
Apple 17" Color	\$495
HITACHI SuperScan 19"	\$895
KDS 15" Color	\$249
NEC P1150 21" Color	\$1349
Radius 20" Color	\$1099
SuperMac 17" Color	\$439
SONY 200ES 17" Color	\$589
ViewSonic E771 17"	\$469



Printers

HP LaserJet 4000N	\$1389
HP LaserJet 5MP	\$545
Apple LaserWriter 12/600	\$1995
Apple LaserWriter 8500	\$2299
Apple StyleWriters Lowest Price!	
EPSON Stylus 600	\$259
EPSON Stylus 3000	\$1645
Tektronix 350	\$2650
" 360/300X	\$3795/4995



Dealers & International
Sales Welcome

Government, Universities &
Corporations P.O.'s are accepted
We Specialize in Business Leasing
Prices are subject to change without notice!

Performas

5260 16/1.2GB/CD	\$995
5300 16/1.2GB/CD	\$1049
6116 8/700/CD	\$749
6116/DOS 16/700/CD	\$949
6360 16/1GB/CD	\$795
6400/200 32/2.4GB/CD	\$1095

**Call for Software
& other Accessories**

Digital Camera

Agfa ePhoto 1280	\$799
Agfa ePhoto 780	\$479
Kodak DC 120	\$695
HITACHI MPEG	\$1595
Olympus DL 600	\$1249
SONY Mavica FD7	\$649



Scanners

Agfa DuoScan	\$2995
Agfa Arcus II	\$1349
EPSON Expression 636	\$975
HP ScanJet 6100C	\$749
Microtek ScanMaker E6	\$495
Microtek ScanMaker III	\$1449
LaCie SilverScanner IV	\$989
UMAX PowerLook II	\$1249



CIRCLE 404 ON READER SERVICE CARD

CD Recorders

4x12 Teac	\$439
4x2x6 Yamaha CD-RW	\$489
4x6 Yamaha	\$479
4x8 Panasonic	\$379
Add \$60 for external	

CD-R Duos

JAZZCDR (4x8)	\$829
CD2CDR (12x/4x8)	\$669
All Duo prices external	

Media

Mitsui (w/drive)	\$1.95
CD-RW	\$15.99
Jaz Cartridges	\$78.99

**Blank CDs From
\$1.45 Each!!**

Nobody Sells for Less Than the Copy Cats!

CD-Rs From
\$379

Complete Kits
\$479
& up

\$829
4XB CD-R!!

\$899
2 in 1 printer!

Order Toll Free
1-888-663-3121
Mon-Fri 7 am - 7 pm 760.510.9880 Voice 760.510.9888 Fax

Copy Cat Shop
www.copycatshop.com

Specializing in Rebuilt Imagesetters complete

PrePress Systems and Digital Video 3101 W.PCH suite 150
NewPort Beach Ca 92663
phone 714-574-3939 • fax 714-574-3947
email: CLucero126@aol.com

We Custom Configure

Pre Press System

Complete Color Pre Press System
Includes Power Mac G3
32/4G, 17" Color
Monitor, Software, Ex
Keybd., AGFA Color
Scanner, Color Proof
Printer, Imagesetter w/Rip
& Processor.
\$16,950

SilkScreening System

Imagesetter - Agfa or Linotype 18" Wide
• Includes RIP
• Adobe Postscript
• 2400 DPI
• Factory Refurbished
• Call for New & Refurbs
\$15,000

Spot Color System

COMPLETE SYSTEM FOR SPOT
COLOR
Includes Power
Mac G3 32/4G
17" Color
Monitor, Software, Ex
Keybd., AGFA Color Scanner, Color Proof
Printer, Imagesetter w/Rip & Processor
Call!

Scitex Station

PM 9600/300/128MB/3GB/CD/ATI
Targa 2000, Microsphere
The only Real Time...All the
Time system in the quicktime
market to provide unimagi-
nable real time effects.
Starting at
\$12,500

Accessories

Howtek Drum Scanner
Flatbed Scanners
Pantone • Scanview
Proofing Printers
Epson • Fargo • Barco
IRIS • Seal • Visual Edge
Call for Pre Press needs

Software

After Effects...\$1575
Form Z...\$995
Borris Effects...\$495
Final Effects...\$575
Photoshop...\$395
Page Maker...\$495
Illustrator...\$350

AVID® MCXPRESS MAC

MCXPRESS Workstation for Macintosh
SYSTEM INCLUDES: Real Time
effects, country kit 110v, beta-
cam video, avid standards
effects, Single Channel Controller
2 Channel Audio, Film Option,
Deck Control, & 3D. Note:
Options not included
Starting at 9,995

Media TOOLX Station

9600/300MHz, 128MB/4G/CD
After Effects 3.0, 17" Monitor,
Keyboard, 4100 w/SCSI Wide Array,
Vicent Component, Batch Capture
Starting at 13,900

AGFA • Linotype • ECRM • Ulte • Scitex • Harlequin RIP HR



- 100-MHz PowerPC 603e
- 8/500 Configuration
- 8 bit Dual Scan Color

As Low as
\$499†

POWERBOOK 5300cs

Trade in Your
PowerBook 540c for
this incredible deal!

Special!

- Factory Refurbished
- Includes Battery and A/C adapter
- 90 Day Warranty

† Requires trade-in of Powerbook 540c, 8/250 minimum configuration. Unit must be good condition. \$899 is the outright price.



Performa 6400/180

Bundle
16/1.6GB/8xCD
\$1099



14" Trinitron

Quadra 950

16/0 Configuration
33 Mhz 68040 Proc
5 Nubus slots



\$699



PowerComputing PowerCenter Pro 180 MT

16/2GB/16xcd
Factory Refurbished
\$1349
Add a 15" Monitor for \$250

Performa 6400/200

32/2.4GB/8xCD
Video Editing
Edition
\$1199



NEC

Silentwriter 1765

- 17 pages per minute
- Ethernet, local-talk & parallel ports for easy networking
- Postscript Level 2



BRAND NEW **\$999**

TEXAS INSTRUMENTS MICROLASER PRO E



- 600 dpi
- 12 PPM
- Localtalk and Parallel
- Postscript Level 2

BRAND NEW **\$749**

LC 580

- 68LC040-33MHz
- 12/800 Config.
- 14" Built-in Screen
- Edutainment package



\$799
BRAND NEW!
\$949 with Internal 4X CD

POWERMAC 7200/75 LOGIC BOARD



Logic board with
Power Supply...
Only \$299.00

\$149
BRAND NEW!

Performa 5200

- 75-MHz PowerPC™ 603
- internal 14.4 faxmodem
- Built-in Display
- keyboard & mouse



\$899 12/800/4XCD Refurbished

Performa 6320/120

- 120-MHz PowerPC™ 603e
- internal 14.4 faxmodem
- 15" Apple Display
- keyboard & mouse



\$1199 16/1.2GB/4XCD Refurbished (for only \$100)

Personal NT to NTR Upgrade

Turn your Personal NT printer into a Personal NTR with a simple logic board upgrade. The NTR features PostScript Level 2 and a fast RISC processor!



NEW W/EXCHANGE . . . **\$79**

ATI XCLAIM VR WITH TV

- Features QuickDraw 3D RAVE acceleration
- XCLAIM TV tuner allows your Mac to receive broadcast television signal.
- Supports resolutions up to 1152x870



TV OPTION AVAILABLE SEPARATELY FOR \$69.

WITH TV OPTION . . . **\$199**

QuickTake 200

Store high-quality 24-bit images on a removable 2MB data card. 640x480 resolution. LCD display.



RECONDITIONED . . . **\$449**



PowerBook 150

- Refurbished
- 33-MHz 030 processor
- 8MB RAM, 120MB HD
- passive-matrix grayscale

\$649

Javelin Video 3240XL PCI

- accelerated multimedia card for PCI PowerMacs
- 2MB VRAM onboard
- supports resolutions up to 1600x1200 pixels
- Built-in accelerations for video playback, QuickDraw™ and QuickTime™



NEW OEM . . . **\$99**

Macintosh CPUs

*Performa 635 4/250	.....\$499.
**Performa 5200 8/800/4XCD	.....\$899.
*Centris 650 4/0 (LC040 processor)	.....\$499.
*Quadra 660w 4/0	.....\$549.
*Quadra 840w 0/0	.....\$749.
*Quadra 800 8/0	.....\$749.
**PowerMac 8500/120 16/1GB/4XCD	.....\$1599.
*WGS 95 16/700/CD	.....\$999.
*WGS 8150/80 8/500	.....\$1499.
*WGS 9150/120 16/1GB/CD	.....\$1799.

