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AUGUST 1999

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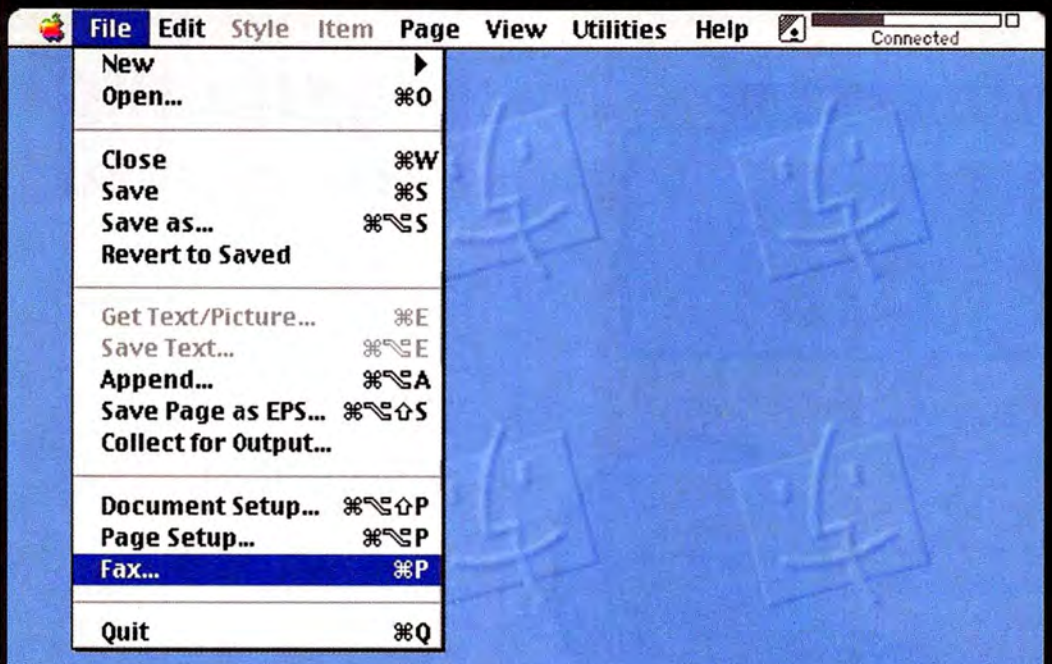

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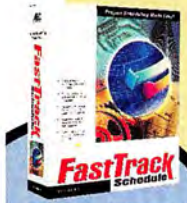

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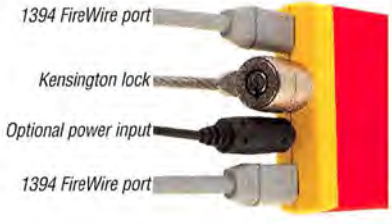

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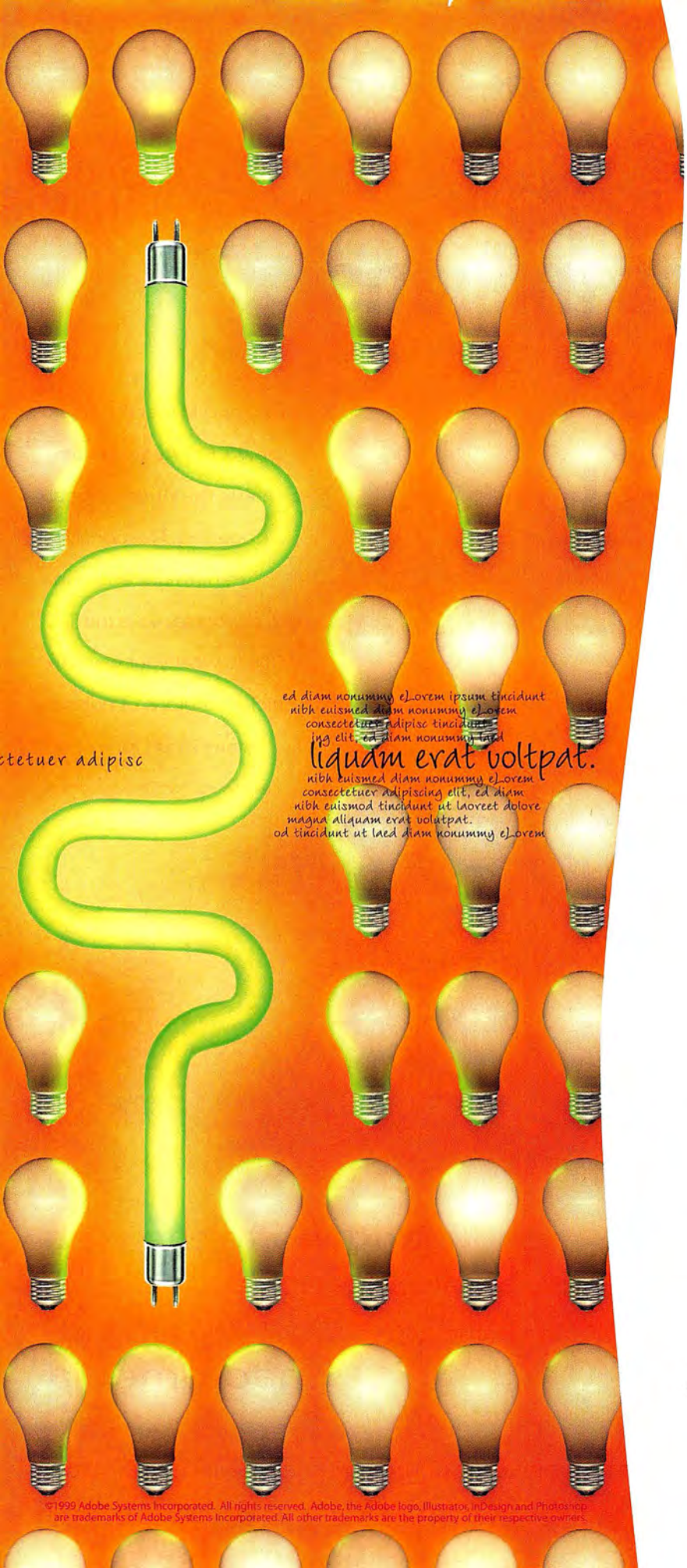

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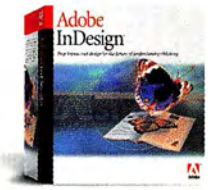

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AUGUST 1999

Letters

Almost Perfect

WHEN DID *MACWORLD* BECOME a mind reader ("Your Perfect Mac," May 1999)? Recently I, an avid Mac enthusiast, was looking to buy a new system. Then you come out with an article describing the ideal system for an enthusiast, and the specs were almost identical to the one I bought. At a total cost of just over $3,000 for the entire system, I think I got a good deal despite not making price my primary reason for selecting a model. The new Power Macintosh G3 is a great deal, no matter which configuration you buy.

RICH ATKINSON
Philadelphia, Pennsylvania

WHY DOES *MACWORLD* CONTINUE to push Microsoft Office? The reviews Office 98 has received since its introduction puzzle me. True, it's better than its immediate predecessor—but that's like saying a rotting pile of garbage smells better than an open septic tank. "Your Perfect Mac" continues this trend, recommending Office for three of five otherwise excellent Macs. There's nary a mention of the competition, not even AppleWorks.

Many features in Office are still too hard to get to or, like the auto-underlining for misspelled words, too hard to get rid of. As a professional Web designer, I really hate cleaning up the lousy HTML created by the Save As HTML feature. The interface is still cluttered, and that stupid dancing Mac is an insult.

Christopher Breen even claims, "Everyone who's anyone in business uses Word and Excel." Well, I like to think I'm someone, and I get most of my business done using a program that beats Word for functionality, ease of use, security, and stability, despite its not having had a major upgrade in four years: WordPerfect. I hope your other readers also have the brains to think for themselves when it comes to choosing productivity software.

DAVE CUTLER

DANIEL DVORKIN
Denver, Colorado

IN "YOUR PERFECT MAC," CHRISTOpher Breen suggests that enthusiasts purchase a Micro Conversions' GameWizard 12MB Voodoo 2 card. From what I've heard, the ATI Rage 128 card included with the Power Macintosh G3/350 is faster than the Voodoo 2. Why would you want to buy a slower card?

DAVID LEGATT
Rice, Minnesota

The Rage 128 will be a tremendous card for gamers as soon as games supporting the OpenGL 3-D hardware acceleration standard are released. Until then, we'll continue to use the Voodoo 2–based Micro Conversions card with Unreal, Quake, and Myth I and II.—Ed.

InDesign Anticipation

I READ DAVID BLATNER'S ARTICLE "Adobe Answers XPress" (May 1999) with glee. I have long told my colleagues and clients that QuarkXPress, the application, is the best page-layout program available, but Quark, the company, is a different story.

Quark's business practices have caused me to yearn for a competitive publishing program to unseat its dominance and the stingy attitude that comes along with it. Upgrades are expensive. Support packages are typically less generous than those of other companies.

Adobe's InDesign sounds like it might give Quark a run for its money. I took delight in *Macworld*'s report that Quark was rushing to offer a sneak preview of QuarkXPress 5—the company must be a little nervous, as it should be. I doubt I'm the only one who hopes Adobe can deliver a page-layout program that plays Iomega to Quark's SyQuest!

DAVID LYNCH
Asheville, North Carolina

MACWORLD'S PREVIEW OF ADOBE'S InDesign did not say anything about the future of that *other* Adobe page-layout program: Adobe FrameMaker. I find this omission strange, though not entirely surprising. FrameMaker isn't mentioned much *anywhere* even though many people use it. Are FrameMaker users expected to upgrade to InDesign, or will there be yet another upgrade of FrameMaker itself? As far as I'm concerned, FrameMaker still leaves QuarkXPress (and PageMaker) in the dust for preparing long, standardized-format documents.

TOM ROGERS
Reston, Virginia

continues

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Adobe FrameMaker will not be phased out, according to Adobe. The company says it will support FrameMaker for the technical publisher, InDesign for the professional publisher, and PageMaker for the business user.—Ed.

Much Ado about Modems

THE ARTICLE ABOUT ALTERNATIVES to traditional dial-up Internet access, "Modems' Last Stand" (May 1999), provided a comprehensive overview of newer, faster connection technology. However, a significant fact about Digital Subscriber Line (DSL) technology bears further comment.

Readers should be aware that there are significant differences between DSL intended for business-class use and versions intended for residential use. Providers that have chosen to focus on the small-to-medium and large enterprise business markets offer DSL access with symmetric, reliable upload and download rates—an important factor for businesses that are heavy users and that handle very large files.

While residential-quality service may offer lower price points in some markets, the bandwidth available frequently depends on the number of subscribers utilizing the service at any given moment. Therefore, business users would be well advised to sign on with a provider focused on dedicated business-class DSL Internet access.

JOSEPH BARTLETT
Marketing Director, HarvardNet
Boston, Massachusetts

I'D LIKE TO POINT OUT A VERY important factor in online performance that Mel Beckman overlooked in "Modems' Last Stand." The only number that usually gets talked about is bandwidth, but latency (the amount of time it takes for a single bit to travel from one end of the connection to the other) is very important as well. Modems typically have a one-way latency of 100ms or more. When you consider that up to half the time you spend waiting for a Web page with moderate graphics to download is actually latency, you realize how important it really is.

Latency has the largest effect on highly interactive applications, such as videoconferencing, Internet telephony, and video games, and on multiple transactions of small amounts of data, such as loading Web pages. As these are widely used services on the Internet, latency is an issue people should be aware of.

Thankfully, all the new technologies mentioned in the article have much better latency than modems, usually 25ms or less. But unless magazines such as *Macworld* report these numbers and discuss their significance, manufacturers won't have the incentive to keep latency low.

SCOTT ATWOOD
Redwood City, California

Essential XTensions

ANDREW SHALAT'S REVIEW OF QuarkXTensions (*Reviews*, May 1999) completely misses the point of XTensions. In a professional studio, time is money. Shalat complains because Markzware Software's Markztools III costs $199. Recently I used that XTension to recover a complex QuarkXPress document that would have taken hours to rebuild. With that first job Markztools III paid for itself.

Many XTensions, including the others Shalat reviewed, are intended to assist the designer by performing a repetitive, time-consuming task. If Shalat's job required him to perform these repetitive tasks, he would be wasting his time (and his employer's money) by not buying these XTensions.

Not all QuarkXTensions are intended for everyone to own. If you can justify the cost, buy the XTension. If not, don't buy it. But don't complain that an XTension costs too much for a task you don't need to perform regularly. Instead, ask an XTension user how it saves time and money.

JAY NELSON
Boulder, Colorado

Easy DV

I READ DAVID POGUE'S REVIEW OF Digital Origin's EditDV 1.5 with great interest (*Reviews*, May 1999), but found the review sadly lacking praise for what I consider an excellent product.

When I first became involved with digital video, I had to choose between Adobe Premiere and EditDV. At the time, Premiere cost $600 without a FireWire card, and the EditDV system cost $700 including software and a PCI DV FireWire capture card. I chose EditDV.

Setup was a snap, and the product worked perfectly with my Canon XL-1

continues

Houdini

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camera right off the bat. I found EditDV 1.5 easy to learn, robust, and an excellent product overall. It does lack many features that the newest version of Premiere offers, such as support for third-party filters. Still, I created my first professional video project in about a week working with a brand-new product. I would highly recommend EditDV 1.5 to anyone who wishes to dive into the world of nonlinear digital-video editing.

BEN LEVI
Boulder, Colorado

The Right to Choose

IF ONE WERE TO IDENTIFY THE flaw that has caused Apple more problems than any other, it would have to be stubbornness. Apple's inflexibility is particularly frustrating when it comes to trying to assemble a computer I want to use rather than a computer Apple wants to sell me.

When I bought my Power Mac G3 last fall, I opted to pick up an inexpensive two-button mouse, which I have found very nice to work with. Just why Apple refuses to let go of the inefficient one-button mouse is beyond me. I wouldn't mind nearly so much if I could buy a new Mac without having to buy two mice, one of which sits in a desk drawer unused.

What's wrong with offering the option to buy another kind of keyboard and mouse, along with letting the user decide how much RAM to install or whether to get a built-in Zip drive?

MATT KUHNS
Ames, Iowa

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CORRECTIONS

Contrary to what we reported, Canon's PowerShot A5 costs $500, Umax's PowerLook 3000 sells for $7,295, and upgrading a Power Macintosh G3/400 to 1GB of RAM costs $3,320 ("Your Perfect Mac," May 1999). m

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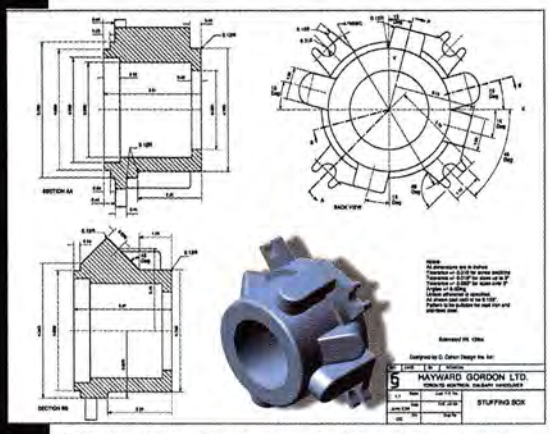

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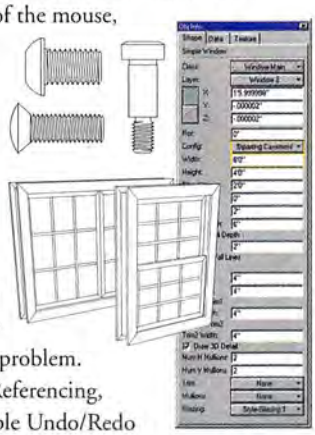

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The Vision Thing

by Andrew Gore

'Face Off

WHEN IT COMES TO THE MAC OS X FINDER, APPLE SHOULD GIVE ITS CUSTOMERS A CHOICE

News Item: When Mac OS X arrives early next year, the venerable and familiar Finder will be replaced with a new file-management interface derived from the Next OS's file browser. (See "The Millennium Mac," elsewhere in this issue.)

When I first sat down to write this column, I fully expected to flame Apple for this decision. The Finder is the result of over 15 years of careful evolution. Cycle after cycle of customer input and resulting refinement have created a user experience that is inextricably linked with the Macintosh.

But just as I began to write a carefully worded critique of the strategy, I asked myself: "What if *I* was faced with the task of improving a user interface that was invented before there was networking?"

'Faced with a Dilemma

I use a Mac not because I feel a sense of loyalty toward Apple or have some powerful religious fervor about the Macintosh. I use a Mac because I believe the Mac OS provides the best way for people to interact with their computers. I started using a Mac back in 1984 because I recognized what a leap forward the Mac interface was, and I continue to use it to this day for the very same reason. And I like to think that if someone other than Apple came along with a better way for me to interact with a computer, that I would stop using a Mac and start using this amazing new computer and its amazing new interface.

A computer is just a tool—incredibly adaptable and powerful, but a tool nonetheless. We must always be open to the possibility that no matter how accustomed we are to a particular tool, there might be a superior tool for performing the same tasks.

So I'm open to the idea that there might be a better way to manipulate files and work with resources on a network than the Finder. In May, Apple CEO Steve Jobs said that better way is a side-scrolling File Viewer that allows users to follow a hierarchical path to whatever files they're looking for. The advantage to this approach is clear: a single window can display all the folders and files at each level, without interceding windows obscuring the user's view. I can see this approach being especially helpful for new users, who constantly misplace files behind windows or lose track of where they are in the hierarchy of their hard drive while using the Finder.

But more sophisticated users, who might want to work with files in different branches of the hierarchy, would need to open multiple windows in order to perform tasks. The clean, straight-line approach of the scrolling viewer would quickly lose its clarity, as users struggled with multiple views displaying directories that might overlap in some places but not in others.

JOHN RITTER

Two 'Faced

While a Next-style viewer would be simpler and offer more flexibility, it could also confuse and complicate aspects of the user experience, compared to what the Finder offers. My solution? Offer both. Just as the Finder today offers several ways to view files—sorted lists, big icons, little icons, single-clickable buttons—the new Finder could offer both viewer windows and old-style Finder windows.