Logic Boards on Sale

*Performa 600	.....\$129.
*Performa 630	.....\$199.
*Performa 6200	.....\$299.
*LC	.....\$99.
*LC II	.....\$129.
*Mac IIcx	.....\$129.
*Quadra 800	.....\$399.
*Quadra 840AV	.....\$449.
*Quadra 950	.....\$449.

More Logic Board Upgrades

*LaserWriter IIsv/xtx to IIf	.....exch. \$399 sv/299-xtx
*Mac II or IIfx to IIfcx	.....exch. \$249
IIfcx to Centris 650	.....exch. \$299

Video Cards

E-Machines DoubleColor SX 8-bit NEW	.....\$99.
RasterOps 24MX NEW	.....\$199.
Radius PrecisionColor 8/1600 PCI NEW	.....\$349.
Micron XCEED for Performa	.....\$299.
**6100 series AV Card with adapter	.....\$349.
*PowerMac HPV VRAM Card (1MB VRAM)	.....\$179.

NuBus Adapters & Misc.

*Apple QuickDraw 3D Accelerator Card PCI	.....\$199.
Quadra 660AV NuBus Adapter	.....\$49.
Quadra 610 NuBus Adapter	.....\$49.
*Quadra 610 DOS Compatibility Card	.....\$99.
Apple Color OneScanner	.....\$199.
Apple Color OneScanner 600/27	.....\$349.
UMAX LC840 Scanner NEW	.....\$299.
Epson ES-600C NEW	.....\$349.

Monitors

Apple 14" AV new	.....\$349.
*Apple MultiScan 17"	.....\$499.
**Radius IntelliColor Display/20e NICE!	.....\$1299.
*Hewlett-Packard 17"	.....\$449.
*Hewlett-Packard 20"	.....\$649.

Printers

*Apple StyleWriter 1200	.....\$139.
*Apple LaserWriter 16/600FS	.....\$1199.
*Apple Personal LaserWriter 300	.....\$329.
*Apple Personal LaserWriter NTR	.....\$549.
*LaserWriter IIf w/5MB RAM	.....\$749.
*LaserWriter IIfx w/5MB RAM	.....\$899.

Laser toner cartridges sold separately

Power Supplies

Q610, Q680v, PM 6100	.....\$199
Q700, Q650, PM 7100	.....\$169.
Performa 630, 6200, 6300	.....\$199
PM7200, 7500, 7600	.....\$199
Q800, Q840v, PM 8100	.....\$229
PM 8500	.....\$399
PM 9500	.....\$449
PM 5200	.....\$249
Duo Dock	.....\$199
LC 575	.....\$299.
Classic, Classic II	.....\$129.

MACINTOSH LOGIC BOARD UPGRADES

PowerMac 8100 to 8500/120 (exchange)	.....\$999
Quadra 950 to WGS 9150 (exchange)	.....\$999
PowerMac 7200 to 7500/132 (exchange)	.....\$699
Quadra 800/840 to PM 8500/132 (exchange)	.....\$1299
Performa 630 to 6300/100 (exchange)	.....\$499
Performa 6200 to 6300/100 (exchange)	.....\$249
Quadra 800 to PowerMac 8100/80 (exchange)	.....\$599
Quadra 860 to PowerMac 6100/60 (exchange)	.....\$449
Performa 600/IIfx to Centris 650 (exchange)	.....\$279

PowerCenter Pro 210 LP

• 180 MHz PowerPC 604e • 16MB of RAM, 2GB hard drive • 16X CD • 2MB VRAM • keyboard & mouse • factory refurbished



PowerComputing \$1599

PowerBase 180 LP

• 180 MHz PowerPC 603e • 16MB of RAM, 1.2GB hard drive • 8X CD-ROM • keyboard & mouse • factory refurbished

\$899

Save the Mac Foundation

ORIGINAL APPLE 1.44 FLOPPY

We have original Macintosh floppy drives!



Now \$99

APPLE ADB MOUSE II

The original Apple ADB Mouse II. In stock!



ONLY \$49

NEW 8x INTERNAL

- Matsushita cr-506-B
- Mounting kit optional
- Mac Bootable!



Only \$119!!

PowerPort Mercury

GlobalFax software included. Features data transfer speeds of 19.2Kbps and fax speeds of 14.4Kbps. Fastest standard modem available for the PowerBook 520 series.



BRAND NEW! . . . **\$99**



PM8100 power supply

\$229!!

LC power supply

- Fits LC-LCIII, Q605 LC475



\$39!

MAC ALLY Extended Keyboard

- 105-Key w/Numeric Keypad and F-Keys
- Recessed Power Button
- Compare to Apple Extended Keyboard II



\$29!

A Mac is a terrible thing to waste.

SHREVE Systems
<http://www.shrevesystems.com>

WE STOCK MAC PARTS!
1-800-227-3971
FAX (318) 424.9771 • TECHNICAL SUPPORT (318) 424.9787
CUSTOMER SERVICE (318) 424.9791 • PURCHASING/INFORMATION (318) 424.9791
1200 MARSHALL STREET • SHREVEPORT, LOUISIANA 71101

* indicates refurbished
** indicates factory refurbished
Products are refurbished unless indicated as "new". Prices reflect a 2% cash discount and are subject to change without notice. Returns are subject to a 15% restocking fee. Not responsible for typographical errors. Refurbished systems may include like-new components and may also include cosmetic blemishes which do not functionally impair performance of the hardware.



EMAIL: SALES@MICROOUTLET.COM
Hours:
Mon-Fri 7 AM to 7 PM PST,
Sat 10:00 AM to 2:00 PM PST

4455 TORRANCE BLVD., #789
TORRANCE, CA 90503
PHONE: 310-533-0496
FAX: 310-320-4807



800 801-4622

800 801-4622

800 801-4MAC

DESKTOP MACS

PowerPC 63

- PowerMac G3/288 MT
- 64MB RAM, Zip
- 6GB HD, 24x CD, Mod
- Rasterops SuperScan 21" Monitor
- Keyboard

\$132.00

Per Month,
For 36 Months

Model	Configuration	Buy/Lease
G3/288 MT	32/6/24xCD/12/Zip....	\$2285/878
G3/233 DT	32/4/24xCD/12/Mod....	1489/52
G3/233 MT	32/4/24xCD/12/Mod....	1899/68
G3/266 DT	32/4/24xCD/12/Zip....	1789/62
8600/350	64/4GB/24xCD/12/Zip....	3498/121
9600/300	64/4GB/24xCD/12/Zip....	2988/103
9600/200	0/0GB/CD/Key.....	1450/50
8800/300	32/4GB/24xCD/12/Zip....	2289/78

PowerPC

- 8600/300 MHz
- 32MB RAM / Zip
- 4GB HD, 24 X CD
- Rasterops SuperScan 21" Monitor
- Keyboard

\$145.00

Per Month,
For 36 Months

Model	Configuration	Buy/Lease
4400/200	32/2GB/12xCD/33.8/DO5	\$1289/845
4400/200	16/2GB/CD.....	1250/43
6500/300	64/4GB/CD/Zip/33.8....	2085/73
6500/275	48/6GB/CD/Zip/33.8/Mod	1949/67
6500/275	32/6GB/CD/56/Zip.....	1857/57
6500/225	32/3GB/CD/33.8/Sony 15"	1528/53
6500/225	32/3GB/CD/33.8.....	1199/42
6380/160	16/1/CD.....	789
6400/200	16/1/CD.....	1085

Power Mac

63/233

32/4GB/CD/56K MOD/KB

ViewSonic 17" Monitor

\$73.00

Per Month

Model	Configuration	Buy/Lease
Power Mac	8600/300	
32/4GB/24xCD/ZIP		
		\$99.00
		Per Month

WORKGROUP S

PowerPC

9650/350

64/2X4GB/CD/AS/ENet

\$226.00

Per Month

Model	Configuration	Buy/Lease
WORKGROUP SERVERS		
8650/350	64/2X4GB/CD/Internet....	5849/188
8650/350	64/2X4GB/24xCD.....	5465/180

LEASING

- Fast Approval
- Tax Deductible
- Very Low Yield Rates
- Three Buyout Options
- Business or Personal Leasing
- Ask for the Leasing Department



3 Year Extended

Warranty Available!

POWERBOOKS

PowerPC 63

- 63/250 MHz
- 32MB RAM
- 5 GB HD
- 20X CD
- 33.6 Modem

\$159.00

Per Month, For 36 Months

Model	Configuration	Buy/Lease
63/250	32/5GB/20xCD.....	\$4295/148
3400c/240	16/3GB/12xCD/33.6/EN	3399/118
3400c/200	16/2GB/8xCD/EN/33.8	2799/87
2400c/180	16/1.3GB.....	1895/67
1400c/166	16/2GB/8xCD.....	1789/62
1400cs/166	16/1.3GB/12xCD.....	1550/53

Model	Configuration	Buy/Lease
PowerBook	3400C/240	
16/3GB/12xCD/EN/Mod		
		\$111.00
		Per Month

MONITORS

Model	Configuration	Buy/Lease
Micro Outlet	17" Monitor .26 1280/1024	
		\$369

Model	Configuration	Buy/Lease
Multiscan 15" AV		\$ 389
AppleVision 750		750
Multiscan 750AV 17"		889
Multiscan 850AV 20"		1589
Superscan 17" .22mm		839
Superscan MC21		1189
VisionMaster Pro 21		1195
17" 1024 x 1280		475
Diamond Pro 81txm		1249
Multisync M700		875
Pressview 21SR		3088
Multiscan 200ES		589
Multiscan 200PS		815
MO .26 18" 1024x1280		889
Optiquest V773 17"		449

VIDEO EXPANSION

Model	Configuration	Buy/Lease
ATI		
Xclaim VR 4mb V-card		\$ 229
Xclaim 3D 8mb V-card		285
Twin Turbo 4mb V-card		285
Twin Turbo 8mb V-card		385
Tempest PCI 8MB V-card		395
Thunder TX 1182		895
PrecisionColor 24/1600		398
Thunder 3D/PCI		1480
Thunder 3D/1620		618
Videovision V2.0		2248
Targa 1000 w/Premiere		1589
Targa 2000		2889
Targa 2000 Pro		3350
VRAM		
1MB 7300,8600,9500,9800 Series		\$ 25

PRINTERS

Apple LaserWriter 8500
\$1895

Model	Configuration	Buy/Lease
Color Stylewriter 6500		\$ 489
Color Stylewriter 4500		349
LaserWriter 12/640		1095
MD1000 Micro Dry Mac/PC		889
Stylus Color 800 1440dpi		328
Stylus Color 800 1440dpi		235
Stylus Photo 8 Color/720dpi		349
Elite XL 808 800 DPI		2475
Elite XL 1208 1200 DPI		3989
LaserJet 6MP		879
Color LaserJet 5M		4885

SCANNERS

Model	Configuration	Buy/Lease
Arcus II Bundle		\$ 1329
SnapScan 800		359
SnapScan 310		195
Express. 638 Artist		889
Express. 638 Executive		889
Express. 638 ProPress		1255
5P Mac 600 dpi LE Photo		289
Linocolor Jade II 800 dpi		435
Scanmaker E8		269
Scanmaker III w/Photo		1289
Astra 1200s 800 dpi		235
Astra 1200s w/PhotoShop		428
Powerlook II & Trans		1230

KEYBOARDS / MODEMS

Model	Configuration	Buy/Lease
Keyboards		
Design Keyboard		\$ 69
Extended Keyboard II		99
Extended Keyboard		39
MODEMS		
Netopia (ISDN)		\$ 329
Teleport 56K Fax v.34 X2		159
Teleport 56K Fax v.34 X2		139
PowerPort 56K PC Card		359
PowerPort Plat 28.8 PC Card		219
ExpressModem 33.6		89
ExpressFax Modem 56E V.34		129
Express 56E Speakerphone		139
Sportster 28.8 PC Card		199
Sportster 56K X2		139
33.6 Int. 14.4 Fax PC Card		155

PERIPHERALS

Model	Configuration	Buy/Lease
CACHE CARDS		
268K L2 Dimm 8400/4400 Series		\$ 48
512K L2 Dimm 8400/4400 Series		78
268K L2 Dimm 7200-8500 Series		48
512K L2 Dimm 7200-8500 Series		69
REMOVABLE CARTRIDGES		
Verbatim 200MB		29
SYQUEST EZ 135MB / 230MB		14/22
Zip 100MB/10 Pack		18/114
JAZZ 1GB Cart/5 Pack		83/389
DRAWING TABLETS		
Wacom ArtZ II 8x8 w/Ultra Pen		\$ 278
Wacom ArtZ II 12x12 w/Ultra Pen		380
Wacom ArtZ II 12x18 w/Ultra Pen		645

MEMORY

Model	Configuration	Buy/Lease
16MB 72 Pin Simm		39
32MB 72 Pin Simm		69
32MB 168 Pin Dimm 60ns		85
64MB 168 Pin Dimm 60ns		128
128MB 168 Pin Dimm 60ns		425
32MB 168 Pin Dimm SDRAM 63		68
64MB 168 Pin Dimm SDRAM 63		189
128MB 168 Pin Dimm SDRAM 63		338
16MB 168 Pin Dimm 60NS 3.3V		45
32MB 168 Pin Dimm 60NS 3.3V		69
64MB 168 Pin Dimm 60NS 3.3V		139
16MB Powerbook 63		59
32MB Powerbook 63		89
64MB Powerbook 63		189
128MB Powerbook 63		345
16MB Powerbook 1400 Module		68
32MB Powerbook 1400 Module		89
64MB Powerbook 1400 Module		109
16MB Powerbook 2400c Module		78
32MB Powerbook 2400c Module		145
64MB Powerbook 2400c Module		259
32MB Powerbook 3400c Module		99
64MB Powerbook 3400c Module		189
128MB Powerbook 3400c Module		345

HARD DRIVES

Model	Configuration	Buy/Lease
Quantum Stratus 4.3 GB		\$359.00
ADIVE		
2.1 GB		\$ 219
EXT.		\$ 259
Quantum		
Stratus 2.1 GB		239
Stratus 3.2 GB		252
Fireball 4.3 GB		309
Fireball 6.4 GB		379
Atlas II 4.5 GB N		399
Atlas II 4.5 GB W		389
Atlas II 9.0 GB N		739
Atlas II 9.0 GB W		789
Seagate		
Barracuda 4 2.0 GB		339
Barracuda 4 4.5 GB N		529
Barracuda 4 4.5 GB W		549
ST34501N Cheetah 4.5GB		589
ST34501W Cheetah 4.5GB		609
Barracuda 9.0 GB N		889
Barracuda 9.0 GB W		729
Elite 23.0 GB N		1999
Elite 23.0 GB W		2055

REMOVABLE DRIVES

Model	Configuration	Buy/Lease
Zip w/100MB Cartridge Ext.		\$ 149
Zip 100MB & Cartridge Int.		188
Jaz 1GB Retail & Cart. Int.		275
Jaz 1GB Retail & Cart. Ext.		279
Jaz 1GB Retail & 4 Cart. Ext.		589
Syjet 1.5GB & Cartridge Int.		279
Syjet 1.5GB & Cartridge Ext.		289
Syjet 1.5GB & Cart. House Ext.		289
640 MB Dynamo Int.		389
640 MB Dynamo Ext.		449
230 MB PowerMO Ext.		229
ZIP drive for PowerBook		289
230MB MO PowerBook		399
8Rx4W CDR Rewr. w/Toast Ext389		
8Rx4W CDR Rewr. w/Toast Int359		
Jaz/Panasonic 8x4 CDR Combo 695		

EXPANSION CARDS / CAMERAS

Model	Configuration	Buy/Lease
DOS CARDS		
Pentium 166mhz		\$ 595
Pentium 100mhz		499
PROCESSOR UPGRADE CARD		
Newer Tech. Max Power 604/200 MHz		\$ 199
Newer Tech. Max Power 63 for PM 6100		495
Newer Tech. Max Power 63 for PM 718100		595
Newer Tech. Max Power 63/250		999
Newer Tech. Max Power 63/275		1399
Newer NuPower PBM 500 167 Mhz w/8MB		509
DIGITAL CAMERAS		
AGFA		
Ephoto 307		\$ 289
SONY		
DSC-F1 w/Flash 4mb Color LCD		878

CompuMall

1-800-977-5665
www.computerstogo.com

PowerMacs	PowerBooks
G3/233 32-4GB, CD \$1675	G3/250 32-5GB, 20xCD \$4195
G3/266 32-4GB, CD, Zip \$1935	3400C/240 16-3GB, CD \$2995
G3/266 Tower 32-6GB, Zip \$2385	1400C/166 32-2GB, CD, 33.6K \$2045
9600/350 64-4GB, 24xCD \$2995	1400C/166 16-2GB, 8xCD \$1795
9600/300 32-4GB, CD, Zip \$2595	1400CS/166 16-2GB, 12xCD \$1495
9600/233 64-4GB, 12xCD \$1985	Duo2300C/100 8-750MB \$995
8600/300 32-4GB, CD, Zip \$2195	Duo2400C/180 16-1.3GB \$1895
4400/200DOS 32-2GB, CD \$1295	16/32/64MB Memory \$45/95/175

Prices are based on C.O.D. order & subject to change!