Users could choose either the new interface or the classic one, and might even mix both. A viewer window could be open for viewing files on a remote server, while application icons are displayed in a Finder-like window, allowing users to drag-and-drop between the two. More than offering users choice, the two views could work together in an interface that's more powerful and more flexible than the sum of its parts.

Apple has had a lot of success lately in limiting user choice. Replacing standard serial and ADB with USB proved to be the only way to get USB accepted by the mainstream.

Some would argue that the only way to get users to change is to remove all other options. But I think you're just as likely to alienate users as you are to enlighten them by forcing a new metaphor on them. Others would no doubt observe that mixing metaphors is never a good thing to do, whether you're a writer or an interface designer. To them, I say: "Fine—then give the people both and let the user decide which is better."

I have no doubt that by changing the Finder, Apple is trying to develop a better way for users to interact with their computer. So why not provide both and let Mac users decide over time which view works best for them? m

Questions? Comments? E-mail them to Andy at visionthing@macworld.com.

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News

publishing

Developers Tackle Workflow Issues

QUARK, ADOBE SEEK TO INTEGRATE WEB AND PRINT PRODUCTION

by Stephen Beale

BRYAN WIGGINS

Whatever you call it—workflow management, digital-asset management, media-independent production—it's the final frontier of electronic publishing and a hot topic at industry trade shows: the ability to integrate print and Web production seamlessly into automated workflows.

Two factors are driving the interest in workflow management: growing business opportunities and the emergence of the Web as a new publishing medium. A mere 15 years after Apple and Adobe launched the desktop publishing revolution, software and hardware developers have addressed almost every individual need of graphics professionals. We have great tools for vector illustration, image editing, page layout, and print and Web production. However, the technologies that allow us to use these tools within an integrated production environment are still in their infancy.

Meanwhile, publishers are learning that efficient production systems are crucial if they want to take full advantage of the Web, and this means sharing print and online resources in a logical manner. However, few publishers have truly productive setups: most are still using separate workflows for print and online media, or implement Web production as an afterthought to print.

A handful of developers have addressed these problems by introducing workflow systems built around a flexible media database. All media elements—drawings, photos, page layouts, HTML documents, animations, audio and video clips—are stored in the database; from there users can quickly deploy them in print or online. These systems also incorporate project-management functions, allowing you to track each item's status.

Unique Challenges Unfortunately, workflow management does not lend itself to "one size fits all" products. Each publishing operation is unique, and implementing a productive workflow system is both expensive and time-consuming, often requiring outside assistance. In some cases, these systems must incorporate information from

continues

areas of a company not associated with graphics production. For example, catalog producers might want to link their publishing software with inventory-tracking systems.

Most currently available workflow products target big corporations, which typically have substantial information-management needs along with the resources required to implement customized systems. The developers often function as system integrators, coming into a company and configuring their software to meet that customer's particular needs.

Even then, the systems have limitations. For example, many publishers make last-minute changes directly in a QuarkXPress page layout—but without a lot of custom programming, there's no easy way to make the central database reflect those changes.

Enter the Titans Now that Quark and Adobe Systems are throwing their energies behind the issue, it's more likely that we'll see workable solutions for these print-related bottlenecks.

Of the two, Quark has had the most to say on the subject. Last year, the company announced the Quark Digital Media System (QuarkDMS), which uses an Oracle database to manage text, graphics, and other design elements. Quark plans to release the software within the next several months. By the end of the year, the company plans to offer a product that integrates QuarkDMS with the Quark Publishing System, an editorial management system based on QuarkXPress.

Adobe has offered few details about its own workflow-management system, code-named Stilton. However, the company's new InDesign software, with its flexible plug-in architecture, is ideally suited for integration with custom publishing systems. Several developers of magazine and newspaper systems have already announced plans to incorporate InDesign. Adobe is also continuing work on the GoLive Web Publishing System, which it acquired early this year as part of its GoLive purchase.

The workflow systems from Quark and Adobe won't necessarily be appropriate for smaller businesses. However, given the extensibility of QuarkXPress and InDesign, plus the current plethora of inexpensive media databases, there should be plenty of opportunities for developers to step in with scaled-down applications.

Mac Impact Within large corporations, the move to automated workflows could have ominous implications for the Mac. Even now, Mac-based designers in many companies feel pressure to switch to the Wintel platform. As they implement integrated publishing systems, IT managers might think they have even greater incentive to force a switch.

On the other hand, many of the current workflow-management systems do use platform-agnostic Web browsers as their primary client interface, and the Mac retains its advantage as the preferred computer choice for design and publishing. During a conference session at the recent Seybold Boston show, Kevin Hannon of Sotheby's recalled that he tried to implement a "PC only" policy when he took over the auctioneer's publishing operations, only to reverse his position when he discovered how difficult it was to attract PC-savvy designers.

OpenGL Spurs Mac Games

APPLE'S RECENT DECISION TO embrace the OpenGL 3-D graphics standard is paying dividends in the form of new game titles for the Mac. Several developers have announced that they will offer Mac versions of popular games largely as a result of Apple's support for OpenGL. Forthcoming titles include the most popular PC role-playing game of 1999, Sierra's Half-Life, along with Interplay's Descent 3 and Id Software's Quake II and Quake Arena.

OpenGL is already a standard on the PC, so Apple's support makes it easier for developers to port their games to the Mac. Apple recently released its OpenGL software, available for download at www.apple.com.

In addition to these OpenGL-inspired releases, some vendors are stepping up their Mac development efforts simply in response to Apple's resurgence. For example, Aspyr Media expects to ship Madden NFL 2000, the first major Mac-based team sports game in recent memory, and Humongous Entertainment plans an October release for its new Backyard Football title.

Other new or forthcoming Mac games include Simon & Schuster Interactive's The Fallen, Deer Avenger II, and Sabrina the Teenage Witch II; Gathering of Developers' Fly; Blizzard Entertainment's Diablo II; and Bungie Software's Oni.—PHILIP DYER

systems

Apple Puts PowerBook on a Diet

NEW MODEL OFFERS EXTENDED BATTERY LIFE

by Michael Gowan

Addressing the concerns of many PowerBook users, Apple Computer (800/795-1000, www.apple.com) has introduced a slimmer version of its laptop that offers faster performance and extended battery life.

Apple's new PowerBook weighs just 5.9 pounds with CD drive and battery—almost 2 pounds lighter than earlier models. You can reduce the weight even further by removing the drive and inserting a "weight-saving module"—a small plastic device that ships with the laptop. Just as important to mobile professionals, the portables are 20 percent thinner than previous models, with a depth of 1.7 inches. Because of the slimmer design, the new PowerBook's expansion bay won't accept batteries or storage devices that work with earlier G3 PowerBooks.

Brawny Chips While cutting bulk, Apple added more brawn in the form of faster PowerPC G3 chips. The 400MHz PowerBook ($3,499) ships with a 6GB hard drive, a

BRYAN WIGGINS

DVD-ROM drive, and a 1MB L2 cache. The 333MHz PowerBook ($2,499) includes a 4GB hard drive, a 24× CD-ROM drive, and a 512K L2 cache. Both include a 14.1-inch screen, 64MB of RAM, dual USB ports, an internal 56-Kbps modem, and a 10/100BaseT Ethernet connection. You can opt for larger storage—up to 10GB—and a maximum of 384MB of RAM. You can also order the 333MHz PowerBook with a DVD-ROM drive, but if you buy one without the DVD-ROM installed, you cannot upgrade to DVD-ROM later. However, Apple says it is possible that other companies might eventually offer a DVD-ROM upgrade kit that works with the 333MHz model.

Apple says that a single battery in the new PowerBook can last up to 5 hours, compared with 3.5 hours in the previous models. Apple credits the extended battery life to the lower power consumption in the new G3 chips, as well as improved power-management features in Mac OS 8.6, which ships with the new laptop.

The new PowerBooks also feature built-in dual-display capability without the need for an extra adapter. You can connect to an external monitor or multimedia projector without losing the image on the laptop's LCD screen. When the PowerBook is using dual displays, the external monitor shows millions of colors, while the laptop itself is limited to thousands of colors. (In single-display mode, the laptop shows millions of colors.)

VST Technologies (978/263-9700, www.vsttech.com) is offering Zip and SuperDisk drives that work with the slimmer media bay. If you want to use FireWire peripherals such as digital camcorders or hard drives, you can add the $249 FireWire 2 Go Cardbus card, from Newer Technology (316/943-0222, www.newertech.com). Available in June, the card transfers data at a speed of 100 Mbps, 200 Mbps, or 400 Mbps, depending on the maximum speed of the connected peripheral. The card works only with self-powered FireWire devices.

online

Macromedia Bets the Store on Flash 4

ANIMATION TOOL GETS E-COMMERCE FEATURES

by Stephen Beale

Flash animations could be coming to a store near you—an online store, that is. Macromedia (800/326-2128, www.macromedia.com) has announced Flash 4, an upgrade of its vector-animation software with new electronic-commerce capabilities.

The Flash format lets you create compact Web-based vector animations that download much more quickly than the equivalent bitmapped animations. You can produce Flash animations using Macromedia's Flash software or other applications that support the format. Apple's QuickTime 4 software supports Flash, making it possible to include Flash animations in QuickTime movies (see "QuickTime 4 Moves Upstream," *News*, July 1999).

Text Entry The new e-commerce capabilities are made possible by a feature that lets you set up data-entry fields within Flash animations. You can thus create eye-catching, animated forms that bear little resemblance to conventional data-entry screens. You can set up password fields, restrict text length, and define borders and background for the fields. Entered data can pass on to a CGI script for integration with database or other server software.

Flash 4 also adds support for audio compression using the increasingly popular MP3 format, allowing you to set up Flash movies in which pressing a button or launching an animation triggers an MP3 audio stream. A new Actions feature makes it easier to create customized interfaces, menus, and buttons for Web sites. A Publish command places updated Flash animations on the Web in a single step.

In addition to these new Web publishing features, Flash 4 includes numerous interface enhancements, some borrowed from Macromedia FreeHand. These additions include FreeHand-style inspector palettes that provide control over objects, transformations, frames, and scenes. An edit-in-place

continues

Product WATCH

Amateur Auteurs You don't need a high-end digital-video system to make movies. XLR8's (316/636-5544, www.xlr8.com) $99 **InterView** captures video from a camcorder, VCR, or digital camera and sends it to a Power Mac through the USB port.

Disappearing Act Micro Conversions, developer of the **Game Wizard** game accelerator, has closed its doors after 14 years as a Mac hardware vendor. A new company called iWonder (817/633-4011, www.iwonderinc.com), headed by Micro Conversions founder Greg Smith, will continue offering the Game Wizard as well as future iMac products. iWonder will also handle technical support for Micro Conversions hardware.

Software Shuffle Some popular apps have found new homes. Digital-video–system producer Media 100 (508/460-1600, www.media100.com) bought Terran Interactive, developer of **Media Cleaner Pro**. Terran will still focus on software for video encoding and streaming. Smith Micro Software (800/964-7674, www.smithmicro.com) acquired STF Technologies and plans to keep producing the latter's **Faxstf** fax software for the Mac. Smith Micro also plans to develop a Mac client for **conexs.com**, a Web site that lets you place Internet phone calls, have real-time chats, and participate in videoconferences. No release date was announced.

continues

Product WATCH

Y2K Fix The Mac isn't entirely free of Y2K problems. Intuit (800/446-8848, www.intuit.com) has released a free update of **QuickBooks** and **QuickBooks Pro** that brings both versions into compliance with the company's Year 2000 Compliant Standard. Intuit also announced that it will no longer support payroll functionality in QuickBooks for Mac and that it is discontinuing the Tax Table Service for Mac. Instead, users will receive a subscription to Aatrix's Mac-based tax-table service.

Lasers to Go Xerox (800/275-9376, www.xerox.com) introduced its first Mac-compatible personal laser printer, the $700, 1200-dpi, USB-equipped **DocuPrint P1202**. LocalTalk and Ethernet connections are options. HP (800/752-0900, www.hp.com) unveiled the **LaserJet 4050** series, a family of 17-ppm printers ranging from $1,100 to $1,600. Each printer includes a built-in 10/100BaseTX Ethernet print server. NEC Technologies (800/632-4636, www.nectech.com) announced the **SuperScript 1800**, a 1,200-dpi laser printer that sells for $1,198, including an Ethernet card required for Mac connectivity.

Office Synergy Make the most of your business tools. Microsoft (800/426-9400, www.microsoft.com) has released a free **Office 98 plug-in** that imports FileMaker Pro databases into Word or Excel. Download it from www.microsoft.com/mac/.

—EDITED BY MICHAEL GOWAN

feature lets you modify objects in relation to other artwork on screen. The revamped Timeline makes it easier to create keyframes and tweening effects.

Broad Support Macromedia has made a big effort to build support for its Flash technology, and versions of Flash Player—needed to view Flash animations—are bundled with the Mac OS, Microsoft Windows and Internet Explorer, and Netscape Navigator. As part of its campaign to promote the Flash format, Macromedia has announced that it will make Flash Player available as free source code, permitting developers to incorporate it into their applications more easily. The company cites survey research indicating that about 77 percent of Web browsers have the ability to view Flash content. You'll need an upgraded version of the Flash Player to view Flash 4 animations, but it is a small download—less than 400K.

Flash 4 is scheduled to ship by the time you read this for an estimated price of $299 ($269 if downloaded from Macromedia's Web site). Current users can upgrade for $129 if they have the boxed version or $99 if they have a downloaded version.

Shockwave.com Along with the new software, Macromedia has announced a Web site, Shockwave.com, devoted to showcasing Flash and Shockwave content. Building on Macromedia's previous Shockrave Web site, Shockwave.com will feature cartoons, music, and games, including content from Comedy Central, Fox Interactive, and Marvel.com.

When you download the Shockwave Flash Player, you'll receive Shockwave Remote—complete with rewind and fast-forward controls—which you can use to access Shockwave or Flash movies on the new Web site or the sites of other companies. By paying a $20 upgrade fee, you can turn Shockwave Remote into Shockmachine, an enhanced controller that lets you scale content up to full-screen size as well as store an unlimited number of Shockwave movies or links in virtual carousels.

Shockwave.com will be run by a new Macromedia business unit of the same name. Heading the division is Stephen Fields, who was previously general manager of Disney Software.

printing

Multifunction Peripherals Arrive for Mac

CANON ANNOUNCES FIRST MAC-BASED MFP

by Macworld Staff

Multifunction peripherals (MFPs), a growing presence in the PC market, are about to arrive for the Mac. Canon (800/652-2666, www.ccsi.canon.com), the second-leading vendor of MFPs, after Hewlett-Packard, has announced the MultiPass C635, the first Mac-based MFP. Others are likely to follow.

MFPs combine a scanner and printer in a single low-cost unit that also works as a digital copier and plain-paper fax machine. The MultiPass C635, with an estimated street price of $379, features a 720-by-360-dpi color inkjet printer based on Canon's BJC-4400, as well as a 24-bit color sheetfed scanner that offers 300-dpi optical resolution (600 dpi with software enhancement).

Developed specifically for the Mac, the MultiPass C635 features a USB interface and is bundled with Adobe PhotoDeluxe 2.0, for image editing, and ScanSoft's TextBridge Professional, for text recognition. You can use it as a stand-alone fax machine or copier when it's not connected to a computer. The copier can produce one black-and-white page in 45 seconds and additional copies at up to three pages per minute. It produces color copies at up to three minutes per page.

SOHO Revival MFPs typically target SOHO users who want a cost-effective means of scanning and printing but don't need the higher quality that stand-alone imaging devices generally offer. Apple's recent resurgence has boosted the Mac's profile among these users, making Macintosh-based MFPs a more viable business proposition. Canon says Apple has been encouraging manufacturers to offer MFPs for the Mac, so it's probable that other companies will follow suit. One likely player is HP, which has closely allied itself with Apple and currently has the largest share of the MFP market.

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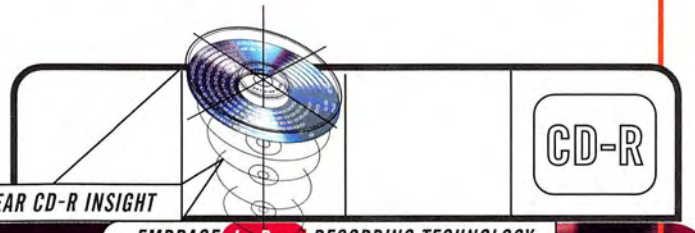

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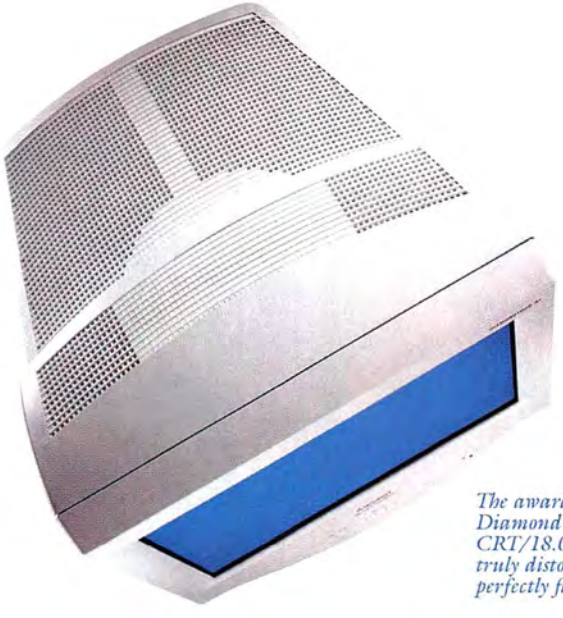

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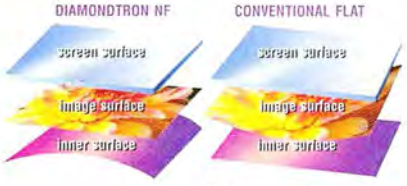

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Reviews

Acrobat 4.0

A RAFT OF SMALL ENHANCEMENTS ADDS UP TO A DECENT UPGRADE

JENNIFER JESSEE

AFTER SLOGGING AWAY FOR several years, Adobe Acrobat is now the undisputed standard for electronic document production, whether on the Web, via CD-ROM, or in print publishing. Version 4.0's new interface masks a variety of small and moderate improvements. Few of the changes will make you say "Wow!" but some will make your life a little easier.

A Few Big Changes

The biggest change is under the skin: Acrobat 4.0 uses a new version of the Portable Document Format (PDF) that's based on the PostScript 3 language. This will have little effect on most users, but it should be a boon in prepress operations as PostScript 3 output devices come to be used more widely. PostScript 3 makes color output more predictable, speeds printing of some graphics formats, and offers better handling of gradients than previous versions.

The most visible effect of the new PostScript 3 engine is the new Prepress Options dialog box, which lets you implement color trapping when producing film. You can also preserve the original CMYK values in a PDF file, bypassing any modifications made by color-management software installed in your system.

Experienced users will also see a revised interface that alters most menus and keyboard shortcuts, part of Adobe's long-standing effort to impose a similar look-and-feel in each of its programs. Expect to lose time getting used to the new design, although you'll adapt quickly if you frequently use other Adobe software. To this reviewer, the new interface reflects an Adobe conceit more than a user need. It makes sense for Adobe Photoshop and Illustrator to have similar interfaces, but this is less true of products such as PageMaker, Acrobat, and the forthcoming InDesign; the conventions that make sense in graphics programs don't always work well in these latter packages.

Fortunately, Acrobat's revised interface doesn't usually get in the way. Our biggest problem was figuring out how to create thumbnail previews of images, which in Acrobat 3 was an option in the main menu. In version 4.0, you access the feature through an easily overlooked palette menu in the Thumbnails pane or by control-clicking on the same pane. Control-clicking is an action few Mac users have adopted, unlike right-click–savvy Windows users.

Some features have been renamed but are otherwise the same: Notes are now *Annotations*, and the Scan OCR function,

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: ♦

for converting scanned documents to editable text files, is now *Paper Capture*. Acrobat Exchange, the core application in the package, is now simply Acrobat. The other key applications are Acrobat Distiller, for converting PostScript files to PDF, and Acrobat Reader, for viewing PDF files.

Added Touches

Beyond these changes, Acrobat 4.0 feels like a minor upgrade. Sure, there are many nice touches, but you won't find any "Wow, I've gotta have it" additions. However, several moderate enhancements stand out.

One of the most powerful features of Acrobat technology is its ability to simulate the appearance of fonts that are not installed in your system. If the PDF document includes Gill Sans but that font is not on your Mac, Acrobat can still display a reasonably good approximation. The new Use Local Fonts command lets you choose whether Acrobat 4.0 displays a document with the fonts installed in your system or with the simulations that others will see. In previous versions of Acrobat, you had to open the PDF file on a system without the original fonts to see how the simulations would look.

Acrobat Distiller 4.0 also makes it easier to create PDF files for specific purposes by adding canned settings optimized for screen display, printer output, and prepress output. You simply pick the setting from a pop-up menu, and the program generates a PDF file with the appropriate options. You can also create your own settings and associate them with a folder so any documents dropped in automatically convert to PDF files. That's handy.

When editing text, you can now change the font and type size, although you're still limited to working on one line of text at a time. You can also edit embedded bitmap and EPS files by double-clicking on them; Acrobat launches an appropriate program such as Photoshop or Illustrator if you have it on your Mac.

Also handy is the new Filter Manager, which finds all annotations and editing marks from one or more selected users. It's a great tool if you have many people annotating your PDF files. The new version also lets you print annotations through an option in the Print dialog box, a function we've long wished for.

If you want to place your PDF files on the Web, Acrobat 4.0 lets you set a base URL, a useful feature if most of your links from a document are to a single site. For example, if you use www.macworld.com as your base URL, then you can enter **/1999/08/reviews/** for a link to August 1999 reviews, rather than the whole URL, **www.macworld.com/1999/08/reviews/**.

If you create a lot of forms, a new forms grid helps you align the various fields to make data entry easier. The new Go Back Doc and Go Forward Doc commands are nice touches, letting you move among documents in the same way you move from page to page.

A Few Flaws

Despite the improvements, there are some flaws. For example, the ability to renumber pages would seem handy when you're merging several PDF documents. Unfortunately, these page numbers display only within the Thumbnails view, not on the actual pages, so they're not very useful for the recipient.

You can also use non-Arabic numerals—such as i, ii, and iii—to number pages in the table of contents or in other front or back material. However, you cannot print pages numbered in this manner unless you print the entire document. For example, if the document begins with page i, followed by page 1, you cannot print just the first page. If you use the Print dialog box to print page 1, Acrobat prints the page numbered 1, not the first page of the document. This is a serious oversight.

Acrobat's Fit Text To Selection option, a good idea introduced in Acrobat 3.0, still works awkwardly. This feature squeezes or stretches revised text to fill the space the original text occupied. But you must select this option before entering text—there's no way to use it once you've started typing, even if you're replacing an entire line.

The Windows Advantage

The biggest flaw in Acrobat 4.0 is what's lacking: the Windows version includes several useful features that aren't currently available for the Mac, including the ability to import Web pages, add secure digital signatures, and extract formatted text and tables. Adobe says it will eventually offer these features to Mac users as free plug-ins, most likely beginning with the Web-capture utility. The same thing happened with Acrobat 3.0, and it took a year in some cases for Mac users to get feature parity. The Mac is still the preferred environment for creative work, so it should be the preeminent platform for Acrobat.

Fortunately, if you use the PC-only digital-signature feature—the only one that affects PDF files internally—you won't lose the signature if you later modify the PDF file with the Mac version of Acrobat. You'll even get a note added to the Signatures pane that an unidentified person (the Mac user) has modified the file.

It's the Little Things Acrobat 4 has a revised interface featuring page thumbnails, but its core features remain the same.

Macworld's Buying Advice

Acrobat is priced to sell: $249 for a new copy and $99 for an upgrade. That will make it easy for most users to consider an upgrade, even given the moderate enhancements. If you're a Web, CD-ROM, or print publisher using Acrobat files, there's no compelling reason not to upgrade. But if you're happy with Acrobat 3.0, there's little reason to jump quickly to version 4.0, at least not until the Mac version adds what Windows users are getting. Take your time, since the gratification in making the switch is not tremendous.—GALEN GRUMAN

RATING: ♦♦♦½ **PROS:** Some enhanced features, including the ability to simulate fonts and filter annotations by type or creator. **CONS:** Windows version offers key capabilities not on the Mac; numbering feature prevents printing. **COMPANY:** Adobe Systems (408/536-6000, www.adobe.com). **LIST PRICE:** $249.

Final Cut Pro

VIDEO-PRODUCTION PROGRAM IS VERSATILE, ELEGANT

THE SAGA OF APPLE'S FINAL CUT Pro reads like that of a Hollywood epic: Years in the making. An all-star cast. Bounced from one studio to another. Finally released to rave reviews . . . more or less. Final Cut Pro 1.0 is a video-production titan that combines the video-capture and -editing features of Adobe Premiere and Digital Origin's EditDV with many of Adobe After Effects' animation and compositing tools, all within a beautiful, efficient interface. But one price of Final Cut Pro's versatility is its stiff hardware requirements. Moreover, Final Cut Pro's new-kid-on-the-block status means that it lacks the broad hardware support the competition offers. And despite its sophistication, the program handles some tasks awkwardly.

Effective Editing Final Cut Pro's well-designed interface combines video editing with motion-graphics effects.

The Big Picture

Apple's hardware specs call for a 266MHz or faster Power Mac G3 with at least 128MB of RAM. (Apple doesn't warrant that Final Cut Pro will run on Macs containing G3 upgrade cards.) I used a shiny new 400MHz G3 for my testing, but just for laughs, I also installed Final Cut Pro on a gray-haired Power Mac 7600/132 with 160MB of RAM. To my pleasant surprise, Final Cut Pro ran—or at least walked. The 7600 was often too slow to capture and play video without dropping frames, and cobwebs occasionally formed when I moved or resized windows, but I was able to perform basic editing and compositing.

Final Cut Pro makes a great first impression. It sports an elegant 3-D look, and windows snap to each other as you move them; when you drag and resize them, Final Cut Pro redraws their contents on the fly.

Many of Final Cut Pro's windows will feel familiar to video veterans. A Bin window holds media that you import or capture, while a Timeline window displays the sequence of edits and transitions. For complex productions, a Browser window helps you manage media and a Find command lets you search on numerous criteria. And a Final Cut Pro project can contain multiple timelines—something you won't find in Premiere.

Final Cut Pro's Canvas window displays edited material and lets you set in- and out-points. It also lets you edit clips: Drag a clip to the Canvas window, and Final Cut Pro superimposes a set of editing options on the window. Point to the desired option and release the mouse button, and the program makes the edit. This approach is slick and easy to learn.

Manipulating Media

Final Cut Pro can import QuickTime movies as well as all QuickTime-supported image and audio formats. You can also import Photoshop images that retain their layers. Unlike Premiere and After Effects, however, Final Cut Pro can't import Adobe Illustrator or EPS files—a potentially serious drawback if your work involves animating vector-based art.

Final Cut's video-capture features work particularly well with FireWire-based DV devices. You can control such a device directly from Final Cut's Log and Capture window, setting in- and out-points for various scenes and then batch-capturing the scenes. Alas, at this writing, Final Cut supports a relatively small number of DV camcorders and decks. As for non-DV capture hardware, Apple has currently certified only Pinnacle Systems' Targa 1000– and 2000–series cards. Visit Final Cut Pro's Web site (www.apple.com/finalcutpro) to verify compatibility with your gear.

Packing a full arsenal of video transitions and filters, Final Cut Pro is unique in supporting QuickTime 4's built-in filters. Its audio filters are ideal for sweetening and equalizing soundtracks, but it lacks equivalents to Premiere 5's terrific reverb and multitap delay. Nor can Final Cut use Premiere-format audio-filter plug-ins; indeed, it can't use *any* Premiere- or Photoshop-format plug-ins. And the program's titling features are surprisingly weak, lacking a Premiere-style WYSIWYG titling window; you can't even mix fonts and type sizes within a title or use Type 1 PostScript fonts.

Going After After Effects

Where Final Cut Pro pulls away from the pack is in compositing and motion graphics. Click on an option in Final Cut's Canvas window, and you can animate and layer clips and still images much as in After Effects. You won't find all of After Effects' keyframe controls, but Final Cut Pro comes close enough for many jobs. The program also offers basic keying features. And advanced users will love FXBuilder, a built-in scripting language that lets you create custom filters.

When you're rendering effects, you can choose from a variety of resolution settings and apply motion blur for added realism. Final Cut Pro's rendering performance seems a bit slow at times, and no third-party rendering-acceleration cards are available yet.

Macworld's Buying Advice

If you're already using Premiere and After Effects, there's little reason to switch to Final Cut Pro. But Final Cut's extensive capabilities and refined interface make it a first-rate foundation for a professional video-editing system—particularly if you're putting together a new system and can choose your hardware based on what Final Cut Pro supports. Version 1.0 is a stunning effort, and we expect even better things from the sequels.—JIM HEID

RATING: ★★★★ **PROS:** Elegant interface; broad capabilities. **CONS:** Stiff hardware requirements; limited third-party hardware support; poor titling features. **COMPANY:** Apple Computer (800/795-1000, www.apple.com). **LIST PRICE:** $999.

Amorphium

3-D SCULPTING SOFTWARE TRADES FUNCTION FOR FUN

AMORPHIUM'S PACKAGING tells you everything you need to know about the software. The blurb describes it as "Real Time 3D Sculpting and Painting," and sure enough, you can poke and prod fully rendered 3-D forms, paint on their surfaces, and view the changes instantaneously. The artwork on the box appears molded out of plastic, and rounded, rubbery figures are precisely the kind of images at which Amorphium excels. Even the name of the vendor, Play, is appropriate. The same company sells the high-end ElectricImage Animation System, but *Play* fits Amorphium like a latex glove. You'll have a ball experimenting with the program, but its emphasis on brush controls in lieu of construction tools makes creating predictable artwork difficult.

Extra Dimensional To combine multiple objects in Amorphium, you visit the Composer window, which lets you position wire-frame objects and render them as an image or movie.

Push, Pull, and Smear

Amorphium provides several ways to create 3-D forms. For starters, the program invites you to mold a shape as if it were a lump of putty. After loading a primitive—such as a sphere, a cylinder, or a doughnut—you can use different brush tips to bore holes, draw spikes, and carve grooves. The object reacts immediately, but it's often hard to gauge the effects of your edits because you're brushing directly into the shape. A long protrusion can look like a small pimple when viewed straight on. And if you bore too deeply, Amorphium will create a spike on the opposite side.

The problem is magnified by Amorphium's single-level undo. If you make a series of bad edits, you can cancel only the last one. As a result, it's a good idea to rotate the shape frequently so you can judge your edits from multiple angles. The program offers an optional second view—for observing edits from the side, for example—but it's awfully small.

To make painting easier, Amorphium offers a set of sophisticated symmetry controls, which are useful for shaping faces and other regular images. You can also choose from an assortment of distortion effects that stretch, twirl, and reshape the object. To apply an effect, you drag on a command name as if it were an invisible slider bar. The process is intuitive, but old-fashioned numerical fields that remember your last settings would be more useful.

You can also reshape objects by applying a height map—a gray-scale image that molds the object inward and outward according to shadows and highlights.

The best creation tool, though, is biospheres, magnetic balls that fuse into one another. These are great for shaping fingers, arms, necks, and other appendages. It would be nice if you could use biocones, biocubes, and other connecting shapes, but Amorphium generously lets you adjust the roundness of each ball to avoid the knuckle-like ribbing that would otherwise appear.

Paint and Morph

If you've ever used a 3-D rendering program, you know how difficult it is to assign multiple colors to a model. Amorphium makes it easy. At any time in the sculpting phase, you can switch to the Paint&Optics mode and paint colors directly onto the object. You see exactly where the colors go and how they reflect and refract light.

The program also offers straightforward morphing and animation controls. Creating a 3-D movie is as simple as modifying an object, repositioning it in the Composer view, and clicking on a keyframe icon. Amorphium automatically generates the intermediate shapes between the keyframes to create the effect of continuous motion. You can then render your composition as an animated GIF file or QuickTime movie.

Although you can modify paint, shape, and distortion attributes from one keyframe to the next, you can animate just one object per movie. Sadly, this single-object constraint holds true throughout the program. When editing an object, you see that single shape and no other. To view how multiple objects interact, you have to switch to the Composer view, which lets you adjust the placement of objects in a wire-frame mode and then preview the rendered shapes in a separate step (see "Extra Dimensional"). If you don't like what you see, it's back to the wire-frame mode or single-object view for additional editing.

Amorphium takes over your screen and hides all other applications, including the Finder. A button lets you switch to the Finder and hide the Amorphium window, but there's no way to switch directly to some other application. If this sounds reminiscent of Kai's Power Tools, that's because Amorphium owes much of its implementation to various MetaCreations programs. Play even goes so far as to tout its own ready-made guru, the slinky Kiki.

Macworld's Buying Advice

If you liked Kai's Power Tools, you'll think Amorphium is the cat's polymer pajamas. But if you found that KPT did more to impair your productivity than enhance it, Amorphium will likewise get in your face. I come down somewhere in between. Although its approach is too whimsical to make it much use to professionals, Amorphium is a wonderfully addictive recess tool.—DEKE MCCLELLAND

RATING: ♦♦♦½ **PROS:** Highly responsive; offers fully rendered preview mode; has intuitive painting and animation controls. **CONS:** Single-level undo; interface takes over screen; can edit and animate just one object at a time. **COMPANY:** Play (916/851-0800, www.play.com). **LIST PRICE:** $149.95.

Canoma

TURN 2-D INTO 3-D

GET READY TO START SEEING more of 3-D. Just as PageMaker brought drop shadows and multiple fonts to the masses, MetaCreations' Canoma 1.0 brings effective, high-quality 3-D stills and animations to anyone with a Power Mac and $499. Although it won't help you model organic shapes or finely detailed geometry, Canoma does let you create stunning 3-D architecture, interior scenes, and simple geometric renderings and output them as stills or animations. Best of all, you'll do most of the work with a still camera or paintbrush rather than complex 3-D–modeling tools.

Working Geometrically

Even though it sports an interface inspired by Kai's Power Tools, Canoma is fairly unique among MetaCreations products in that it's easy to use. None of the tools are hidden, and you probably won't have to return to the poorly written manual after the first read.

To begin working in Canoma, you import a bitmapped image—a scanned photo or painting—of the scene you want to render. Canoma displays the image in its single window and presents you with a simple palette of 3-D primitives, such as cubes, pyramids, cropped pyramids, and planes, containing tools for constructing your scene's geometry.

To model the scene, you pick out a shape in your image and then select a 3-D primitive of similar geometry. Using a simple pointer tool, you drag the corners of the primitive to "pin" them to the corners of the object in your image. Canoma uses the primitive's geometry to calculate focal length, perspective, camera angle, and interobject relationships and then maps your image onto the object. When you switch from Edit to View mode, you can rotate and move your object with its texture-mapped surfaces (a technology known as camera mapping).

Although the results are startlingly effective, if you rotate your image too far from its original location you'll notice artifacts. The image looks like what it is: an object with pictures pasted to its sides. And anything that protrudes from the model—balconies on a building, for example—won't rotate or scale with the proper perspective. To improve your model and give the rest of your scene more detail, you must add more geometry.

Behind the Scenes

Fortunately, MetaCreations has included some excellent features and tools to streamline modeling. By default, you create primitives on the ground plane, but it's easy to stack a new primitive on top of the previously selected one. You can also duplicate primitives with or without the same orientation as the previous object.

But Canoma's best tool is one you can't see. As soon as you begin placing objects, Canoma starts calculating focal length, perspective, vanishing points, and camera angle and applies these calculations to new objects. And the program is amazingly accurate: after you pin just one or two corners of an object, you'll find the program has already calculated the other corners correctly.

Adding Dimension To create a scene in Canoma, you pin the corners of geometric primitives to the corners of objects in your source image.

Still, we'd like to see a few more primitives (especially curvy ones; trying to model domes or turrets is a tricky process). And because it can be hard to understand Canoma's 3-D space, the addition of multiple views would ease approximate placement of objects.