WACOM

Graphic Tablets

ArtiPad II 4x5/ArtZ II 6x8	\$119/259
ArtZ II 6x8 with Painter 5	\$335
ArtZ II 12x12 with Painter 5	\$435

Digital Camera/Scanners

ePhoto 307	\$279
ePhoto 1280	\$795
Arcus II	\$1179
DuoScan	\$2979

Sales: (818)787-1054 Fax: (818)787-2111

e-mail: csales@pacificnet.net

6735 Van Nuys Blvd., Van Nuys, CA 91405



LACIE

Recordable

2x6/4x8 CD-R	\$379/479
2x2x6 CD-R W	\$579
10 Pack CD Media	\$15
100+ CD Media each	\$1.29

SOFTWARE

Photoshop 4.0	\$399
Illustrator 7.0	\$279
PageMaker 6.5	\$325
QuarkXpress 4.0	\$695
Freehand 8	\$289
Painter 5	\$249

MWCM0598

Visit our Web Site

for the latest information & Prices.

TRADE YOUR MAC FOR A NEW ONE. We Pay Top \$\$\$ For Your Mac & Mem.

CALL FOR UPGRADES

Email: cgn@cgnusa.com

BUY • SELL • TRADE

We custom configure and test your system.

PowerMacs

G3 266 Mhz/32/4gb/CD	1950
G3 233 Mhz/32/4gb/CD	1620
9600 350 Mhz	3590
9600 300 Mhz	2890
8600 300 32-4Gb-CD	2390
7300 180 Mhz	1299
8500 132 Mhz	1390

Call For G3 New Sys.

4400 200Mhz	1195
7200 75/90/120	CALL
Call for config. not listed	

Powerbooks

3400C 240 Mhz	3395
3400C 200Mhz	2890
G3 250 Mhz	4299
1400C 166 Mhz	1790
1400cs 166 Mhz	1649

3400 180 Mhz 2150

5300CS 16/500	950
540C 12/500/Mod	899
5300C 16/750	1099
145-170-180e-165c	CALL
5300C 16/500 Activ 1025	

Upgrades

Same day Upgrade No down Time!!	
Prf 63X to 6300 603-75Mhz	470
7200 to 7600	595
8100 to 8500	850
7500 to 604-200/233 275/399	
Call for PowerBook Upgde	
Q800- Q840 to 8500	825
7xxx to G3	Call
7200 to 7500/100	570
Q800-840 to 8100	490
PB 5300 to 3400/CD	Call
Call for Upgrades not listed	

Demo Macs

8500 120/132 1299/1325	
7600	1195
9500	1350
8100/100 16/1GB/CD	890
Q 800/ 840/950	450/550
15" / 17" Monitor	250 / 430
SE 30	150
Mac IIcx	99
6400-180 16/1Gb CD	90
Call for latest prices.	
6320/6400/4400/6500	

Performa

Call for latest prices.

Memory

Dimms 16/32/64	39 /75/139
30 Pin 1/ 4/16	8 / 13/ 55
72 Pin 8/16/32	32 /45 /75
2X - 4X-8x CD	50 /95/109
HD 1.GB - 2.GB-4GB	Call
Imega JAZZ Drive	299
Global Village Modem	169

Call For:

Monitors, Printers, Scanners.
All Apple Parts In Stock and
We do Advance exchange.
Leasing Available.

Parts

Floppy 1.44	75
POWER SUPPLIES	CALL
AV Card	\$175
Power supply Cx Ci 7100	45
Call for Logic Boards & more	

Computer Graphics & Networking

All prices Reflect cash Discount.
Visa, Mastercard, Amex Accepted
Prices are subject to Change.

TEL:310-441-4771 10922 W. Pico Blvd. Los Angeles, CA 90064 Fax: 310-441-4770

Power Macintosh

G3/233DT 32/4GB/CD/Zip	1579
G3/233MT 32/4GB/CD/56K	1849
G3/266DT 32/4GB/CD/Zip	1849
G3/266MT 32/6GB/CD/Zip	2289
G3/266MT 128/4GBUW/CD	3439
4400/200 16/2GB/CD	1199
4400/200 PC/32/2GB/CD	1789
7300/180 16/2GB/CD/KB	1429
7300/200 32/2GB/CD/KB	1599
6500/225 32/3GB/CD/KB	1189
6500/250 32/4GB/CD/56K	1379
6500/275 32/6GB/CD/56K	1639
6500/275 48/6GB/CD/Office	1899
6500/300 32/6GB/CD/ZIP	2079
8600/300 32/4GB/CD/ZIP	2299
9600/300 64/4GB/CD/ZIP	2859
9600/350 64/4GB/CD/ZIP	3439

POWERBOOK

Apple eMate 300	729
1400CS/117 16/750/CD	1749
1400CS/166 16/1.38xCD	1629
1400C/166 16/2GB/8xCD	1849
3400C/180 16/1.1G/12xCD	Call
3400C/200 16/2GB/12xCD	2599
3400C/240 16/3GB/12xCD	3199
Duo 2400C/180 16/1.3G	1869
G3/2500 32/5GB/20XCD	4269

Apple Printers

LsrWrtr 8500	1869
LsrWrtr 12/640 PS	1069
LsrWrtr 16/600 W/Tnr	1579
LsrWrtr 12/660Ps Kit	Call

your #1 Apple
Super Source

MAC TO GO

your #1 Apple
Super Source

Apple Monitors

MS 15"	249
MS 15AV	339
MS 1705/720	529/559
MS 750/750AV	659/749
AppleVision 850	1549
AppleVision 850AV	1679

WorkGroup

WorkGroup Specialist!

6150/66 16/1.2/INTRNT	699
7250/120 16/2GB/INTRNT	999
9650/350 64/8GB/CD/AS	Call
G3/233 64/4GBUW/CD/AS	3199
G3/266 128/8GBUW/CD/AS	4229

Tektronix

Phaser Z300X 22MB,Enet	4799
Phaser Z350X 24MB,Enet	4599
Phaser Z380X 48MB,Enet	9099
Phaser Z450X 64MB,Enet	7549
Phaser Z480X 48MB,Enet	13999
Phaser Z480X 64MB,Enet	14699
Phaser Z560X Ext. Feature	4939
Phaser Z600X 40MB,Enet	9099

SONY

100ES/100GS 15"	325/365
200ES/200GS 17"	579/639
200PS 17"	789
400PS 19"	1069
300SF 20"	1149
20SE2 20"	1499
500PS 21"	1649
GDM-W900T 24"	3559

NEC

A500/E500	265/335
M500	359
A700/E700	565/639
M700/P750	649/743
E1100/P1150	1069/1099

ViewSonic

15GS 15"	285
15GA-2 15"	309
V70 17"	365
V771 17"	439
V773 17"	446
EA771 17"	459
V775 17"	475
17GA 17"	489
P775 17"	539
G1775 17"	565
P1770 17"	589
V98 17"	779
G800 20"	969
Q810 21"	1089
P810 21"	1179
P815 21"	1319

RASTEROPS

MC621 17"	485
MC7515 19"	870
MC801 21"	1199
MC801HR 21"	1399
PressView 21SR 2989	
MultiView 21 1289	
Radius MII Card 1199	
ThndrPwr30/1920 609	

HEWLETT PACKARD

DeskJet 870CXI	299
DeskJet 340CM Portable	349
DeskJet 890CXI	385
DeskJet 1600CM	1599
LaserJet 6MP	839
Color LaserJet 5M	4799
LaserJet 4MV	2299
LaserJet 4000N	1389
LaserJet 4000TN	1549
LaserJet 5SI MX	3349
ScanJet 6100C	689
DesignJet 755CM Plotter	Call

EPSON

Expression 636 Exec	709
Expression 636 Artist	895
Expression 636 Proff.	1249
Stylus Color 600	237
Stylus Color 800/1520	317/719
Stylus Color 3000	1649

IXMicro

Turbo TV	95
4MB PCI	249
8MB PCI	445
Targa 2000	2685
Targa 2000 Pro	2899

AGFA

Arcus II Le	1169
Arcus II Full	1339
StudioStar LE	749
StudioStar LE	889
StudioSn IISI Le	199
StudioSn IISI Full	889
EPhoto Dig Cam	279

UMAX

Astra 600S	179
Astra 1200S Dix	399
Astra 1200S Full	499
PowerLook II Pro	1279
Mirage IISe	3159

Nikon

ScanTouch	569
CoolScan II	859
Super CoolScan	1639

WACOM

LinoColor	Art Pad II 128
LinoColor	ArtZ II 6x8 289
LinoColor	ArtZ II 12 x 12 379
LinoColor	ArtZ II 12 x 18 595

GLOBAL VILLAGE

NEWTON

2100 8MB	729
4MB	148
Keyboard	79

Software

MS Office 98	Call
Photoshop 4.0	299
Illustrator 7.0	269
After Effects Bdl	1229
QuarkExpress	695
Director	479

MICROTEK

V300	145
V310	147
V600	229
ScnMkr E3	143
ScnMkr E3 Plus	143
ScnMkr E6 Std	275
ScnMkr E6 Pro	485
ScnMkr III	1359

I-MEGA

ZIP 100MB Ext.	129
Zip 100 Int.	Call
JAZ 1GB Ext.	379
JAZ 1GB Int.	Call
JAZ 2GB Ext.	569
100MB/1GB	13/79
100MB 10Pack	119
1GB 10Pack	730

NEWER

MaxPwr G3/250	985
MaxPwr G3/266	1879
MaxPwr G3/275	1279
MaxPwr G3/275	1999
NewPwr 183/1400	439
NewPwr 183/500	669
Citation 233	425

Specials!

Viewsonic E771 17" **\$419**

Epson Stylus Color 800 **\$329**

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 **\$1599**

G3/266 Desktop **\$1869**

G3/266 Tower **\$2329**

G3/250 PBook **\$4799**

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**

Digitek

www.macstuff.net

Call Toll Free

1-888-699-8787

School, Government and Corporate P.O.s Welcome

Prices are subject to change without notice.



Bringing buyers and sellers together since 1992

The Easiest Way to Buy & Sell Used Macs & More!

Internet Systems:

● OnLine Exchange™ Individual-to-individual transactions

● BidMaster™ Volume seller-to-reseller transactions

What's It Worth? Download

MacAppraiser 2.x

www.uce.com

800-755-3033

Tel: 770-612-1205 Fax: 770-612-1239

1690-A Enterprise Way Atlanta, Georgia 30067

"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

David Harry Computer Consultants, Inc. January 1998

Macworld[®]
SHOPPER

THE BEST IN REMANUFACTURED Macintosh

COMPUTERS & PARTS

■ GENUINE APPLE PRODUCTS AT BIG SAVINGS

■ "LIKE NEW" REMANUFACTURED

SYSTEMS & PERIPHERALS

■ EXCHANGE REPAIR & STOCKING PARTS

■ 180 DAY LIMITED WARRANTY

■ WE BUY YOUR SURPLUS APPLE PRODUCTS

Pre-Owned Electronics

1-800-274-5343

Offices: 781-776-4600 Fax: 781-778-4848

125 MIDDLESEX TPK, BEDFORD, MA 01730

0180119

CIRCLE 416 ON READER SERVICE CARD

1-800-334-KIWI

Kiwi Computers • Save on refurbished Macs

Mac Computers

630/81 G4x4CD	\$399
6200/75 81 G4x4CD	\$575
6300/100 16/1.2 G4x4CD 28.8	\$699
6360/160 16/1.2 G4x4CD	\$789
6400/200 16/2.4 G4x4CD 28.8	\$999
6500/225 & 250	Call
7200/120 16/1.2 G4x4CD	\$999
7600/132 16/1.2 G4x4CD	\$1199
Motorola 4300/200 604e 16/1.2 G4x4CD	\$999
Powerbook 5300cs 8/750	\$899

Upgrades

Performa 630 to 6300/100mhz	\$439
Performa 630 to 6300/120mhz	\$499
Performa 6200 to 6360/160mhz	\$475
Performa 6300 to 6360/160mhz	\$399
Performa 6400 to 6500/250mhz	Call
PowerMac 7200/120 to 7600	\$499
PowerMac 7200/120 to 7600	\$499
Quadra 650 to PowerMac 7100/80	\$449
Quadra 610 to PowerMac 6100/60	\$425
Quadra 660AV to PMac 6100/60	\$375

Monthly Specials

Apple Design Keyboard	\$25
Apple PlainTalk Microphone	\$10
Apple Manual Inject 1.44 Floppy	\$49
Apple Auto Inject 1.44 Floppy	\$69
Performa 630 logic board	\$149
P630/6200/6300 power supply	\$45
1.2 G4 IDE internal hard drive	\$119
Platinum Internal 28.8 modem for P5200/P6200	\$69
Apple TV/Video system for P630/6200/6300	\$85
Avid video editing system for P6300/6400	\$149

Refurbished products have a 90 day warranty • Returns subject to a 15% restocking fee • Prices subject to change without notice.

Toll Free: 800-334-5494 International: 310-553-4507 Fax: 310-286-9667



MAC & PC MEMORY

LIFETIME REPLACEMENT GUARANTEE ON MEMORY PRODUCTS



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



Hubs & Connectors



Mac & PC to TV



NewerTECH



28.8Kbps 33.6Kbps 56Kbps!



Iomega Zip & Jaz Drives



Zip & Jaz Drives & Disks



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

233MHz 604e... ONLY \$299!

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.

CRESCENDO 604e/G3 ACCELERATOR CARDS

Power Mac 6100/7100/7300/7500/7600/8100/8500/8515/8600/9500/9515/9600 •
Performa 611X • Workgroup Server 6150/7350/8150/8550/9150/9650 •
DayStar • Power Computing • UMAX • Radius



Boost your Power Mac speed up to 266 MHz with Crescendo™ accelerator cards. Just plug in the new card, restart your computer, and prepare to be blown away.

CRESCENDO 233MHz 604e \$299 G3 233MHz/512K OR 266/1M \$Call
Power Mac 7300/7500/7600/8500/8515/8600/9500/9550/9600 • Workgroup Server 7350/8550/9650 • DayStar Genesis • PowerWave • UMAX J700/S900

CRESCENDO 180-200MHz 604e \$399 G3 210-233MHz/512K OR 1M \$Call
Power Mac 6100 • Performa 611X • Workgroup Server 6150

CRESCENDO 200-233MHz 604e \$399 G3 210-233MHz/512K OR 1M \$Call
Power Mac 7100/8100/8115 • Workgroup Server 8150/9150 • Power 100/120 • Radius 81/110



The Crescendo 180-200MHz, 200-233MHz, and 210-233MHz cards automatically adjust to the highest possible processor speed for each Power Mac model.

RUN YOUR '030 MAC UP TO 500% FASTER WITH PRESTO 040!

Mac LC/LC II • Color Classic • Mac IIcx/IIcx/IIxi/IIvi/IIvx •
Performa 250/275/400/405/410/430/600

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, IIxi, IIvi, IIvx, and Performa 600 is only \$199, with FPU \$299. (*49 Adapter required for Mac IIcx and IIxi.) The Presto 040 50/25 MHz for Mac LC, LCII, Color Classic, or Performa 250, 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, IIcx: Mac OS 7 only).



RUN
MAC OS 8

DOUBLE YOUR QUADRA SPEED!

Quadra 610/660Av/700/900 •
Centris 610/650/660Av • Workgroup Server 60

Plug QuadDoubler™ 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 QuadDoubler include an FPU.

RUN YOUR MAC II, MAC LC, LCII, MAC SE, SE 30, OR PERFORMA 400, 405, 410, OR 430 TWICE AS FAST OR MORE WITH ALLEGRO! STARTING AT \$69



SONNET
Simply Fast™

800-786-6260
<http://www.sonnettech.com>

Sonnet Technologies, Inc.
18004 Sky Park Circle, Irvine, CA 92614
Tel: 714-261-2800 Fax: 714-261-2461
E-mail: sales@sonnettech.com

Visa, MasterCard, and American Express no surcharge. Government, corporate, and education P.O.s welcome. All Sonnet products are covered by a one-year limited warranty. Prices are subject to change without notice. Returns require an authorization and are subject to a restocking fee. Sonnet, the Sonnet logo, Allegro, Crescendo, Presto, QuadDoubler and Simply Fast are trademarks of Sonnet Technologies, Inc. *Mac LC compatible through System 7.6.1; Mac IIcx compatible through System 7.5.5. ©1998 Sonnet Technologies, Inc.

www.macworld.com/buyers/hot.deals



Want bargains
online?
Bookmark
Hot Deals at:



Contact Macworld on
how to advertise.
(415) 243-3534

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

MEMORY

"Computer Show" Prices Everyday!