Adding Texture

Since a photo typically shows only one or two sides of an object, when you spin the rendered object around the other sides are blank. Fortunately, Canoma's powerful texturing tools can duplicate textures symmetrically onto blank faces. You can add more photos to fill in missing detail; you tell Canoma how to use them by pinning your existing model to the new image. The program can also interpolate missing pixels to fill in blank spaces. Though these areas appear smeared and washed out, the overall effect is fine.

To alter or paint on your source image, click on a textured surface; Canoma opens that texture in your image-editing application with all perspective removed. After you finish painting and editing and return to Canoma, the new image is applied automatically.

In addition to touching up your image, you can define an alpha channel to mask out unwanted objects, such as power lines or telephone poles. When Canoma renders the scene, it fills in the masked section with detail from another shot (one in which the telephone pole isn't visible, for example).

Canoma can output still images; QuickTime movies; and using MetaCreations' MetaStream format, streaming 3-D objects. The program can also export geometry in OBJ, DXF, TrueSpace, and VRML 2 format and textures as a series of JPEG files. You may have to do some work in a 3-D application to figure out where the textures go on your model, but for complex scenes this method is still faster than starting from scratch. Canoma is a great tool for serious 3-D users who need a camera-mapping (or an easier-to-use camera-mapping) tool.

Macworld's Buying Advice

Canoma 1.0 is simply breathtaking software. Although the camera-mapping effect is nothing new, it's astonishingly easy to use. Even without a full complement of modeling primitives and navigation tools, Canoma is a fun, powerful, capable program for anyone who wants to delve into 3-D.—BEN LONG

RATING: ♦♦♦♦ **PROS:** Fast, easy scene building; great texture-editing tools. **CONS:** No cylinders or curvy primitives; limited navigation tools. **COMPANY:** MetaCreations (800/472-9025, www.metacreations.com). **LIST PRICE:** $499.

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RealProducer Plus G2

STREAMING-MEDIA CONTENT-PRODUCTION TOOL

STREAMING MEDIA MAKES THE Web come alive with audio, video, and animation. Unlike download-oriented technologies such as MP3, streaming gives near-immediate gratification: click on a link, and you're listening or watching within seconds. RealNetworks' RealSystem, which incorporates the company's RealAudio and RealVideo technologies, has long been the most popular streaming platform; RealSystem G2, introduced last year, improves playback quality and authoring options.

Encoding for G2 RealProducer Plus G2 makes support for multiple bandwidths a matter of clicking in check boxes. During encoding, a preview of the final clip appears alongside the original.

To create RealSystem G2 content, you need RealNetworks' new RealProducer Plus G2; to tune in to RealSystem G2 or 5.0 content, there's RealPlayer Plus G2. (Both are available in free versions as well.) Unfortunately, RealProducer falls short of its Windows counterpart in key areas, while RealPlayer is buggy and has stiff hardware requirements (see the accompanying review).

To encode QuickTime movies and audio files in RealSystem G2 format, you simply drag a source file into RealProducer Plus G2's window and specify your encoding settings. RealProducer Plus G2 supports RealSystem G2's SureStream technology, which dynamically adjusts a clip's playback quality based on network conditions and enables a single RealSystem G2 file to accommodate multiple connection speeds.

RealProducer's cropping feature removes extraneous portions of a video clip. The program can also create a barebones HTML page containing the tags necessary to call up a clip and, if you have an FTP program, can transfer an encoded clip to your ISP. These basics aside, RealProducer Plus G2 can't match the broad array of quality-optimizing options in Media 100's $499 Media Cleaner Pro 4.

A key feature missing from RealProducer Plus G2 is support for live encoding—the ability to encode a RealAudio or RealVideo clip in real time from audio and video devices connected to a Mac. RealNetworks says it may add live encoding to a future version; for now, producers needing to produce or archive live Webcasts must use the company's Windows- or Unix-based tools.

RealSystem G2 supports Synchronized Multimedia Integration Language (SMIL), which combines audio, video, images, and text into time-synchronized presentations with Web links, scrolling text, and visual effects. Like its Windows counterpart, RealProducer Plus G2 lacks features for creating SMIL presentations. The $500, Windows-only RealProducer Pro G2 offers basic SMIL authoring, but for now the best way to write sophisticated SMIL is to hand-peck its tags into a text editor. RealProducer Pro G2 also lets you encode an entire collection of files in one fell swoop; RealProducer Plus G2 lacks batch-encoding features.

Macworld's Buying Advice

RealProducer Plus G2 is an ideal encoding tool for anyone who occasionally produces RealSystem G2 content. But the program's lack of live- and batch-encoding features make it a second-best choice for streaming professionals. For batch encoding, Media Cleaner Pro 4 and the Windows-based RealProducer Pro G2 are better options; for live encoding, turn to RealNetworks' Windows- or Unix-based tools.—JIM HEID

RATING: ♦♦♦½ **PROS:** Easy to use; very good results. **CONS:** No live encoding or batch processing. **COMPANY:** RealNetworks (800/632-8920, www.real.com). **LIST PRICE:** $150.

RealPlayer Plus G2

A PLAYER WITH REAL PROBLEMS

TO WATCH AND LISTEN TO RealSystem G2 content, you need the free RealPlayer G2 or the $30 RealPlayer Plus G2. Both comprise a player application (used by most streaming sites) and a browser plug-in (used by sites that embed content in Web pages); both can play RealAudio and RealVideo content as well as SMIL presentations; and both have a Channels area that offers one-click access to content from media outlets and a Presets menu for bookmarking your favorite streams.

Both also require *much* more hardware iron than their Windows counterparts. While the Windows versions of RealPlayer G2 can run on a 90MHz Pentium box, the Mac versions require at least a 200MHz 604 system. We successfully played streaming audio on a Power Mac 7600/132, but content encoded for very fast connections didn't play well. Even on a 400MHz Power Mac G3, we encountered frequent playback glitches.

RealPlayer Plus G2 can record a stream to your hard drive for later playback, but only if the content provider encodes it to allow recording (most don't). It also features an audio equalizer that enhances playback quality, and TV-like picture controls that make Web video just a bit less hideous. A bookmark feature lets you not only bookmark a favorite streaming site but also save your current place in a specific stream.

Macworld's Buying Advice If you wade into streams only occasionally, use the free RealPlayer G2. If you're a streaming junkie, consider RealPlayer Plus G2; although none of its goodies are earth-shattering, they do enhance the streaming experience. If you have an older Mac—or you'd prefer to wait until RealNetworks swats the bugs in its G2 players—stick with RealPlayer 5.0; RealNetworks continues to make it available for downloading at www.real.com/products/player/50player/50download.html.—JIM HEID

RATING: ♦♦½ **PROS:** Inexpensive; many convenience features. **CONS:** Buggy; unreasonable hardware requirements compared to Windows version. **COMPANY:** RealNetworks (800/632-8920, www.real.com). **LIST PRICE:** $30.

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466MHz G3 Upgrade Cards

MORE POWER . . . AT A PRICE

THOSE SEEKING THE ULTIMATE Mac must be prepared for one inevitable disappointment: in a few short months, your computer will no longer be the fastest box on the block. To maintain that bleeding edge, you must either purchase Apple's latest high-end computer or procure a processor upgrade to accelerate your current Mac.

We examined four such upgrades—XLR8's Mach Speed G3Z, Newer Technology's Maxpowr G3-G3 466, Phase 5's G3 Power Booster, and PowerLogix's PowerForce G3 ZIF 466/233—designed primarily for the first-generation G3s (the Newer, PowerLogix, and XLR8 cards also work in the blue-and-white G3s). All feature a processor rated at 466MHz and a 1MB backside cache. Given their similar benchmark performance and prices, little separates the cards except the warranties and the manufacturers' tolerance for having their product overclocked. But at roughly $700 to $850, these upgrades aren't cheap; only the most demanding users require this kind of power.

Crank It Up

These upgrades fit neatly into the Power Mac G3's zero insertion force (ZIF) socket. Installing the upgrade requires only that you remove the heat sink clipped atop the Mac's original processor card, swap the new processor for the old one, and replace the original heat sink (if the upgrade doesn't include one). The Newer, PowerLogix, and XLR8 cards also require you to install proprietary extensions and control panels for adjusting the speed of the backside cache.

The four upgrade cards are preset to their advertised speed of 466MHz. Your ability to adjust the speed of the cards' backside cache is somewhat limited—none can be pushed to more than half the speed of the processor.

In addition to adjusting the backside-cache speed, you can also change the clock speed of the processor using DIP switches, jumpers, or adjustment wheels—but only the XLR8 manual encourages you to exceed the rated speed of the processor. The XLR8 Mach Speed G3Z carries four tiny jumpers that you can move to boost the card to 533MHz. A 266MHz G3 refused to boot at this setting but did perform reliably at 500MHz. We were able to obtain 500MHz reliably from the Phase 5 and PowerLogix cards as well.

You can also adjust the Newer Maxpowr G3-G3 466 to a faster clock rate, but it crashed our computer when we set it to 500MHz. Newer states that it won't be responsible for damage such adjustments cause, and the Phase 5 and PowerLogix warranties indicate that any misuse of their products—and we presume overclocking fits this description—voids the warranty. Only XLR8 seems willing to cover an overclocked upgrade card.

The first PowerLogix upgrade we received was unstable, but its replacement worked perfectly. The other cards operated without a hitch. Although the Newer card scored marginally better in our Graphics test and the PowerLogix upgrade eked out Processor and Disk test scores a few points higher than those of the competing cards, the real-world speed difference between all four cards isn't noticeable.

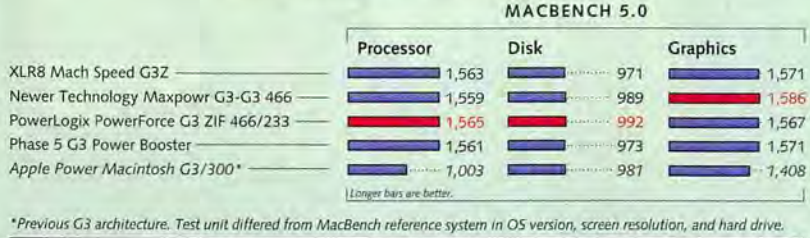
Macworld's Buying Advice

With price and performance this close, you'll base your buying decision largely on warranty and reliability (PowerLogix offers a three-year warranty, Newer and XLR8 guarantee their products for two years, and Phase 5 provides coverage for a single year). Newer Technology consistently produces reliable, well-documented upgrades that are among the fastest in their class; the comparably priced XLR8 card is a solid performer as well, and the company seems willing to let you overclock the processor—a tempting proposition for those living on the bleeding edge.—CHRISTOPHER BREEN

Macworld LAB TEST

Rev Up Your G3

Best results in red. *Reference system in italics.* MacBench 5.0 scores are relative to those of a first-generation Power Macintosh G3/300, which is assigned a score of 1,000 for each test.



**Previous G3 architecture. Test unit differed from MacBench reference system in OS version, screen resolution, and hard drive.*

Behind Our Tests We tested all cards on a Power Macintosh G3/300 with 64MB of RAM, a 2MB system disk cache, and a screen resolution of 1,024 by 768 pixels.—Macworld Lab testing supervised by Gil Loyola

G3 Power Booster

RATING: ♦♦♦½ **PROS:** Fast; can be overclocked. **CONS:** Expensive; short warranty period. **COMPANY:** Phase 5 (610/701-6303, www.phase5.de). **LIST PRICE:** $699.

Mach Speed G3Z

RATING: ♦♦♦♦ **PROS:** Fast; can be overclocked. **CONS:** Expensive. **COMPANY:** XLR8 (888/957-8867, www.xlr8.com). **LIST PRICE:** $859.

Maxpowr G3-G3 466

RATING: ♦♦♦♦ **PROS:** Fast; good documentation. **CONS:** Expensive. **COMPANY:** Newer Technology (316/943-0222, www.newertech.com). **COMPANY'S ESTIMATED PRICE:** $829.

PowerForce G3 ZIF 466/233

RATING: ♦♦♦½ **PROS:** Fast; can be overclocked. **CONS:** Expensive; first test unit didn't work. **COMPANY:** PowerLogix (888/769-9020, www.powerlogix.com). **LIST PRICE:** $799.

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Network-Management Software

FILEWAVE AND NETOCTOPUS EASE SOFTWARE DISTRIBUTION, ASSET MANAGEMENT

YOU COULD COUNT YOUR COMpany's Power Macs on your fingers and install system software manually on each user's computer—or you could invest in a tool that does those things for you. Netopia's netOctopus 3.0 and Wave Research's FileWave Enterprise Edition 3.2 offer a simpler way to deliver software over a network and maintain a database of hardware and software assets for Mac and PC configurations alike; however, they approach those tasks very differently.

netOctopus is most useful at creating configuration reports and monitoring software use, although its distribution component can't manage complex software packages. FileWave, though marred by a nonintuitive interface and high deployment costs, shines as a full-featured software-delivery system that can move complex combinations of applications, system files, and documents onto client workstations.

Different Strokes

netOctopus is appealingly simple to set up and use, consisting of an administrative application and a client control panel for each Mac or PC. FileWave's client software is similar, but divides its software-distribution and asset-management functions among several server tools and administrative applications. Although this distributed approach makes sense for large networks, it does require that you devote all or part of several Macs to network-management tasks.

To distribute software with FileWave, you create *filesets* that reside on the repository server in a proprietary format. The easiest way to create filesets is to use FileWave to scan the contents of a hard disk connected to the administrator's Mac, and install the software you're distributing via FileWave on the same disk. FileWave builds a package based on the files you have modified or added since taking the "before" snapshot. You can deliver packages to individual users or to groups, and the software is smart enough to hold updates for absent PowerBook users until they return to the network.

Dashboard Control FileWave Enterprise Edition 3.2's Asset Trustee relational database can hold detailed information on your computers, software, vendors, and employees.

netOctopus uses a much simpler arrangement, in which you distribute files or folders individually on Macs as well as PCs. The trade-off: you can't simultaneously install applications, extensions, and preferences, as you can with FileWave (but you can create distribution packages yourself, if you're handy with AppleScript).

Asset Tracking

Mac managers may recognize FileWave's Asset Trustee database as a remnant of TechWorks' long-dead Asset Manager. With an ACI US 4th Dimension database as its engine, Asset Trustee inventories computer hardware and software, right down to the amount of VRAM installed and—if you're inclined to enter it—the depreciation method used to pay for each system. Wave Research added a scanning function to the database, making it possible to track changes to hardware and software as they occur and to combine static data with dynamic information. (FileWave is also available without Asset Trustee; the 20-user version is $1,863.)

The asset-management interface in netOctopus is oriented less toward printing reports and tracking inventory than toward taking live snapshots of the network and managing software use. Templates and AppleScripts offer a quick look at common configuration settings for a group of systems. This is useful if you want to determine whether your systems are capable of accepting a Mac OS upgrade or have properly configured IP addresses, for example.

Both packages allow you to export data. netOctopus includes an HTML export feature, although FileWave does that feature one better by building in Web-server software that displays asset reports in HTML. And both include substantial printed documentation, though FileWave's manual is a bit disjointed and leaves out important information.

Macworld's Buying Advice

Although it's complex—and occasionally infuriating—FileWave Enterprise Edition 3.2 has no equal when it comes to software distribution. If you distribute lots of software to lots of users, FileWave may be worth the learning curve and the high cost of resources necessary to use it. If you can make do with a bit less, netOctopus 3.0 rewards your flexibility with a smart, straightforward distribution interface. For asset managers, netOctopus is the best choice when you need to take a "live" look at your network or monitor the way software is used; FileWave's asset-management features will appeal most to managers who need both continuous monitoring and static-information gathering.—SHELLY BRISBIN

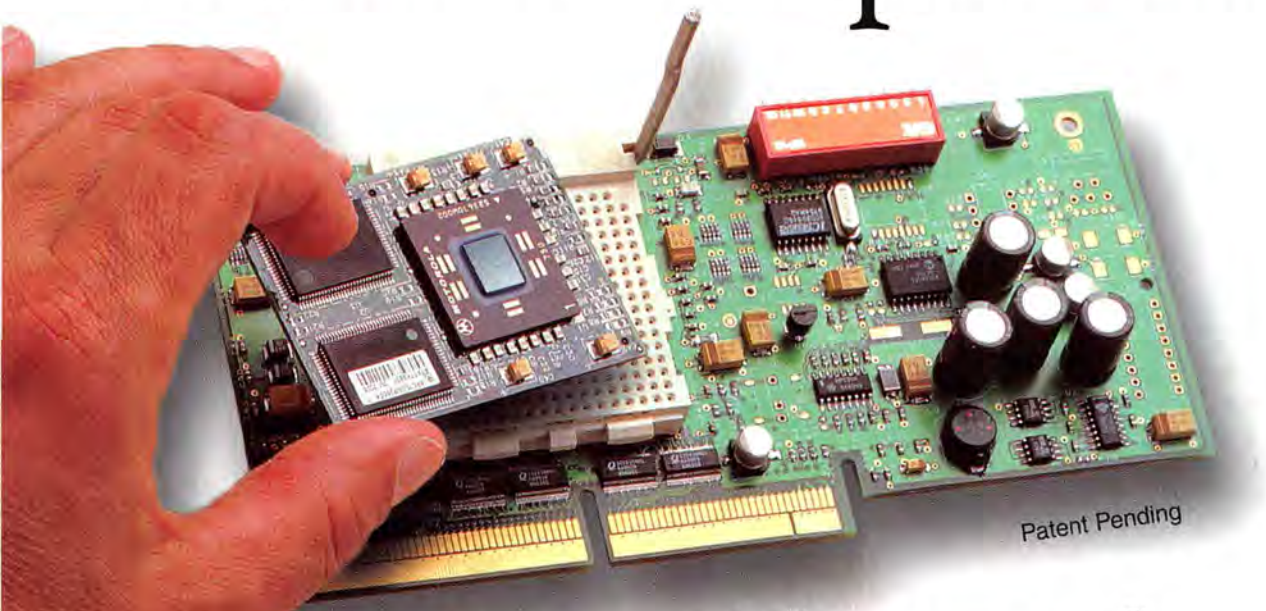
FileWave Enterprise Edition 3.2

RATING: ♦♦♦½ **PROS:** Sophisticated software-distribution capabilities; flexible server-placement options. **CONS:** Nonintuitive setup; expensive; heavy hardware demands. **COMPANY:** Wave Research (888/345-3928, www.filewave.com). **LIST PRICE:** $2,530 (20 users).

netOctopus 3.0

RATING: ♦♦♦♦ **PROS:** Easy, on-the-fly asset and configuration reporting; intelligent license management. **CONS:** Software-distribution tools limited without resorting to AppleScript. **COMPANY:** Netopia (800/803-8212, www.netopia.com). **LIST PRICE:** $1,625 (25 users).