Mohawk Memory Co., Inc.

SIMMS • DIMMS • EDO • ECC •
VRAM • CACHE • PRINTER •
SDRAM • POWERBOOK

Fax: (978) 897-0009

Email: simdim@mohawkmem.com

Webstore: www.mohawkmem.com

16A Waltham St., Maynard MA 01754

Visa MC Discover AMEX PO's O.A.C.

1(800) 986-6429

Good Old-Fashioned New England Service

A&R COMPUTING 1221 West 6th Street, Suite C Austin, TX 78703

memory

1-800-832-8802

CALL FOR CURRENT BEST PRICES

all items are new! **32MB \$73** **64MB \$129** **16MB \$30** **32MB \$60**

TOP quality! **OUR PRICES ARE THE BEST.** **NO MATTER WHAT'S BEEN ADVERTISED IN THIS MAGAZINE!**

prices subject to change

www.anrweb.com

VISA • MasterCard • Discover • NO SURCHARGE FOR CREDIT CARDS

"If we had to place
just one ad,
it would be in
Macworld Shopper.

It just plain works better
for us than the others ...

We know,
we've tried them."

-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: cpcomp@aol.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 .28mm 1280X1024 \$319
- 17" monitor .26mm 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

Hours: M-F 9-8 Sat 9-5 PST

Shadow Technologies

(800) 4-SHADOW
800-474-2369

PowerBook Memory

PB G3 / 3400
16M/32M/48M/64M/128M
\$66/\$114/\$168/\$219/\$420

PB 2400
8/16/32/64M 2K
\$40/68/119/208

PB 2300 DUO
20M/28M/40M
\$109/\$138/\$215

PB 1400
16M/24M/32M/40M/48M
\$67/\$95/\$119/\$162/\$189

PB 520/540(c)
16/32M \$65/\$119

PB 160/165/180(c)
6/8/10M \$129/155/179

PB 100-170 SCall

Cache

61/71/8100 256K/1M
\$9/\$112

72/73/75/76/85/8600
256K/512K/1M
\$38/\$64/\$129

41/6360/54/55/64/65
\$38/\$62/\$169

VIDEO RAM

256K SIMM \$9
512K SIMM \$14
1M DIMM \$2-86 \$19
2M ATI 9500 \$58
2M EDO StarMax \$25
2M SGRAM SMax \$34
4M SGRAM SMax \$52
2M G3 SGRAM \$55
4M G3 SGRAM \$79

CPU UPGRADE

PowerPC Accelerator

SONNET

newer

P/WERLOGIX

Best Prices & Shipping is FREE!!

Lifetime Warranty!

All New!

Low Price \$5 Guarantee

If ANY advertiser offers a lower price on comparable modules (new, late date, code, name brand chips) Shadow will strive to BEAT their best price by 2-5%!

Call us LAST and SAVE!!

Govt., Edu, Corp. PO's Welcome

Call for Volume Discounts

No Surcharge

VISA MasterCard

MEMORY

Lifetime Warranty!

BEST PRICES!

Apple Authorized Value-Added Reseller

168 Pin DIMMs	SIMMs 72 & 30 pin	SDRAM-In Stock!
16/32 mb \$34/64	72 16mb/32mb \$31/60	32/64mb \$60/170
64mb \$123	30 2mb/4mb \$9/12	128mb \$330
64 mb 3.3VEDO \$131	30 8mb/16mb \$35/48	4mb G3 VRAM \$55

PBook 5/53/14/34	Cache/VRAM	Specials
16/32 500 \$64/105	61/7100 256k/1mb \$12/125	Quantum 2.1 gb \$225
16/24/32 1400 \$64/88/94	44/64/65 512k \$45	Quantum 3.2 gb \$260
32/48 5300 \$108/155	72/86 512k \$69	Quantum 4.3 gb \$290
32/64 G3/3400 \$99/170	73/85/86 1mb \$170	Quantum 6.4 gb \$390
128 G3/3400 \$325	1mb VRAM \$20	Mac Ilci 8mb/o \$99

All prices are subject to change. Limited to stock on hand. *0218

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-Discover/MC-AMEX no surcharge

MAC Solutions

(800)873-3RAM

CIRCLE 400 ON READER SERVICE CARD

WE SPECIALIZE IN WHOLESALE WATERLESS COLOR PRINTING

1000 FULL COLOR BUSINESS CARDS FOR \$100 Sug. retail price \$179
1000 FULL COLOR POSTCARDS FOR \$149 Sug. retail price \$249

Printed waterless at 300 line screen from your computer files on Super Premium 10pt. Kromekote with our FREE scratch-resistant aqueous coating.



Retail Catalog Now Available!

- BUSINESS CARDS
- POSTCARDS
- CD INSERTS
- CD TRAY LINERS
- BROCHURES
- BOOKLETS
- NEWSLETTERS
- POSTERS & MORE

JOHN BEJKO THOMAS HOOVER

BURNING GUNN
ENTERTAINMENT

1544 Princeton Avenue
Trenton, NJ 08638
609-392-0406

website: GUNNLACE.com

FEATURING 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

\$1699
SUGGESTED RETAIL \$2,699

GRAPHIC ARTS
AVAILABLE



Copycraft
PRINTERS, INC.

4413 82nd Street • Lubbock, TX 79424 • FAX: 806.794.1305

QUARK
Authorized
Service Bureau

COREL
Factory Authorized
Service Bureau

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!

CIRCLE 428 ON READER SERVICE CARD

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



wholesale
pricing for
resellers

1-888-2-FIX-UPS

DIGITAL DOCUMENTS

"Digital Printing From Your Internet File"

FULL COLOR PRINTING
LARGE FORMAT COLOR

COLOR COPIES
49¢

24 HOUR SERVICE
Please Visit Our Web Site For a List of Services & Prices

www.Digital-Documents.com

1-888-450-SEND (7363)

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.
6. Featured by CNN, NextStep, BBC, C-Net, Forbes.
7. All storage devices: Mac OS, DOS, Win95, WinNT, OS/2, UNIX, Sun, SGI, Novell.

©1997 DRIVESAVERS, INC.

Clip and save this ad. Visit DriveSavers at: www.drivesavers.com

DRIVESAVERS, INC. 400 BEL MARIN KEYS BLVD., NOVATO, CA 94949, INTL: 415-382-2000, FAX: 415-883-0780
CIRCLE 430 ON READER SERVICE CARD

MAC REPAIR & UPGRADE



DT & T
MACINTOSH
SERVICES, INC.

24 HOUR SERVICE TURNAROUND • LONGER WARRANTY
FREE DIAGNOSTIC • COMPETITIVE PRICE

- * Specialize in component repairs:
• Power Mac • Power Book • Logic boards
- * Advance Exchanges

800-622-7977

720 East Evelyn Ave., Sunnyvale, CA 94086 • Tel: 408-720-9899 • Fax: 408-720-9459
<http://www.dttservice.com>

Data Recovery in hours.

- Over 10 years of experience with clients worldwide including Apple, NASA, HP, and FedEx.
- We've recovered more than half-a-million megabytes of Mac Data alone.
- You only pay when there's a recovery.
- Express One-Day Service is available.
- Call 24 hours a day.

415-495-5556 • FAX 415-495-5553 • RESTRICTIONS MAY APPLY
301 Clementine Street • San Francisco, California 94103



LAZARUS
DATA RECOVERY

Working at the speed of business.

800-341-DATA

CIRCLE 431 ON READER SERVICE CARD

Macworld SHOPPER

Repair • Data Recovery • Digital Production • Color Printing Services

"A Macworld never goes by without me checking to compare prices. I always look to see if what I need is there."

—Owner,
Computer Consultants

Source: Perry Communications Macworld Shopper, January 1998

Macworld
SHOPPER

POSTCARDS!

1000
Postcards
\$145

1000
Business Cards
\$60

Ready in 5-7 days!

Full color!
Unique beefy 15pt stock!
Glossy U.V. coating!

PostCard
PRESS
(800) 957-5787

SELL YOUR PRODUCTS!

Full Color
Promo Cards
\$95
500 copies

Create Your Own Full Color Custom
Promo Cards To Market Your Products
& Accessories • Perfect For Trade Shows,
Special Events & More! • Call Now For
More Information & A Free Sample Kit!

Modern Postcard™
1-800-959-8365

©1993 Modern Postcard. All rights reserved.



Free Shipping
Call for details

Digital Output
Overnight
PC or Mac

Send PC/Mac files by FTP or
Priority Air Express to Imagers
and for most output services,
your finished work is in your
hands the very next morning.



XEROX.
DocuColor 40
Single or double-sided
quality color laser printing.
Great for newsletters...
As low as \$.50 per side



SLIDE IMAGING
Overnight is \$4.95.
Economy is \$3.00
in 48+ hours.

Call for a brochure on our services...
4x5(8k)negative,pos.,b&w output...\$35
Fujix photo color prints... \$10.00/\$5.00



IMAGERS
Digital Production Center
INFO & QUOTES on the web
800.672.7029/404.351.5800
1575 Northside Dr. Ste. 490 Atlanta 30318
www.imagers.com

CIRCLE 429 ON READER SERVICE CARD

PROFESSIONAL DATA RECOVERY SERVICES.

Hard Drives, Floppy Drives, Syquest,
EZ-135, ZIP, JAZ, Optical & Bernoulli.

TOTAL RECALL
THE DATA RECOVERY COMPANY™



800-743-0594 VISIT US AT... www.recallusa.com

2462 WAYNOKA ROAD • COLO. SPRINGS, CO 80915 • TEL (719) 388-1818 • FAX (719) 388-7022

CIRCLE 433 ON READER SERVICE CARD

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
©1997 Ontrack Data Recovery, Inc.

CIRCLE 432 ON READER SERVICE CARD

MAC REPAIR

Mac Shop Northwest
WWW.MACSHOP.COM

- Apple™ Certified Technicians
- One-Day Service Turnaround*
- Hard Disk Repair & Data Recovery
- Up to 75% below Dealer Rates
- Component-Level Repairs
- Expert Advice and Prices by Phone
- Power Supplies & Logic Boards*
- Lifetime Repair Warranty*

Tel: 1-503-642-3456

*on many repairs. Visa/MC/AX. Fast overnight shipping available. We use genuine Apple™ parts.

1-800-MAC-SHOP

CIRCLE 435 ON READER SERVICE CARD

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 38th St., NY, NY 10018
212 840 2912 • 212 840 7953 (fax)

CIRCLE 434 ON READER SERVICE CARD

MacTECHS

INTERNATIONAL

Macintosh Repair, Sales
& Upgrades

24 Hour Turnaround

Powerbook Specialists

Component Level Repair

Great Memory & Hard
Drive prices

3337 El Camino Real
Palo Alto, CA 94306
Phone: 650.845.6400
Fax: 650.845.6411
www.mactechsinc.com

1-888-622-3493

WE GET TO THE CORE OF THE PROBLEM



DIRECTORY

ACCOUNTING SOFTWARE

COMPLETE BUSINESS SOLUTIONS

One-stop shop for hardware, software, financing and services for any size business. Our accounting programs range from basic to sophisticated multi-user systems plus Point of Sale, Inventory, Invoicing and Payroll packages. Call for a catalog or e-mail us at info@maxworld.com.

MAX COMPUTERS • (800) 656-6299

1506 25th Street, San Francisco, CA 94107
<http://www.maxworld.com/accounting> • Fax (415) 695-0257

CIRCLE 436 ON READER SERVICE CARD

ACCOUNTING/POS SOFTWARE

DB:\$ RETAILER'S ADVANTAGE™

POINT OF SALE • ACCOUNTING & MORE
Full demo available for fast POS/Inventory Management
Single or Multiple User(s) and Store locations
Includes POS, Order Entry, Receivables, Inventory, PO, Payables

DB:SOLUTIONS, INC.

929 Sir Francis Drake Blvd. C-238 Kentfield, CA 94904
www.posbydbs.com • eMail: sales@posbydbs.com

Toll Free: 888/461.9501 TEL: 415/461.9500 FAX:

415/461.9501

CIRCLE 437 ON READER SERVICE CARD

BUSINESS CARDS

FULL COLOR BUSINESS CARDS

For Resale: Get the full spectrum of colors at 2400 dpi
for only \$89.00 for 1,000.

Price includes: Design, Printing, & Delivery to your door.

Stock weight: 12pt. coated; screen res. stochastic

COLOR VISION BUSINESS CARDS

1-800-475-9332

WWW.COLORV.COM

CIRCLE 438 ON READER SERVICE CARD

CD ROM

CD-ROM Production Services

- All formats: Mac, ISO, Hybrid, Mixed Modes
- Premastering, beta testing, or archiving
- Mass Replication available, any quantity
- Personal, Knowledgeable Service for 10 Years!
- Certified Apple Developer • Low prices/fast delivery

NORTHEASTERN DIGITAL RECORDING

2 Hidden Meadow Ln, Southboro, MA 01772
508-481-9322 Fx:508-624-6437 CDNDR@aol.com

CIRCLE 439 ON READER SERVICE CARD

COMPUTER INSURANCE

INSURES YOUR MAC

The Computerowners™ insurance policy repairs or replaces hardware, media and purchased software. \$49 a year covers up to \$2,000 of equipment against theft, fire, accidents, power surge, natural disasters and more! \$50 deductible. Call for immediate coverage or information. 1-800-800-1492.

SAFEWARE, The Insurance Agency, Inc.

5620 N. High Street, PO Box 656
Columbus, Ohio 43085

CIRCLE 440 ON READER SERVICE CARD

DISK DUPLICATION

CD-ROM MASS-REPLICATION

- Quantities from 500 discs to 10,000,000 +
- ISO 9000-certified manufacturing
- Complete, innovative printing & packaging: cardboard, Tyvek®, & jewel-box packaging options available.

OASIS® DUPLICATION

micah@oasiscd.com • 800/697-5734
Fax 540/675-2500 • Flint Hill, VA 22627

CIRCLE 441 ON READER SERVICE CARD

DRIVE SALES & REPAIRS

FLOPPY DRIVE REPAIR & SALES

Mac 3.5" 400k, 800k, & 1.44 MEG (Repair) ... \$40.00
Advanced Exchange From \$40.00
New & Refurbished Hard Drive & Floppy Drive Sales. Call
Price includes most parts, cleaning & alignment. 1yr
warranty on repair, 2yrs on new drives. Schools + Gov't.
PO's accepted. Expert Data Recovery.

UPTIME COMPUTER SUPPORT SERVICES

<http://www.scvnet.com/~uptime> • 23633 Via Primero
Valencia, CA 91355 • 805-254-3384 • Fax 805-254-1950

CIRCLE 442 ON READER SERVICE CARD

GENEALOGY SOFTWARE

REUNION® 5- New upgrade!

"SPECTACULAR" ★★★★★ MacWorld, 1/98. Sound & video,
Web publishing, drag-and-drop editing. Unlimited individ-
uals, events, facts and sources. Create large wall charts:
Ancestor and Descendant, plus new Relative and Timeline
charts with photos - great for family reunions. To order,
call MacWarehouse 800-255-6227. Visit our Web site:
www.LeisterPro.com

LEISTER PRODUCTIONS, INC.

P.O. Box 289 Mechanicsburg, PA 17055
tel: (717)697-1378 • e-mail: info@LeisterPro.com

LEATHER MOUSE PAD

High Performance Leather Mouse Pad

Pad with soft leather surface on a non-skid natural
rubber base. Mouse sinks deeper into pad for better
contact, easy to keep clean, edge will not fray, looks
and feels great. 9 1/2" X 8". Available in black &
brown. Price 14.95 + 3.50 S&H Visa/MC

S.R. SIKES COMPANY

P.O. Box 26095 Minneapolis, MN 55426
(888) 433-6142 Fax (612) 931-9905

CIRCLE 443 ON READER SERVICE CARD

MULTIMEDIA

Award Winning Multimedia Software

Create Professional Multimedia Presentations Quickly and Easily with
No Programming! Create stand alone digital portfolios for both
Macintosh and Windows with dozens of images, QTVR, sound and
text that fit onto a single diskette right from the comfort of your Mac!!
Retail Value \$199.95 Exclusive Macworld Special 169.95 Try before
you buy! Visit our website at e-magine.com/mcw and download a
free full working demo.