Y3K Compatible.



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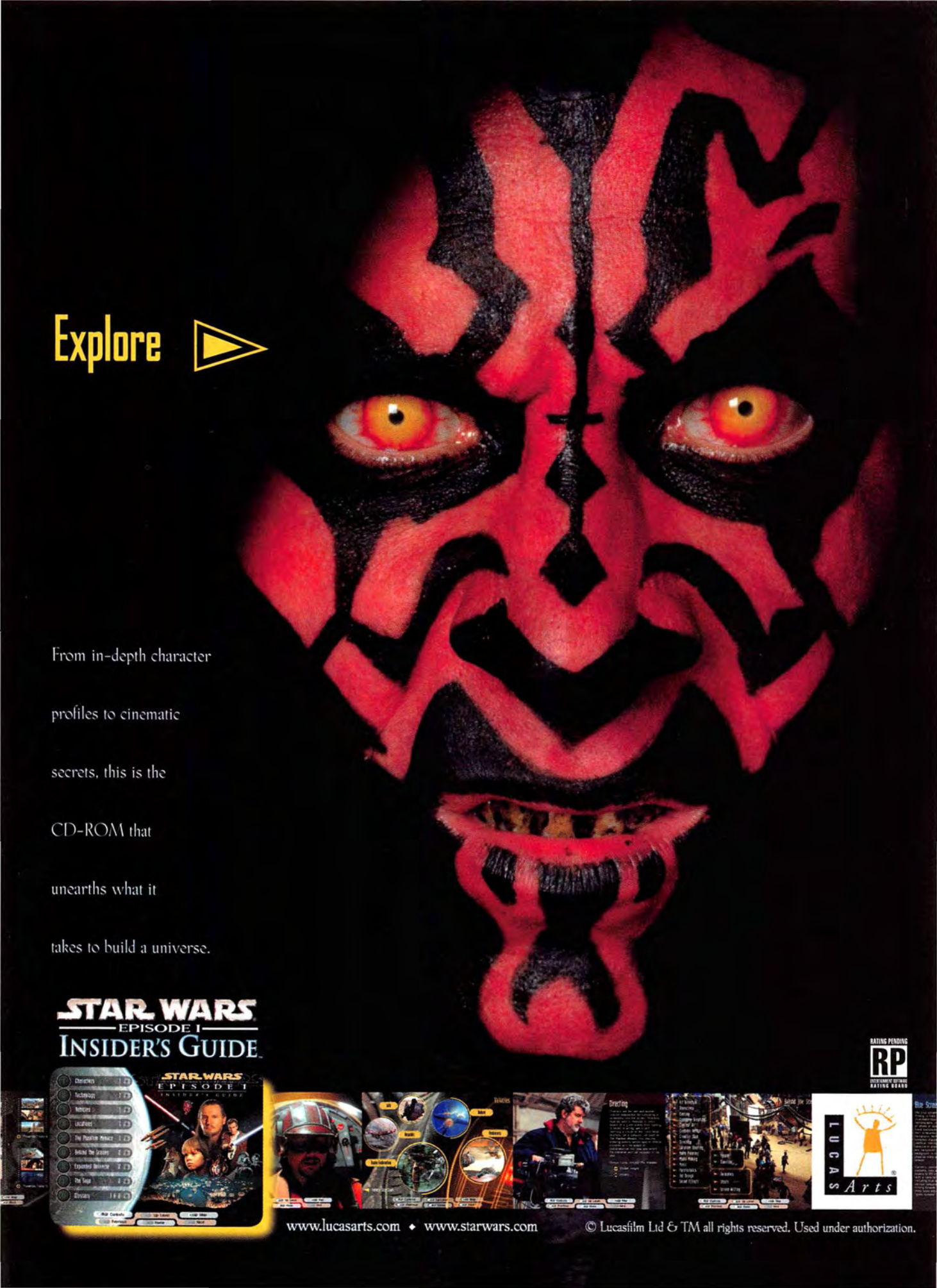
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VST FireWire Hard Drive

COMPACT DRIVE REMOVES SCSI HASSLES

STARING AT THE EMPTY FireWire ports on your blue Power Mac G3? Now there's a hard drive that works with the new high-speed interface. The VST FireWire Hard Drive—available in 2GB, 4GB, and 6GB capacities, with 10GB and 14GB models on the way—is among the smallest and lightest drives you'll find anywhere. It has the desktop footprint of a 3-by-5-inch index card, is less than an inch high, and weighs a mere 6.5 ounces. It's well suited for desktop use and ideal as a portable device. We tested the 4GB model.

SUZANNE ROADY

Dream Connection

After years of struggling with SCSI peripherals, working with a FireWire drive will seem like a dream come true. No device IDs to set. No termination issues to worry about. No spring clips to wrestle with. You can even connect and disconnect drives while your Mac is powered on. We tried pulling the plug on one while playing a QuickTime movie. No problem. A warning appeared on our Mac's screen and all activity stopped. When we reconnected the drive, everything started back up where it left off, including the QuickTime movie.

Because it's a FireWire device, you can even run the drive without an AC adapter, as long as you follow the rules. The FireWire controller on the blue G3's logic board supplies enough power to connect up to two drives without requiring an AC assist. However, if you want to hook up additional unpowered devices, you'll need to purchase an AC adapter for $19.95.

The drive is bundled with VST Format, a custom version of Prosoft Engineering's Drive 7 Pro disk-mounting, -initializing, and -partitioning utility. The software works only with VST's drives; you'll need a separate utility to format FireWire drives from other vendors.

When used with version 2.0 of Apple's FireWire driver, the drive's performance is solid but not stellar. It's not as speedy as the Power Mac G3/350's internal Ultra ATA hard drive or an external 4GB Ultra SCSI drive connected to a SCSI PCI card. However, it outperforms other portable options available for the blue G3, such as USB Zip drives, by a significant margin. And VST expects the drive's performance to improve when Apple ships an updated FireWire driver, which should be available by the time you read this. Macworld Lab tests with a beta version of the updated driver show that it does indeed offer a substantial speed boost, especially on write operations.

The drive has one regrettable shortcoming: It's not bootable. VST blames Apple's current FireWire extensions, which don't support bootable FireWire devices. You won't find boot capability in the updated driver; Apple doesn't plan to release the enabling software for several more months.

Macworld's Buying Advice

The VST FireWire Hard Drive is possibly the world's easiest-to-use hard drive. Its compact, lightweight design makes it well suited for use on the desktop or for shuttling work between home and office. And its performance, while not blazing, is adequate for all but the most demanding tasks.—HENRY BORTMAN

RATING: ●●●½ **PROS:** Small; lightweight; portable; doesn't require AC power. **CONS:** Not bootable; AC adapter not included. **COMPANY:** VST Technologies (978/263-9700, www.vsttech.com). **LIST PRICE:** 2GB, $300; 4GB, $400; 6GB, $500.

GUTS

GLORY

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Avid Cinema for Macintosh with USB

HOBBYIST VIDEO DIGITIZING AND EDITING FOR USB MACS

WITH ITS SPUNKY G3 PROcessor and generous hard drive, an iMac would seem to be a natural platform for hobbyist video editing. But because the iMac lacks expansion slots, it can't accept the video-input cards that let you connect a camcorder or VCR to the computer to digitize videotaped footage. True to its wordy name, Avid Technology's Avid Cinema for Macintosh with USB stashes video-digitizing circuitry in a small box that connects to the USB port on an iMac or a blue-and-white G3. The box and its simple editing software make an excellent entry-level video-editing system—provided you don't need to output your finished product to videotape.

Avid Editing The editing features in Avid Cinema for Macintosh with USB make it easy to combine clips and add titles, effects, and background music.

The paperback-size USB box sports one composite-video connector and one S-Video connector. To digitize video, simply plug your video device into the box and plug the box into your Mac. Avid Cinema uses the Mac's built-in audio circuitry to record sound. With the USB box, an iMac can digitize 30-frame-per-second video at a movie size of 320 by 240 pixels. That isn't full-screen video, but it's ideal for movies that will be stored on CD-ROM, compressed for the Web, or played from the Mac's hard disk.

If yours is an older iMac, you'll need to update its firmware before installing the Avid Cinema software. The Avid Cinema CD-ROM includes Apple's updater software and instructions; the process takes about a minute.

Avid Cinema's software has always offered more hand-holding than a kindergarten crossing guard; version 1.3 retains this simplicity while broadening your output options.

The Storyboard screen helps you plan the shots and editing sequence for dozens of movie types, such as birthday parties and real-estate tours. On-screen tips give shooting and editing advice, and the excellent manual elaborates on many of them. If you prefer to wing it, you can skip this screen and proceed directly to digitizing, which is as easy as pressing your VCR's Play button while clicking on Avid Cinema's Record button.

After you digitize your clips, you can change their duration and sequence, create superimposed titles, and add sound effects and music tracks (see "Avid Editing"). Avid Cinema provides all the common video effects—such as dissolves, wipes, and spins—but it doesn't give you precise control over their duration. Indeed, the lack of precise editing control is Avid Cinema's chief shortcoming.

When you've finished your video, you can view a full-screen version of it. You can also compress it in a variety of formats; an advanced mode lets you specify QuickTime compression settings. What you *can't* do is output your final product to videotape—the USB box is an input-only affair. To record a completed project to tape, you'll need to move it to a first-generation Power Mac G3 equipped with an Apple video input/output card.

Macworld's Buying Advice

Avid Cinema for Macintosh with USB's inability to record projects to tape is a show-stopping limitation for movie makers who want to commit their efforts to videocassette. But if you're content to view your movies on screen or you plan to deliver them via CD-ROM or the Web, Avid Cinema is a winner. There's no easier way to edit video with a Mac, and there's no other way to digitize video with an iMac.—JIM HEID

RATING: ♦♦♦♦ **PROS:** High-quality video captures; extremely easy-to-use editing software; excellent manual. **CONS:** Can't output video to tape; imprecise editing controls. **COMPANY:** Avid Technology (800/949-2843, www.avidcinema.com). **COMPANY'S ESTIMATED PRICE:** $299.

GUTS

GLORY

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Log-Analysis Tools

FUNNEL WEB 3.1 AND SUMMARY 1.2.3 GLEAN DATA FROM YOUR WEB SITE

JUST HAVING A WEB SERVER IS sufficiently exhilarating for some, but most server administrators also need to know which parts of their sites are getting hits (or not) and where all those visitors are coming from. Active Concepts' Funnel Web 3.1 and Summary.Net's Summary 1.2.3, both available in Standard and Pro versions, meet the analysis needs of Web servers large and small. Funnel Web's forte lies in the graphical representation of its findings, and Summary's is fast report generation.

They're Watching You Although Summary's graphics are sparse, the program's reports manage to convey considerable information.

The simpler of the two, Summary is a lightweight Web server in itself, serving up the results of its analyses by dynamically generating pages on demand. After you launch Summary, all further interaction takes place within a Web browser that's pointed at the machine on which Summary is running. The configuration interface is straightforward, allowing you to specify such details as server names, virtual-domain information, and which hit-count filters to use.

In contrast to Summary's Web-based configuration, Funnel Web's configuration occurs within the application itself—in a series of cramped, small panels within the Preferences dialog box, unfortunately. We had some difficulty configuring Funnel Web Pro to handle the virtual-domain scheme in our test files, which used a different top-level directory for each domain. Summary not only didn't have any such difficulties but also lets you truncate the top-level directories' names for legibility.

The Pro version of Funnel Web handles up to 20 million hits per analysis (compared to the Standard version's ceiling of 5 million) and offers two features missing from the Standard version: advanced analysis, such as following the paths users take through a site, and the ability to process virtual domains. The Pro version of Summary goes beyond the Standard version by letting you define HTML headers and footers in the output, save report pages as static HTML files instead of just generating them dynamically, and analyze up to 500 virtual domains versus only 3.

A difference between Summary and Funnel Web lies in their resource requirements. When analyzing 100MB of compressed log files whose IP addresses had been translated to domain names, Summary was significantly faster at both processing the logs and generating the report—and used less RAM as well. The two also differ in the way they present reports: Summary's reports tend to be mainly tabular, with minimal graphics, whereas Funnel Web produces colorful charts and saves them as a collection of HTML or RTF files.

Macworld's Buying Advice

With its straightforward configuration interface, svelte resource requirements, and reasonably priced Pro version, Summary 1.2.3 is the all-around favorite. Funnel Web 3.1 offers a well-thought-out analysis engine and (in its Pro version) high-end features, although it could be faster and easier to use.—STEPHAN SOMOGYI

Funnel Web 3.1

RATING: ♦♦♦ **PROS:** Plentiful, colorful report options. **CONS:** Comparatively slow; pricey. **COMPANY:** Active Concepts (800/551-5282, www.activeconcepts.com). **COMPANY'S ESTIMATED PRICE:** Standard, $249; Pro, $499.

Summary 1.2.3

RATING: ♦♦♦½ **PROS:** Comprehensive analysis options; fast; uses comparatively little RAM. **CONS:** Minimal graphics. **COMPANY:** Summary.Net (summary@summary.net, www.summary.net). **LIST PRICE:** Standard, $59; Pro, $249.

GUTS

GLORY

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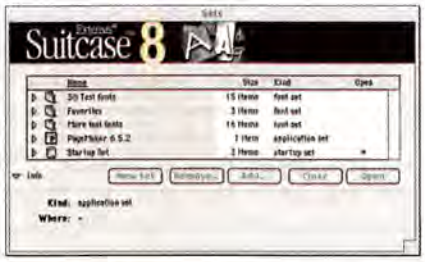
Suitcase 8

LANGUISHING FONT MANAGER IS REBORN

THE MOST IMPORTANT TASK OF any font-management utility is to give you control over which fonts are available at any time. Otherwise, the system must enumerate extraneous font data at start-up and when opening and closing applications or documents, and you waste time struggling with long, unwieldy font menus. For anyone with more than a few dozen fonts, a font manager is essential. Having been acquired by Extensis, the once favored Suitcase is again an option for Mac users. Extensis Suitcase 8 works reliably, without the freezes and crashes that plagued its predecessors, but it still falls short of the competition—particularly where its new features are concerned.

When Suitcase was owned by Symantec, it failed to remain compatible with Mac OS updates. Frustrated users turned to longtime competitor Alsoft MasterJuggler and to the newer, more complex Adobe ATM Deluxe and DiamondSoft Font Reserve. Now, both Font Reserve 2.0.2 and ATM Deluxe 4.5 autoactivate fonts for multiple applications, check font integrity, and automatically create folders of fonts for transmission with jobs to output services—features lacking in Suitcase 8.

Extensis did update Suitcase to work on any Power Mac running Mac OS 7.5.5 through 8.6. And Suitcase now lets users open font suitcases temporarily without creating a set, a time-saver for output services and people who need to open fonts briefly.



Familiar Feel Suitcase 8's dialog boxes and basic operation will make former users feel at home.

Suitcase 8 acquired its other new functions by incorporating third-party utilities. The Suitcase 8 XTension (formerly Font Fetch, from NRG Software) autoactivates fonts for QuarkXPress 3.2X and 4.0, including those in imported EPS files—a very nice feature. But the XTension works only for fonts that are already in a Suitcase 8 set, and it had trouble recognizing some fonts in our tests, even though it had autoactivated the suitcase containing the fonts. In addition, autoactivation doesn't work with other illustration and layout applications, including Macromedia FreeHand and Adobe Illustrator and PageMaker.

Suitcase 8 also ships with a special version of Insider Software's FontAgent, a stand-alone utility that resolves duplicate fonts and missing screen or printer fonts and sets up a logically organized font library. But FontAgent seems to decide which duplicates to retain somewhat randomly—in several cases, it kept an older version. It also empties the system's Fonts folder, replacing only Mac System fonts.

Macworld's Buying Advice For users who prefer the straightforward Suitcase interface and the way it handles sets and font suitcases, Suitcase 8 is a good choice, even with its flawed third-party additions. And if you find ATM Deluxe or Font Reserve dauntingly complex, give Suitcase a look. It's still not perfect, but it has promise.—KATHLEEN TINKEL

RATING: ❖❖❖ **PROS:** Familiar interface; easy to use; stable. **CONS:** Flawed autoactivation feature; FontAgent is overzealous. **COMPANY:** Extensis (800/796-9798, www.extensis.com). **COMPANY'S ESTIMATED PRICE:** $90.

MacAirKey

CORDLESS KEYBOARD DOES STAND-UP

KEYBOARD CORDS ARE INNOCUOUS enough when you're working at your desk, but they only get in the way when you're giving a presentation on your Mac. The MacAirKey, a new cordless keyboard from Digital Creations, lets you type without being tethered. Instead of using a cable, the MacAirKey sends infrared signals to a compact receiver that plugs into the computer's ADB port. (If you want to use the MacAirKey with USB-only models such as the iMac, you'll have to buy a third-party ADB adapter such as Griffin Technology's $49 iMate.) Although it's not perfect, the MacAirKey is a good solution for those times when a corded keyboard simply won't do.

Because of its small footprint—it's about 2 inches narrower than Apple's USB keyboard—the MacAirKey doesn't have room for a numeric keypad. To compensate, 17 of the keys have secondary functions that you access by pressing a special key in the bottom row. Unlike with most keyboards, you can't use the MacAirKey to turn the Mac on, because the receiver draws power from the ADB port. Two feet on the bottom of the keyboard fold down to angle it upward, but they have a tendency to slip.