E-MAGINE SOFTWARE INC (800) 603-1474

**See our 4-star Review in December and Macworld
Buying Advice in February (pg. 64)**

CIRCLE 443 ON READER SERVICE CARD

POWERBOOK BATTERIES AND RAM

Your Best Battery and RAM Source

From PB 100 to 3400, Mac Plus to Power Mac 9600, Erudite has
what you need at prices that won't slow you down. We feature
power products from BTI and Absolute, memory and 56k
modems from Viking - all new & fully warranted. Call, e-mail or
shop online for your best price! Visa/MC/Amex/Discover accepted

ERUDITE PRODUCTS CORP.

409 Grand Ave., Englewood, NJ 07631 800-310-8505
Email: sales@EPC-Online.Com, www.epc-online.com

CIRCLE 444 ON READER SERVICE CARD

RELIGION

Bible Study on Disk or CD-Rom

Full Featured. Fast & Friendly Bible study software.
As the leader in Bible study software since 1981
we have continued to listen to our customers
and provide them with the tools they need.

Call for a FREE catalog. <http://www.brs-inc.com/bible>

BIBLE RESEARCH SYSTEMS

2013 Wells Branch Pkwy. #304, Austin, TX 78728
(800) 423-1228 (512) 251-7541

CIRCLE 445 ON READER SERVICE CARD



Think better. Think quick. Think web.
Think fast. Think success.

Apple Worldwide Developer Conference
May 11–15, 1998
San Jose Convention Center
www.apple.com/developer/wwdc

Introducing a NEW Service to Macworld Readers...



www.macworld.com/getinfo

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 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.

It's quick. Convenient. Fast. So next time you're interested in a product, don't get a stamp. Get Info.

Macworld

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 ⌘ to see the third.

But if you’ve been looking for a reason to upgrade to Photoshop 4, here it is: hold down the ⌘ key while choosing About Photoshop. Your reward: the Big Electric Cat. This isn’t just any old cat; ⌘-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 Riches 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, though, that’s not the Eggy award 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, you guys: we love seeing your names and your photos. But keep your personal problems to yourself, OK? **m**

DAVID POGUE (www.pogueman.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, L.L.C. Editorial and business offices: 301 Howard St., 16th Fl., San Francisco, CA 94105, 415/243-0505. Subscription orders and inquiries should be directed to 303/665-8930. Subscription rates are \$27 for 12 issues, \$54 for 24 issues, and \$81 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$18 per year for postage for Canada and Mexico subscribers. Add \$69 per year for postage for all other countries. Periodicals postage paid at San Francisco, California, and at additional mailing offices. Postmaster: Send address changes to Macworld, P.O. Box 54529, Boulder, CO 80328. Printed in the U.S.A.

Here in this issue!

Introducing a New
Service to Readers...



www.macworld.com/getinfo

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

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 Desktop Critic

by David Pogue

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. Into 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 odd-ball 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 well-

continues on page 169

It may not be your father's monitor, but it could be your grandson's.

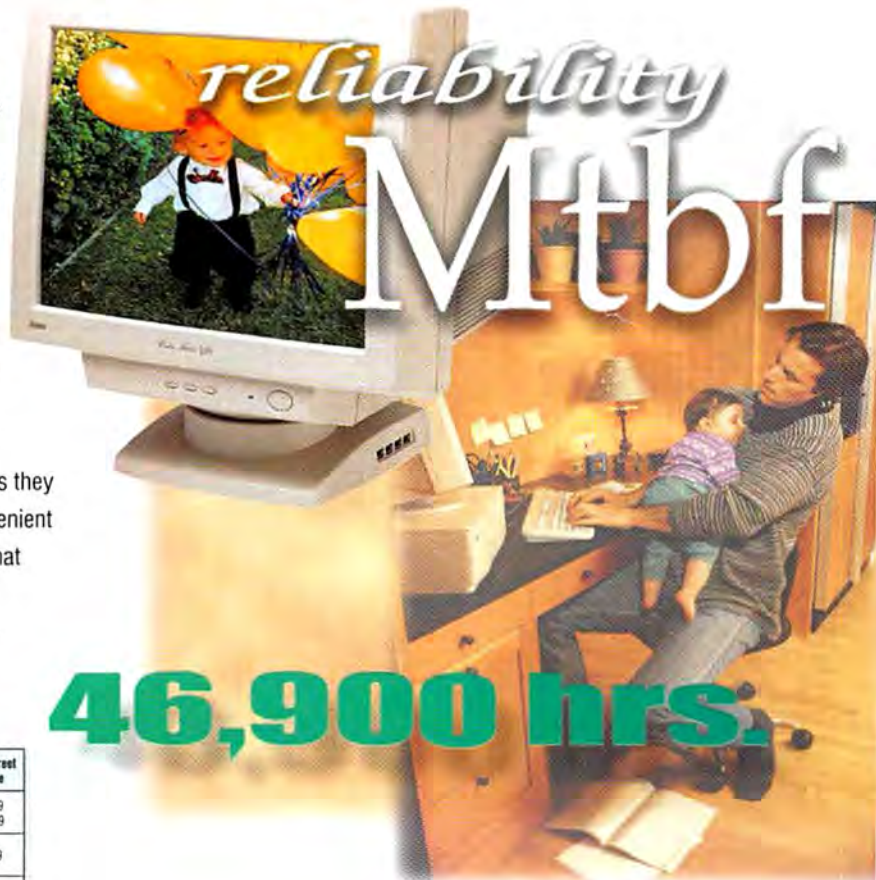
Our engineers take pride in their work. That is why they have designed our monitors with an increased bandwidth. This extra bandwidth means that even while running at their maximum resolution, our monitors are not being pushed to their limit. The result is components that run cooler and therefore last 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.

VisionMaster 450 \$799*



Model/ Viewable Area	Dot Pitch/ CRT Type	Max. Horizontal Scan Rate	Max. Resolution	Est. Street Price
VisionMaster Pro 500 (19.5" VIS)	0.28mm/AG	110kHz	1800 x 1440 @ 74Hz	\$1379
VisionMaster 500 (19.5" VIS)	0.27mm/dp			\$1329
VisionMaster 450 (18.0" VIS)	0.26mm/ High Contrast	102kHz	1600 x 1200 @ 80Hz	\$799
VisionMaster Pro 17 (16.1" VIS)	0.25mm/AG	92kHz	1600 x 1200 @ 74Hz	\$649
VisionMaster 17 (16.1" VIS)	0.28mm/dp	86kHz	1600 x 1200 @ 69Hz	\$589

*Monitor shown with optional USB hub. (\$130 ESP)



iiyama

(800) 594-7480

www.iiyama.com



© 1998 iiyama North America, Inc. All rights reserved. iiyama, the iiyama logo, and the RSVP logo are trademarks of iiyama North America, Inc. All other trademarks are the properties of their respective owners.

**8 hours a day/5 days a week/50 weeks a year. MTEP excludes CRT life, which may vary from model to model. Prices and specifications are valid as of 02/05/98. Estimated Street Price is shown, actual price may vary. Prices do not include shipping, handling and any applicable taxes. Specifications are subject to change without notice. As an Energy Star™ Partner, iiyama has determined that this product meets the Energy Star™ Guidelines for energy efficiency. For more information, please write us at 575 Anton Blvd., Suite 590, Costa Mesa, CA 92626. 800/594-7480, 714/437-5111; Fax 714/437-5982. Home Page: www.iiyama.com



January 6, 1998
VisionMaster Pro 17



Perfect Five-Star Rating
January 1998
VisionMaster 450
VisionMaster Pro 500



Perfect Five-Star Rating
November 1997
VisionMaster Pro 17



Performance & Technical Excellence
March 1997
VisionMaster Pro 21



Six Time Winner
Jan 1997, Feb 1997, March 1997,
April 1997, May 1997, June 1997
VisionMaster Pro 21



October 7, 1997
VisionMaster Pro 17



March 1997
VisionMaster Pro 21



Six Time Winner
July 1996, Jan 1997, March 1997,
July 1997, Sept 1997, Jan 1998
VisionMaster Pro 17

Circle 39 on reader service card



Orbit. Out of this world comfort and control.

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.

PC Connection
1-800-986-2259

MacWAREHOUSE
1-800-255-6227

KENSINGTON
www.kensington.com

The Mac Zone
Your Creating Assistant

MacMail
Creative Solutions

APS
Technologies

1-800-258-2088 1-800-222-2808 1-800-374-5681

Orbit and MouseWorks are trademarks and Kensington is a registered trademark of Kensington Microware Limited. All other trademarks are the property of their respective owners. © 1997 Kensington Microware Limited. 9/97

Circle 12 on reader service card