The MacAirKey sports a built-in pointing device, so you don't need a separate mouse or trackball. You control the cursor by pressing a small, rubberized disk with your thumb or forefinger; the harder you

ARNOLD TIOSEJO

push, the faster the cursor moves. Unfortunately, the disk is hard to press, and you have to use your right hand to reach it. A centrally located pointing device would be much more convenient. Two small push buttons on the left side of the keyboard function like standard mouse buttons, but you can't customize their operation the way you can with many multiple-button mice.

Even without documentation—the early shipping version we tested didn't come with a manual—setting up the keyboard was a snap. We popped the two supplied AA batteries into the keyboard's battery compartment, plugged in the receiver, and were ready to go. The MacAirKey is rated for distances up to 30 feet, but I used it at 40 feet without any problems. The only requirement is that you maintain an unobstructed line of sight between the receiver and the transmitter at the rear of the keyboard. On my desktop, the keyboard was usually reliable, although it occasionally behaved erratically. Operation was much smoother when I separated the receiver and keyboard by at least a few feet.

Macworld's Buying Advice If all you want to do is lean way back in your chair, a standard ADB or USB keyboard with a long cord will do the job more reliably and for less money. Although I wouldn't want to use the MacAirKey as my primary keyboard, it's worth considering if you have to do stand-up presentations with a desktop Macintosh.—FRANKLIN TESSLER

RATING: ❖❖❖ **PROS:** Easy to set up; built-in pointing device. **CONS:** No power key; pointing device is hard to press. **COMPANY:** Digital Creations of Kansas (316/262-8419, www.dcinetwork.com). **LIST PRICE:** $130.

job opportunities

t director

St. Louis: Agency in Clayton is looking for an experienced Designer/ Art Director with a proven ability to work independently and take a job from concept to completion. The ideal candidate will have a positive attitude coupled with expertise in Quark, Photoshop, and Illustrator.

macintosh help desk

Chicago: Elgin company is searching for a Macintosh savvy individual to support in-house staff on hardware and software using Timbuktu. Common tasks are problem solving on FileMaker, Excel, Word, E-mailer Communicator, Mac OS 7.61, 8.0, and 8.1. A working knowledge of Windows 95, UNIX, Retrospect, Fileserver, and Telenet is helpful.

multimedia designer

Providence: A design firm with large corporate accounts seeks a Multimedia Designer skilled in Macromedia Director. Candidates must be able to follow client specifications and work without supervision. The job entails project-based work on an ongoing basis; perfect for an experienced freelancer.

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web "dream team"

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consumer product package designer

Boston: Candidates must have previous package design experience and strong understanding of Illustrator and Freehand. Project management skills and knowledge of Acrobat, Photoshop and Quark are also HireKnowledge Boston has multiple medium- and long-term designers.

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DiscPortVT-28

SERVER MAKES SHARING CDS EASY

ARNOLD TIOSEJO

EVERYONE KNOWS IT'S GOOD TO share, but sometimes that's hard to do. Microtest's DiscPortVT-28 thin server lets users on a network share a library of CD-ROM– and DVD-ROM–based applications with zero hassle. The DiscPortVT dishes up data to Mac, Windows, and Unix clients; supports network access to disc burners; and keeps it all simple with Web-based administration. Although it's a bit pricey, the DiscPortVT is nifty and very easy to use.

The 6.0-by-9.0-by-2.5-inch DiscPortVT is essentially a small file server that plugs into the network via an integrated 10/100-Mbps Ethernet adapter. By attaching drives to the server's SCSI-2 port, the administrator can create a virtual tower of shared devices without a costly custom enclosure. Better yet, the DiscPortVT "caches" discs by copying entire disc images to an internal hard disk. With compression, you can typically fit more than 30 CD-ROMs onto the DiscPortVT-28's 15GB hard disk. (Two other configurations are available: the $2,495 DiscPortVT-14 holds roughly 14 discs, and the $1,995 DiscPortVT-7 holds about 7.) That gives users access to a wider range of resources and, via caching, drastically improves performance.

You upload disc images from a Mac to the server via an attached device; from a Windows machine, discs can also be uploaded over a network. Although the DiscPort supports HFS, ISO 9660, and other common formats, it doesn't serve audio CDs.

The DiscPortVT supports AppleShare, Windows NT, NetWare, NFS, and FTP file-sharing protocols and can even serve files via HTTP. Discs are shared in a single network volume or independently; the DiscPort supports up to 248 volumes. You can secure each shared volume by using an internal users-and-groups database or by integrating the DiscPort with an existing Windows NT or NetWare directory. Macintosh users access shared volumes via the Chooser; Windows users, through the Network Neighborhood. Users on any platform can download files via a Web browser.

Savvy administrators could approximate the DiscPort's functionality by using existing resources, but Microtest's thin-server technology is ideal for environments that demand ease of use. We connected the DiscPortVT-28 to our test network and to a LaCie CD-R drive in less than five minutes. We also integrated the DiscPort into our NT environment, and it automatically added NT accounts to its database as necessary. Both Mac and Windows clients ran CD-ROM applications off the server without a hitch; we even used the DiscPort to copy a CD from a laptop to a burner in another office.

Macworld's Buying Advice The DiscPortVT offers a simple way to share CD and DVD resources on a network. It's not cheap, but it works and will save nontechnical folks a lot of headaches.—JEFF DAVIS

RATING: ♦♦♦♦ **PROS:** Easy Web-based administration; supports Mac, Windows, NetWare, and Unix clients; supports CD-R devices. **CONS:** Expensive; no audio support. **COMPANY:** Microtest (800/526-9675, www.microtest.com). **LIST PRICE:** $2,995.

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Qube 2

EASY INTERNET SERVING FOR WORKGROUPS

YOU CAN SET UP ANY CHEAP Mac as a file and intranet server, but for really robust serving over TCP/IP you normally have to spend thousands on a high-end server and associated software. Cobalt Networks' Qube 2 gives you big-server capabilities on the cheap: you get Mac and Windows file sharing; Web, FTP, and e-mail serving; and Web-publishing tools for user pages and public files. And Web-based administration makes setup and maintenance a snap—just the thing for harried workgroup administrators.

SUZANNE ROADY

The Qube 2's cobalt-blue box houses two 10/100 Ethernet jacks, a small LCD control panel, a serial port, and a PCI slot. Initial setup takes only a few minutes: you enter an IP address and other basic IP settings through the LCD panel and then switch to a Web browser for the remaining configuration steps. A quick-start guide explains the process, and a concise user's guide provides more-detailed information. Once the Qube is up and running, the LCD display lets you quickly verify that the server is operating normally. The built-in Web server automatically sets up a home page for each user, an intranet Web site for shared information, and a public site. You update the HTML for any site by simply copying the appropriate files, using Apple file sharing.

The Qube 2 comes in three configurations, ranging from 16MB of RAM and a 3.2GB hard drive to 64MB of RAM and a 10.2GB hard drive. The two memory slots support up to 256MB, and an available PCI slot provides for future expansion. A 250MHz RISC CPU runs Linux, but the Qube's elegant Web interface insulates you from Unix's complexities.

New with this model is a firewall function, network-address translation, dynamic IP addressing, SNMP remote management, dial-on-demand PPP Internet routing, anonymous FTP, and AppleShare file sharing over IP. The Web server now supports Microsoft FrontPage extensions, and the mail server includes antispam protection.

Live network tests showed the Qube 2 to be a sprightly and reliable server; it never crashed and was very responsive, even with 30 simultaneous users. Cobalt Networks has addressed nearly all the problems of the Qube 2's predecessor, the Qube 2700: occasionally sluggish performance, missing AppleShare IP support, and MIME mapping. The user's manual is still too brief, however, lacking detailed illustrations and user-interface screen shots.

Macworld's Buying Advice If you're setting up intranet or Internet services for a small or medium-size workgroup but can't afford a dedicated Mac server, the Qube 2 is for you. Quick setup, reliable operation, and a comprehensive suite of services—ready to run right out of the box, at a very reasonable price—make it an easy choice.—MEL BECKMAN

RATING: ★★★★½ **PROS:** Web-based administration; Apple and Windows file sharing; full Internet server suite; dynamic IP addressing. **CONS:** Incomplete documentation. **COMPANY:** Cobalt Networks (888/702-6225, www.cobaltmicro.com). **LIST PRICE:** 16MB/3.2GB, $999; 32MB/7.6GB, $1,499; 64MB/10.2GB, $1,799.

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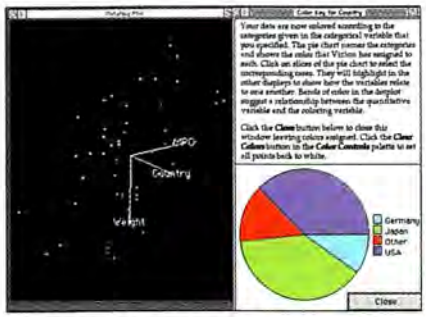
Vizion

AN "INSIGHT MACHINE" FOR EXCEL

MICROSOFT EXCEL'S TOOLS for exploratory data analysis are meager—a limited assortment of 3-D and pseudo–3-D graph types. The developer of Data Desk, a longtime Mac statistics favorite, has come up with a simple solution to Excel's shortcomings: add commands that allow access to Data Desk from within Excel. Data Description's Vizion 1.0 aims to give business users a quick way to analyze the data residing in piles of accumulated spreadsheets—and somewhat surprisingly, it succeeds.

It's surprising because a program has to be designed very carefully to avoid making data mining more trouble than it's worth. Vizion gives you just three Excel menu items; pick one of these and tell Vizion where to find the data to use, and you instantly pop into an environment that performs most kinds of analysis with simple graphics and easily offers complete handholding for all program functions.

To start an analysis, you select some data columns in your Excel spreadsheet, pick the corresponding item from the Vizion menu in the Excel menu bar, and are transported to a Vizion page where you'll find every useful graphical analysis of your data. You don't have to pick and choose among statistical tests, because Vizion chooses the appropriate parts of the Data Desk test repertoire for your data and does all the calculation and graphing for you.



Just Looking Vizion 1.0 turns your Excel data into a comprehensive set of Data Desk–style statistical charts, with interpretation.

Vizion's speed isn't impressive in the simplest cases—even Excel can draw a modest column plot fairly quickly. But Vizion can turn 500 rows by 3 columns into a 3-D rotating scatterplot in a second, along with boxplots and dotplots (plot types that aren't otherwise available in Excel) of the same data. Data Desk–style palettes let you work directly with Vizion graphics, using simple mouse actions rather than plodding through dialog boxes. Tables provide standard summary statistics for variables and their combinations, and you can get clear explanations of what all those table values and graphs mean by clicking in any screen. And Data Description offers separately optimized versions of Vizion for Power Macs and 680X0 machines, which explains why the add-on is so much faster than Excel itself.

The only possible complaint about Vizion is that it assumes that you have a vision of your own. If you're absolutely clueless about statistical graphics in a business context, you'll find only a few sample files in the tutorial to help you.

Macworld's Buying Advice Vizion is the first serious attempt to make the tools of exploratory data analysis, rather than classical table-oriented summary statistics, available to Excel users. Using it is the quickest way to find the relationships lurking in the piles of sales, marketing, and financial data in business spreadsheets.—CHARLES SEITER

RATING: ♦♦♦♦ **PROS:** Simple, efficient tool for data visualization; fast performance on large data sets. **CONS:** Needs more sample files. **COMPANY:** Data Description (800/573-5121, www.datadesk.com). **LIST PRICE:** $150.

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CelView 1.3

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MACS AREN'T EASILY ACCEPTED in large enterprises, especially when they must be able to access legacy applications on IBM's midrange and mainframe systems. It doesn't help that existing mainframe terminal-emulation tools, such as White Pine's WebTerm, lack the SNA (Systems Network Architecture) gateway capabilities—as well as printer-emulation and file-transfer functions—necessary to play well with Big Blue. Cel's new CelView 1.3 gives Macs a leg up in such environments, offering not only these missing features but superior terminal emulation, sophisticated keyboard mapping, and macro programming as well.

CelView, which installs easily from CD-ROM or over a network, actually consists of two programs—one for display emulation and the other for printer emulation, FTP, and mainframe file-transfer emulation. It was originally released as Wall Data's MacRumba; this new incarnation sports simplified setup procedures and a feature that lets you connect to mainframes via existing SNA gateways. Three control panels let you get at connectivity tools that allow you to access mainframes on virtually any kind of network. Connecting to a host system requires that you first define the connection type, using one of these control panels; you can then create as many CelView session documents as you like, each specifying the particular remote host to which you're connecting.

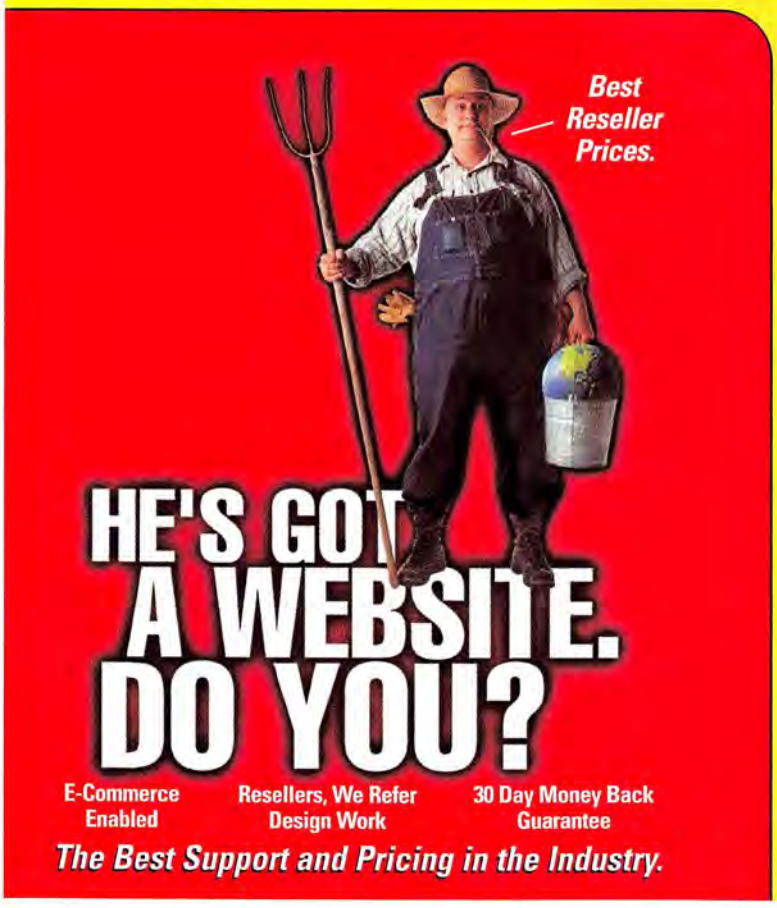
Keyed Up CelView 1.3 lets you map terminal functions to any key combination.

CelView's keyboard-mapping tool lets you drag and drop a terminal-emulation function to any Mac keyboard combination. You can also create tear-off keyboard palettes containing functions you use frequently. CelView automatically displays hot-spot buttons for on-screen function keys, so you can invoke these keys by clicking directly on the terminal screen. A macro language lets you automate multistep sequences as simple scripts, and you can invoke scripts by using on-screen buttons, keyboard palettes, or hot-key combinations.

Besides lacking printed (or printable online) documentation, CelView has two shortcomings: the printer-emulation function isn't accessible via TCP/IP connections, and SNA gateway functions don't work under System 8.X, ruling out SNA connections on G3 Macs. Cel says both problems will be fixed in the next release.

Macworld's Buying Advice As OS X Server gives the Mac new credibility as a workgroup computing platform, enterprise users will likely begin considering the Mac for widespread use. CelView's enhanced access to legacy mainframe applications removes one more barrier to general Mac acceptance and puts Mac users on a par with their PC compatriots.—MEL BECKMAN

RATING: ★★★½ **PROS:** Keyboard mapping and palettes; FTP and mainframe file transfer; keyboard macros; printer emulation. **CONS:** No printable documentation; no System 8.X or G3 gateway support; no TCP/IP print capability. **COMPANY:** Cel (800/338-8491, www.celcorp.com). **LIST PRICE:** $299.



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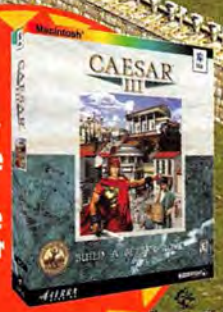

ACTOR

Can't flub my lines again or the director said he'd turn me over to the lion tamers! Okay... "Et tu Bruno? No, that's not right. "Et tu Brun hilda?" Arghh!!

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If at First You Succeed, Try, Try Again

SOME GAMES ARE SO DELICIOUS YOU JUST NEED A SECOND HELPING

by Christopher Breen

Recently, I engaged in an online chat where the subject of computer gaming cropped up. "Kee-ripes," a participant named Mugwump offered, "what is it with games nowadays? Every new computer game seems to have '2,' 'III,' or 'Gold' appended to its title. Where's the originality in game design!?" Others agreed, but I thought, "What's wrong with these people? I *love* sequels!"

True, I have a high tolerance for repetition. After all, I've read 84 Perry Mason novels, eaten Post Raisin Bran (Premium) every morning of my adult life, and dated a set of sisters. But in this case, repetition has nothing to do with it. To begin with, sequels give game designers the opportunity to add all the little goodies they would have flung into the original game, had technology allowed. Also, designers can squash the really nasty bugs and produce—one would hope—a more stable game.

It's a good thing that I *am* so fond of sequels, because this month I examined three games whose roots are well connected to games of the past—Aspyr's Tomb Raider Gold (♦♦♦♦); Carmageddon 2: Carpocalypse Now, from Interplay (♦♦♦); and Blizzard's StarCraft (♦♦♦♦½).

Tomb Raider Gold

Improbable as it may be, I expect that one or two of you are unfamiliar with the Tomb Raider series. This series, published by Aspyr Media for the Mac, stars Lara Croft—a heroic action figure whose proportions are clearly the product of young men with a skewed notion of weight distribution as it relates to physics. Aspyr first released Tomb Raider II—the current-at-that-time Lara Croft game—in order to capitalize on the buzz generated by the PC version. With the success of Tomb Raider II, Aspyr released the Mac rendition of Tomb Raider Gold, a game composed of the original Tomb Raider and an abbreviated add-on called Unfinished Business.

It's no surprise that Tomb Raider Gold is very much like Tomb Raider II: you propel Lara off cliffs and over chasms in search of an archeological treasure.

Tomb Raider Gold features fewer human enemies than Tomb Raider II—in this game, Lara adds significantly to the endangered-species list by blasting away at toothier members of the animal kingdom. The game also doesn't boast as many areas where split-second timing is required. For this reason, Tomb Raider II veterans will find Tomb Raider Gold a much easier game to finish—although the Unfinished Business add-on can be quite tricky.

JOHN LELAND

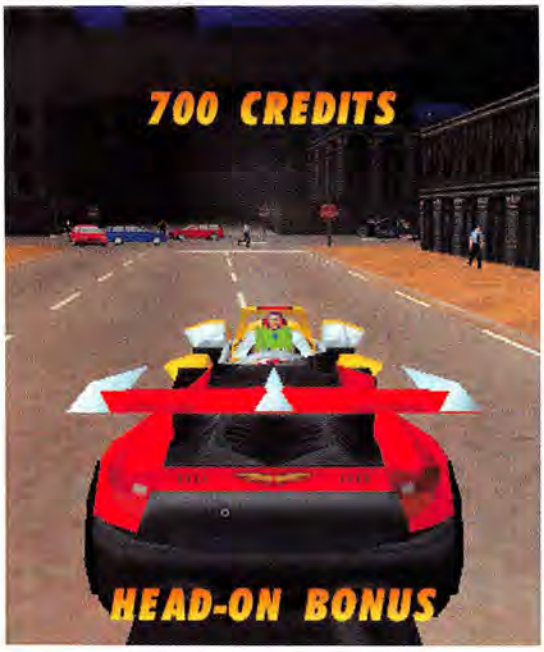
Even though Tomb Raider Gold supports the same RAVE and 3Dfx Glide 3-D hardware-acceleration standards found in Tomb Raider II, the graphics are more jagged. Sure, Tomb Raider Gold is more of the same, but I thought Tomb Raider II was a hoot and I don't mind a second helping.

Carmageddon 2: Carpocalypse Now

In the wake of recent tragedies involving undersupervised minors and overly powerful weaponry, politicians and parents have taken aim at video games and computer games that glorify violence. Although id software's long-in-the-tooth game Doom seems to be taking the brunt of this criticism, these individuals would consider Doom small spuds indeed, were they to catch a glimpse of Carmageddon and its sequel, Carmageddon 2: Carpocalypse Now. Unlike Doom, where your arguably noble objective is to hunt down the spawn of Satan, the Carmageddons ask that you participate in a series of automobile races with the express goal of careening into your opponents and mowing down as many innocent pedestrians as possible.

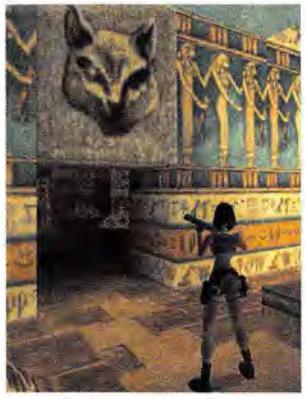
If you find this kind of gratuitous bloodshed despicable, please feel free to avoid these games. Although I'm not terribly offended by this sort of cartoon violence—I have a fairly firm grasp on what's real and what isn't—I *am* bothered by a game that is so repetitive that even the cheap tricks of fast action and violence can't keep me engaged. And that, ultimately, is the problem with Carmageddon 2. It's just the same old thing over and over again—start the race, try to keep

continues



Bodywork While You Wait When you're not tagging innocent pedestrians, take the time to repair your Carmageddon assault vehicle (above).

Stalk Like an Egyptian Tomb Raider Gold's Unfinished Business add-on places Lara Croft in a mysterious Egyptian tomb.



Burnin' Down the House StarCraft's Terran marines, when grouped together, can unleash some impressive firepower.

your barely controllable car on the road, slaughter innocents, pick up bonuses, and bash your opponents into submission.

Carmageddon 2 isn't without charm, however. There's a degree of grisly good fun in the proceedings. For example, I couldn't help but be amused by the Drunken Pedestrian bonus, which causes your foot-bound victims to stagger and weave; the Groovin' Pedestrians bonus, which results in passersby who perform a version of the hully-gully; and the Peds With Stupid Heads bonus, which operates as advertised. Such bonuses abound—each goofier than the next. Also, Carmageddon 2 was built in 3-D from the ground up—supporting both 3Dfx Glide and RAVE—and although it still looks cartoonish, its graphics are far superior to the original's.

If you're offended by the game's concept—or just want a game that offers more than the opportunity to repeatedly biff pedestrians and automobiles—skip Carmageddon 2: Carpocalypse Now. If you have the 40 bucks to spare, possess a compatible sense of humor, and don't mind the repetition, give the game a shot.

StarCraft

Terming StarCraft a mere sequel does a disservice to the game. Yes, at its most rudimentary, StarCraft is similar to its predecessor, WarCraft II. Both games feature an overhead view of a map and ask that you mine resources in order to produce structures that churn out more-advanced weaponry and personnel. And ultimately, both games ask that you triumph over an opposing race. But StarCraft is far more than an interstellar skin slipped over WarCraft's medieval chewy center of gaming satisfaction.

StarCraft tells its story from the perspective of three different races—the humanoid Terrans; the Zerg, a buglike race; and the Protoss, an advanced, mystical race that employs mechanized forces—rather than WarCraft's two. During the course of the single-player game, you have the opportunity to command each of the races in a series of three ten-mission episodes.

Unlike in WarCraft, where the Human and Orc races conduct war along similar lines, each race in StarCraft has differing strengths and weaknesses—which you must exploit to triumph over your enemies. Having such disparate capabilities across races nicely balances the game and ensures that you stay involved from start to finish.

StarCraft includes a powerful campaign editor and several custom maps. The game is networkable and can be played by up to eight people on a LAN or against the rest of the world on Blizzard's own Battle.net. It runs well on an iMac and looks and sounds great. Blizzard's done it again—StarCraft is awesome!

Déjà Vu All Over Again

Three sequels—two of which are surefire winners—and Mugwump would contend that there's not a truly original idea among them. Maybe not, but a repeated experience is not necessarily a worthless one. After all, as ancient Ecclesiastes teaches us: "The thing that hath been, it is that which shall be; and that which is done is that which shall be done: and there is no new thing under the sun." ■

At the risk of repeating himself, Contributing Editor CHRISTOPHER BREEN is coauthor of *The Macintosh Bible Guide to Games* (Peachpit Press, 1996).

Carmageddon 2: Carpocalypse Now ♦♦♦ **COMPANY:** Interplay (949/553-6678, www.interplay.com). **LIST PRICE:** $40.

StarCraft ♦♦♦♦½ **COMPANY:** Blizzard Entertainment (800/953-7669, www.blizzard.com). **LIST PRICE:** $50.

Tomb Raider Gold ♦♦♦♦ **COMPANY:** Aspyr Media (888/212-7797, www.aspyr.com). **LIST PRICE:** $30.

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TURN YOUR WORLD INSIDE OUT

THE MILLENNIUM MAC

THE NEXT YEAR WILL BRING UNPRECEDENTED CHANGES TO THE MAC OS. HERE'S AN IN-DEPTH LOOK AT THE MACINTOSH OF THE FUTURE.

THE YEAR 2000 IS COMING FAST. Depending on who you ask, the coming of the next millennium may mark a new golden age or the beginning of the end. Either way, some people believe there's about to be a change the likes of which we've never seen before. ◆ It's easy to dismiss all that talk as hype and hysteria. Except for one thing—when it comes to the Mac OS, it's actually true. ◆ In the next year, the Macintosh will undergo the most radical change in its history. The foundations of the Mac OS will be replaced by a system that's much more powerful, stable, and efficient than the one we use today. But the Finder that Mac users know and love may be destroyed, replaced by a radically different system for navigating your hard drive. Software companies will be scrambling to make their programs ready not just for the year 2000 but also for the new Mac OS. And your current Power Mac may not even work with this new system. ◆ That's why we've assembled everything we know into one guide to the future of the Mac OS—assuming, of course, that we all make it past the fateful stroke of midnight on December 31, 1999.

BY STEPHAN SOMOGYI

ILLUSTRATIONS BY JOHN CRAIG

THIS MUCH IS TRUE: APPLE'S long-term future will be based on Mac OS X. In the meantime, Mac OS 8 is firmly in charge. And let's not forget that for older Macs incompatible with OS X, Mac OS 8 will likely be the only game in town. So it's only right that while Apple's Mac OS X team cranks away on the Macintosh of 2000, a separate team of programmers is carefully crafting new releases for good old reliable Mac OS 8.

Mac OS 8.6 Released in May, Mac OS 8.6 is a free update that every Mac OS 8.5 user should install. You can download it for free from Apple's Web site (www.apple.com) or get it on CD for $20. Among the big winners in this installment of the upgrade sweepstakes: PowerBook users, owners of multiprocessor Macs, and AppleScript aficionados.

The key part of Mac OS 8.6 is something that no user will really see—a new *nanokernel*, a low-level part of the operating system that operates like a traffic cop. The OS 8.6 nanokernel offers several benefits. For PowerBook users, it is much smarter at understanding when the processor can rest and when it has to work hard. The result is that PowerBooks are more energy efficient—they last longer on batteries and run cooler than they did under previous versions of the Mac OS.

The nanokernel also brings multiprocessing back into vogue. A few years back, Macs and Mac clones with more than one processor inside started appearing, and many of us thought this augured a future where all Macs doubled up on chips to get immense speed boosts. This didn't come to pass, not only because the G3 processor prefers to work alone but also because the Mac OS was designed with a single processor in mind.

But Mac OS 8.6's nanokernel is built to understand Macs with more than one processor, fixing several long-standing bugs. For example, owners of multiprocessor machines can finally turn on virtual memory, which was previously incompatible with multiprocessor Macs. And this new nanokernel will certainly benefit users who buy new multiprocessor Macs, whenever they appear.

Sonata: Bridge to OS X The next release of the Mac OS is due this fall and is code-named Sonata. It's meant to bridge the gap between Mac OS 8 and Mac OS X, but if you think it'll be called Mac OS 9, you're probably wrong. That's because another company, Microware Systems, already has an operating system called OS-9, and it's unlikely that Apple will want to bother with the potential confusion (and lawsuits) caused by calling Sonata Mac OS 9 or even Mac OS IX.

Since Sonata will be the version of the Mac OS that exists when Mac OS X arrives, it has to provide compatibility with as much of that new operating system as possible. As a result, Sonata will be able to run Carbon-based applications automatically. Mac OS 8.1 through 8.6 will be able to do this, too, but they'll require a special system file called CarbonLib.

Multiple Users One of the other features Apple is promising for Sonata is support for multiple users on one machine. If you've ever shared your Mac with other people—most likely at home, in a college apartment, or in a small business—you've probably dealt with the difficulties inherent when several people are constantly modifying each other's application preferences and stepping on each other's personal files.

In Sonata, you'll be able to set up a Mac to ask users to log in before they can access the system (see the screen shot "Identify

In the Year 2000

Early next year, Mac users will sit down at their desks, press the power keys on their computers, and load an operating system that is reminiscent of the one we use today—but underneath it all will be something unlike anything Mac users have ever seen. This isn't to say that in the year 2000 all Mac users will be using Mac OS X—Apple is also continuing to revise Mac OS 8, with a major update, code-named Sonata, due to appear this fall (see the sidebar "Mac OS 8: Preparing for the New Millennium"). But while Mac OS 8 will be there for older Power Macs, eventually all new Macs will come with OS X, and owners of G3-based Power Macs will be able to buy an upgrade to OS X.

Starting Up The first thing you'll likely notice when starting up Mac OS X is that the icons you usually see marching across the bottom of your screen have disappeared. That's because extensions, those bits of software that load at start-up to customize your Mac, will be obsolete under Mac OS X. Extensions latch on to parts of the Mac OS directly, and as a result contribute a great deal to the OS's instability.

For several years, Apple has encouraged software developers to move to a different model for extending the Mac OS: *faceless background applications*. These programs run invisibly on your Mac, altering its behavior without making dangerous modifications to the Mac OS itself. The downside to the move away from extensions is that if you use old software that needs extensions to function properly, you may not be able to use that software with Mac OS X.

A Different Finder For all the talk about OS X's radical changes, it's still called "Mac" and it still has a Finder you use to view files and folders. However, this new Finder is being

Yourself")—an approach similar to using Apple's At Ease software but one that is integrated directly into the Mac OS. After logging in—either via password or through a cool voice-identification system—each user will have his or her own protected file area, along with common areas where any user can share files. Each user will also have their own set of preferences, start-up applications, and the like, making the Mac a much friendlier place for people who must share computer space with others.

If this system sounds familiar, it should—it's essentially the same procedure Apple uses for NetBoot, the system that lets Power Mac G3s or iMacs boot off of a Mac OS X server and log in using their personal files and preferences. From all appearances, Apple has taken NetBoot and implemented the same interface for a single Mac, one that uses its own hard drive—instead of a remote OS X server—as a repository for files.

Identify Yourself In Sonata, any Mac can support multiple users, each with their own separate files and preferences, and you'll be able to log in via password or voiceprint recognition.

Security With the advent of multiuser access in the Mac OS, Sonata will also add new security features to the mix. It will let you encrypt documents from the Encrypt File command in the File menu. Sonata will also reintroduce the Keychain, perhaps the best part of Apple's discontinued PowerTalk software. With the Keychain, you'll be able to save your passwords for encrypted files, file servers, Internet FTP sites, and more in one centralized location—and have one master password that unlocks it, making it easy to collect all your secret codes without having to remember a dozen different passwords for different occasions.

Sherlock 2 Sonata will also offer a major update to Sherlock, the all-purpose search utility introduced by Apple in Mac OS 8.5. Dubbed Sherlock 2, this new Sherlock sports a silvery interface similar to that found in the QuickTime 4.0 player (see the screen shot "Sherlock 2"). At the top of the Sherlock window is a Favorites bar in which you can place buttons to control exactly what Sherlock searches—be it a local hard drive's files, the text on local drives, or files on the Web. Sherlock 2 will let you set up search presets, so you can click on a button to search a different set of sources for different tasks, such as finding news stories, sports scores, or general Web pages.

In addition to the search views available in today's Sherlock, the new Sherlock will let you search for people's names, phone numbers, e-mail addresses, and other contact information. It will then return the listings in a results window with appropriately named columns, such as Name, Phone, and E-mail Address. Likewise, searches for products in online stores will return results that can be sorted by name or price, letting users comparison shop in a flash.

Sherlock 2 The new search utility will sport a new, QuickTime 4.0–like interface and customizable Favorites buttons.

Other Sherlock 2 improvements include a separate window for advertisements, and separate items in the Finder's File menu for searching your hard drive and the Internet, making it easier for users who were confused by Sherlock's array of different search facilities.

The Immediate Future Will Mac OS 8.6 and Sonata last us through the next decade? No—that's the job of Mac OS X. But given that older Power Macs likely won't be able to run the new operating system, these updates to Mac OS 8 add new features to OS 8 while providing an important connection to Mac OS X.—JASON SNELL

completely rewritten by Apple. At Apple's annual developers' conference in May, Steve Jobs and Apple software chief Avie Tevanian showed off a Finder interface that looked remarkably like the interface found in Mac OS X Server, Rhapsody, and the Next OS (see the screen shot "Next Finder?").

This new File Viewer is a multicolumned window that lets you view several levels of a hard drive (or items across a network) at once. When you click on a folder in a column list, the contents of that folder are automatically displayed in the next column to the right. You can continue to move deeper and deeper into your folder hierarchy with this approach and can quickly move back up to higher levels via a horizontal scroll bar set just above the columns. You can also drag favorite items into a shelf at the top of the window for quick access.

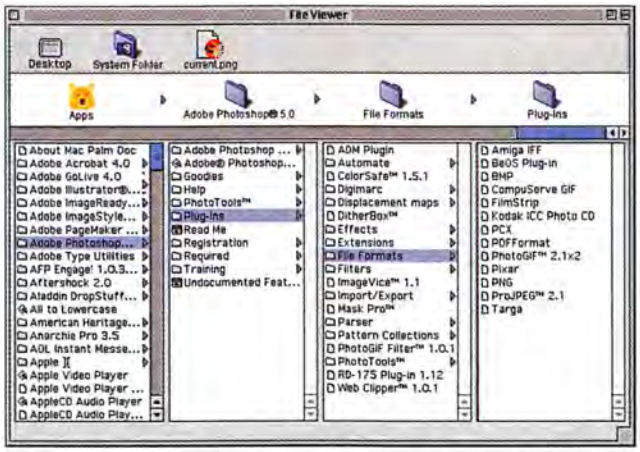
It sounds like an intriguing addition to the Finder—but there's a catch. In May, Jobs and Tevanian suggested that the new File Viewer wasn't an addition to the traditional Finder interface but rather a replacement of it. They received a flurry of criticism from many members of the Mac programming community.

Why? Because the new File Viewer is a far cry from the interface that Mac users have become expert in over the past 15 years. This new browser may have some appeal for novice users, because it's probably easier to understand the geography of a hard drive when using the browser metaphor than when navigating the Mac's classic list and icon views. But the browser becomes much more complicated when you have to move files between different branches of a folder hierarchy.

Sources close to Apple indicate that the group of programmers working on the Mac OS X Finder are writing it to include *both* the traditional Mac Finder and the Next-inspired File Viewer interface. If that's true, then Apple will be able to add a useful new means of viewing files and folders to the tried-and-

true system we use today. But if Jobs and Tevanian should follow through with the suggestions they made in May and remove all traces of the old Finder interface, Apple could be in danger of alienating a large portion of the Macintosh faithful.

Powerful Graphics Mac users in the publishing business depend on Adobe's PostScript technology every day, when they print, use fonts, and work in drawing programs. For them, Mac OS X's new graphics engine, called Quartz, should have a lot of appeal. Quartz is based on Adobe's Portable Document Format (PDF) technology, which is itself based on PostScript. As a result, Quartz will allow applications running on Mac OS X to handle and display PostScript and PDF information much more accurately than apps running on the current Mac OS. Quartz also adds powerful compositing features, such as alpha channels, to the Mac OS, which should lead to faster and higher-quality image display. And Quartz's use of PDF means that just about any Mac OS X–native application will be able to export to PDF in a flash.



Next Finder? This is a *Macworld* mock-up of Apple's declared vision for the Mac OS X Finder: a File Viewer window that graphically displays where you are in the folder hierarchy, with room at the top of the window for the placement of favorite files or folders.

Speedy and Stable Mac OS X will incorporate two features whose absence has long been the target of those critics who call the Mac OS slow and unstable: memory protection and preemptive multitasking.

If you've ever had one of your programs crash and lock up your entire Mac, you know why there's a need for memory protection. In Mac OS X, the system essentially erects walls between all the running programs. That way, if one program misbehaves, all the rest of your programs—and your Mac itself—continue running with nary a hiccup.

A side effect of this new memory protection is the disappearance of one of the most frustrating experiences Mac users have to go through: setting the memory size of your applications. In Mac OS X, that problem is gone—OS X's memory system gives applications as much memory as they need.

If you've ever tried to perform a lengthy download in the background while you're busy working in some other application, you've seen the limitations of the Mac's cooperative multitasking. Each open application can take up as much processor power as it wants, often shutting other applications out and slowing them down. In Mac OS X's preemptive multitasking, the operating system itself determines how much processing time individual programs get.

This means not only that the application you're working in should feel more responsive in Mac OS X, but also that all the programs running in the background should be working much more efficiently as well. It should also mean that Mac OS X will be much more efficient at processing audio and video and understanding spoken commands (see the sidebar "Speech Recognition Returns to the Mac").

Savvy Networking When the original Mac OS was designed back in 1984, the Internet wasn't really on the minds of its designers. But the developers of Mac OS X have kept the Internet in their thoughts. For starters, the Finder will no longer treat items on a network as second-class citizens, to be viewed through the Chooser or the Network Browser introduced in Mac OS 8.5. Items on the network will be as much a part of your Mac OS X desktop as your hard drives. You'll be able to quickly browse through your local network and even access computers elsewhere on the Internet, all from within the Finder itself.

In a first for Apple, Mac OS X will include its own built-in e-mail program, written in Java. Apple says the MailViewer program will support both POP/SMTP and IMAP, but the company didn't give any more details.

Mac OS X is definitely focused on *Internet* networking, and that means that Apple has decided to abandon one of its own creations: AppleTalk. Mac OS X will exclusively use TCP/IP, or Internet-style networking, to browse networks and share files. What ramifications this has for AppleTalk-only devices such as printers remains unclear, although it's

A Mac OS Timeline

	1984	1985	1986	1987	1988	1989
Please Welcome . . .	the Macintosh	drag disk to the Trash; Choose Printer DA, New Folder, Shut Down	HFS, RAM cache, first Japanese version of Mac OS	HyperCard, AppleShare	MultiFinder	32-bit QuickDraw
Mac OS State of the Art	0.7	1.0	1.1	2.0.1	6.0.1	6.0.4
MHz-o-Meter	8			16		25
Chips	68000			68020	68030	

OPEN SOURCE SETS MAC OS X FREE

THE TOAST OF THE COMPUTER WORLD this past year has been the free Linux operating system (see "The Beauty of the Beast," April 1999). What makes Linux so noteworthy is that it's not just free but is also open-source software. This means that everything that makes up Linux—every single line of programming code—is available to all to peruse, modify, and improve as they see fit. We live in a world where a program's source code is usually treated as a trade secret, but thanks to the success of Linux, that's starting to change. And Apple is hoping to match Linux's wave of success with one of its own, by releasing the foundation of Mac OS X to the Internet for all to see.

Meet Darwin As *Macworld* reported earlier (see "Apple Goes Open Source with Mac Server," *News*, June 1999), in March Apple announced the creation of Darwin, a subset of Mac OS X that will be available to developers at http://publicsource.apple.com. In May, the company announced that it would also release the source code for the Mac OS X–based QuickTime Streaming Server as well as for OpenPlay, a networking protocol devised by programmers from Apple and game developer Bungie Software.

If Apple has paid good money to its own employees to create this software, why give it away? Because by going the open-source route, Apple is hoping to benefit from the power of the Internet-based programming community while keeping the juiciest parts of the company software for itself.

Open Source's Strengths As the success of Linux shows, open-source software allows many different developers to work on a single large project, with each developer typically focusing on an area of particular interest. In Linux's case, the result was a complete computer operating system written entirely by volunteers.

Because open-source software has its fundamental building blocks available for anyone to see, it is often far more stable and secure than any proprietary software. That's because all of a program's bugs are on display for hackers to exploit—making it imperative that the programmers fix the bugs promptly.

Open-source software can benefit greatly from the community that grows up around it. That's because one of the tenets of open-source programming is that any additions or modifications to the open-source code need to be contributed back to the project.

Take Mac OS X. Apple says that Mac OS X will run only on Apple Macs that originally contained the G3 chip. But the new approach of making all the code available should—theoretically, anyway—enable non-Apple developers to add the necessary bits of code to support older Power Macs. Apple has even said that it would be quite happy if developers created versions of Darwin for earlier Mac models—and even for Intel-based PC hardware!—as long as the company didn't have to do the heavy lifting itself. As a result, the owners of older Macs (or possibly accelerator-card companies that sell upgrades for those older Macs) may actually have the power to create backward compatibility for Mac OS X all by themselves.

Darwin is in many ways a gamble for Apple—one that could pay off handsomely if Apple manages to get development momentum going. While basing a commercial OS on open-source pieces may seem gutsy at first, it really isn't. What's courageous about this move is that not all open-source efforts have been resounding successes—Netscape's decision to make its Web browser open source has yet to bear much fruit—and if Apple winds up being the only major contributor to Darwin, then most of the benefits of open source will be lost.

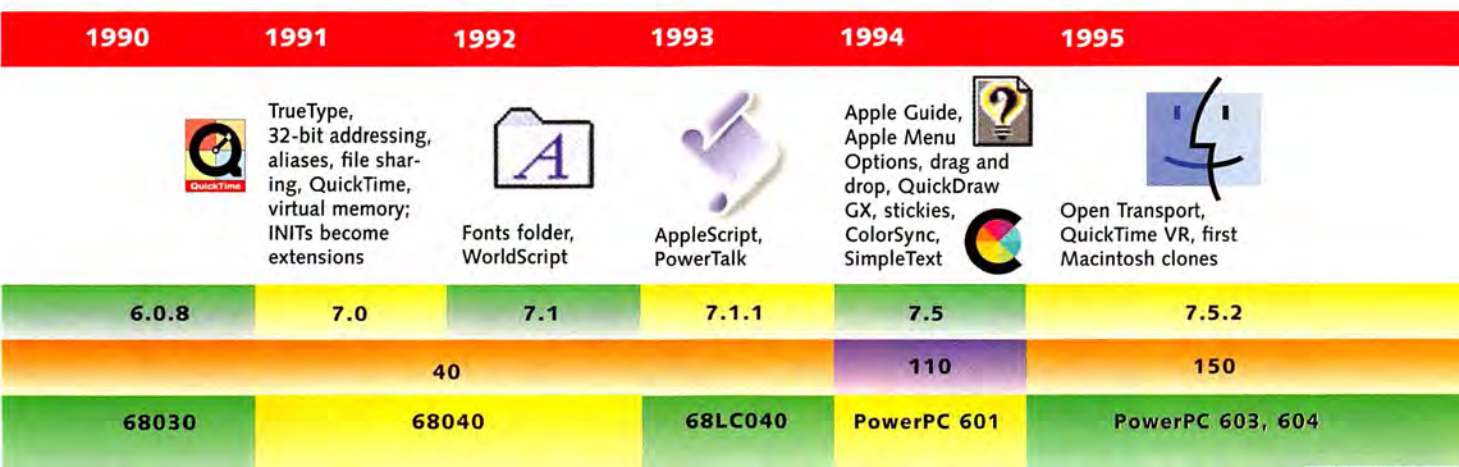
The good news is that Apple says its goal is to synchronize Darwin with FreeBSD 3.X (www.freebsd.org), arguably the most popular version of free BSD Unix available. That move would undoubtedly assure Apple a larger community of programmers who could contribute to Darwin.

Apple's Piece Darwin itself consists of just the Unix part of Mac OS X, a layer of bedrock on which the familiar Mac interface of OS X will be built.

This approach shows that these days, the core of an operating system doesn't need to be treated as a trade secret. Unix has been around for long enough in its various incarnations that it has become a mature, reliable, fast operating system. Apple's decision not to reinvent this particular technology wheel is a shrewd one.

That said, Unix has never been part of a consumer-oriented OS, and that's where Apple's strengths can come to the fore. If the company can build a responsive and easy-to-use consumer operating system on top of Unix, it won't matter that the free Darwin is hiding underneath it.

The true measure of success of Apple's open-source strategy, however, will be whether Apple can succeed in making developers care about Darwin the way they care about Linux and FreeBSD today. Apple must offer technology that open-source developers find useful enough to spend time understanding, enhancing, and maintaining. If Apple can pull it off, making its core OS an open-source project could be one of the best strategic technology choices it has made in a long time.—STEPHAN SOMOGYI



likely that an AppleTalk add-on will be available from a third party.

Not All Programs Are Alike

An important goal for the first version of Mac OS X is for it to run existing Macintosh software well enough that the transition from Mac OS 8 is smooth. However, old Mac applications won't be capable of taking advantage of new Mac OS X features such as memory protection and preemptive multitasking. Consequently, Apple's come up with a multifaceted strategy to help programmers create modern Mac OS X programs without forcing users to abandon older Mac programs they've grown accustomed to.

The result is an operating system that will run three completely different kinds of applications, all from within the same interface. (You'll still be able to copy and paste, drag and drop, and use other features that let various applications interact.) Those three new application types are called Classic, Carbon, and Cocoa.

Classic Formerly called the Blue Box, Classic is a system that lets Mac OS X run old Mac applications without requiring them to be modified in any way. In Mac OS X Server and Rhapsody, the Blue Box was a separate environment—similar to an emulator—that the user had to switch into and out of. But in Mac OS X, Classic applications will appear on the same screen as all other Mac OS X applications, coexisting with Carbon and Cocoa programs.

However, there's a big drawback to Classic programs—one that will spur their authors to update them for Mac OS X: even though Classic programs will be running in OS X, they'll still experience the same limitations they did when running in the Mac OS 8.X environment.

Classic is designed to be a system that smooths the transition from Mac OS 8 to OS X through backward compatibility, much as the Mac OS's 680X0 emulator made it easier for Mac users to move to PowerPC-based Macs. It'll be especially valuable for the users of programs that are no longer maintained but still used.

Carbon Probably the most important of the three different software environments is Carbon, announced by Apple more than a year ago. Carbon represents an evolution—not a revolution—of the current way Mac OS applications are written. As the metaphor goes, all life is based on Carbon—and Apple thinks all future Mac apps should be, too.

With Carbon, Apple made a system for creating programs that was as similar to that of the old Mac OS as possible, discarding methods that were incompatible with an operating system containing memory protection, preemptive multitasking, and other important features Apple wanted to put into Mac OS X.

What this means is that programmers shouldn't have to perform a wholesale rewrite of their applications to gain the benefits of Mac OS X. According to Apple, only about 10 to 20 percent of a typical current Mac OS program will need to be changed to become compatible with Carbon.

So when the authors of your favorite programs decide to update them for Carbon, does that mean you'll be stuck if you're still using Mac OS 8? Not necessarily. Carbon applications can remain largely compatible with Mac OS 8.1 through 8.6 with the help of a special system file called CarbonLib. When running on Mac OS 8.1 and later, however, Carbon applications won't be able to offer any of the performance and stability features of Mac OS X.

Cocoa Formerly referred to as the Yellow Box, the environment called Cocoa provides an easy way for programmers to quickly create new applications. Cocoa's technology comes from Next's OpenStep system, which was designed to aid the rapid development of corporate applications. Cocoa enables—but doesn't require—developers to use Sun's Java language. Java is much applauded by programmers for the ease with which it lets them create complete, Mac OS X–native applications.

While most Mac developers are only beginning to investigate Cocoa and what it can do for them, many former Next developers are likely to update for OS X the programs they've already written for Next.

Unix Let's step out of the familiar Mac interface for a moment. Although Apple has said that it will hide Mac OS X's Unix underpinnings so that no regular user will ever need to look Unix in the face, Mac OS X should be perfectly capable of running Unix programs via a Unix-style command-line interface. Power users and Unix veterans alike will enjoy the fact that any software that runs on one of the flavors of BSD Unix should be portable to Mac OS X, although some compatibility issues between the Unix and Mac OS file systems may limit which Unix utilities will work on Mac disks.

Work in Progress

No one has successfully managed to make Unix into a consumer-oriented operating system before, so Apple's attempts to do so with Mac OS X are quite remarkable. However, it's unclear whether the marriage of the Mac's traditional user-

A Mac OS Timeline	1996	1997	1998	1999	2000
Please Welcome . . .	Control Strip, translucent dragging, OpenDoc, Cyberdog	QuickDraw 3D, multithreaded PowerPC-native Finder, contextual menus, Personal Web Sharing	HFS+, QuickTime 3 Pro, Network Browser, Sherlock, favorites	Keychain, multiuser mode, Sherlock 2, Mac OS X Server, Carbon	preemptive multitasking, memory protection, Cocoa, File Viewer
Mac OS State of the Art	7.5.5	8.0	8.5	Sonata	Mac OS X
MHz-o-Meter	250	350	366	450	?
Chips	PowerPC 603, 604	PowerPC 750 (G3)			PowerPC 7400 (G4)

SPEECH RECOGNITION RETURNS TO THE MAC

IN ALMOST EVERY FUTURE WE'VE IMAGINED, computers listen. Not just to the grumbles, curses, and pleas most of us barrage them with now but also to dictation and commands ("Tea. Earl Grey. Hot.").

The future arrived in 1996, when Articulate Systems released PowerSecretary, the first full-fledged voice-recognition program for the Mac. But by late 1998 it was gone. Dragon Systems—a major investor in Articulate, and the distributor of PowerSecretary—killed the program. As a result, there has never been a Mac program capable of the latest advance in voice recognition: continuous-speech dictation (where you don't have to talk . . . like . . . this).

Now the possibility of relief is in sight. Two companies—an upstart, MacSpeech (www.macspeech.com), and Dragon Systems itself (www.dragonsys.com)—have promised to close the huge gap in voice-recognition capabilities between the Mac and PC by the end of this year. MacSpeech says that it will release both MacDictate and MacDictate Professional for less than $250 each. Dragon Systems has not yet announced the name or pricing of its product.

For Mac users who can't use the keyboard for one reason or another, often because of disabilities or computer-related injuries, the lack of voice-recognition software on the Macintosh has forced them either to use seriously outdated software or to switch to Windows. (This very article is being dictated into a Windows PC by a *Macworld* editor.)

The Mac OS does offer built-in, limited voice recognition through the PlainTalk extension. (To make PlainTalk work, owners of iMacs and the new G3s should upgrade to Mac OS 8.6.) MacSpeech's ListenDo! program enhances PlainTalk, allowing you to control all menu items via voice commands. But all that is nothing compared to the Windows alternatives.

Over the past couple of years, the power of voice-recognition software for Windows has skyrocketed while prices have plummeted. To put it in perspective, the original PowerSecretary cost about $3,000; Dragon NaturallySpeaking for Windows is available in several flavors, at prices ranging from $200 to $700. It's the best-selling voice-recognition product in the U.S., according to market researcher PC Data.

Many people believe that using voice-recognition software will be the primary way people will interact with their computers in the future—the public nature of cubicles be damned. At least now the Mac won't be left out of the game.—SCHOLLE SAWYER

friendliness with Unix's gritty command-line power will be immediately successful. In all likelihood, the first release of Mac OS X in early 2000 will be just the first step in the Mac OS's transition to a modern operating system.

Those concerns aside, the good news is that *continuity* is a commodity at Apple these days. The company's Mac OS strategy not only remained remarkably consistent over the past year but also emphasizes continuity between Mac OS 8 and Mac OS X through the Classic and Carbon environments.

The software transition to Mac OS X will likely mirror the 680X0-to-PowerPC transition that began five years ago and still hasn't quite finished. Those programs that most benefit from Mac OS X's new capabilities will be the first to make the move. Mac OS X will also attract many developers of high-end scientific and engineering software from the Unix world.

Deeper and Deeper When we peer past 2000, things get a bit fuzzier. Mac OS X is such a remarkable departure for Apple that it could potentially change everything we think we know about the Mac in the future. Mac OS X will certainly benefit greatly when the G4 processors arrive, but persistent rumors abound that Apple is also investigating Intel's next-generation chips. Mac OS X isn't nearly as tied to the PowerPC processor as the old Mac OS is. Could Mac OS X run on an Intel processor? Certainly, if Apple wanted it to. The real mystery is, *will* the company want it to?

The Last Word

In the world of technology, experience has taught us that most products touted as revolutionary rarely are. Up to now, Apple has been remarkably restrained when it comes to Mac OS X—probably because the company knows it must deliver this new Mac OS before patting itself on the back. But Mac OS X promises to provide some far-reaching changes in the Mac universe, not all of which may be for the better.

While the power of Unix is undeniable, so too is its user-hostility. We have no doubt that Apple intends to cover up Mac OS X's Unix heritage, but we'll have to wait and see whether the company can manage the trick. Because while extremely technical computer users will rejoice at the prospect of the Mac OS and Unix in the same box, most Mac users won't stand for a Mac OS that displays a command-line interface at the drop of a hat.

After the stroke of midnight, on January 1, 2000, will the Mac OS magically transform from the patchwork twentieth-century Mac OS 8 into the new millennium's shiny new Mac OS X? Of course not. But for Mac users, the path Apple is taking with Mac OS X suggests that a great future lies ahead for the Macintosh—even if there are a few bumps along that road. **m**

Contributing Editor STEPHAN SOMOGYI is looking forward to having the best of both the Mac and Unix worlds in a single OS. He wrote "The Beauty of the Beast" for *Macworld*'s April 1999 issue.

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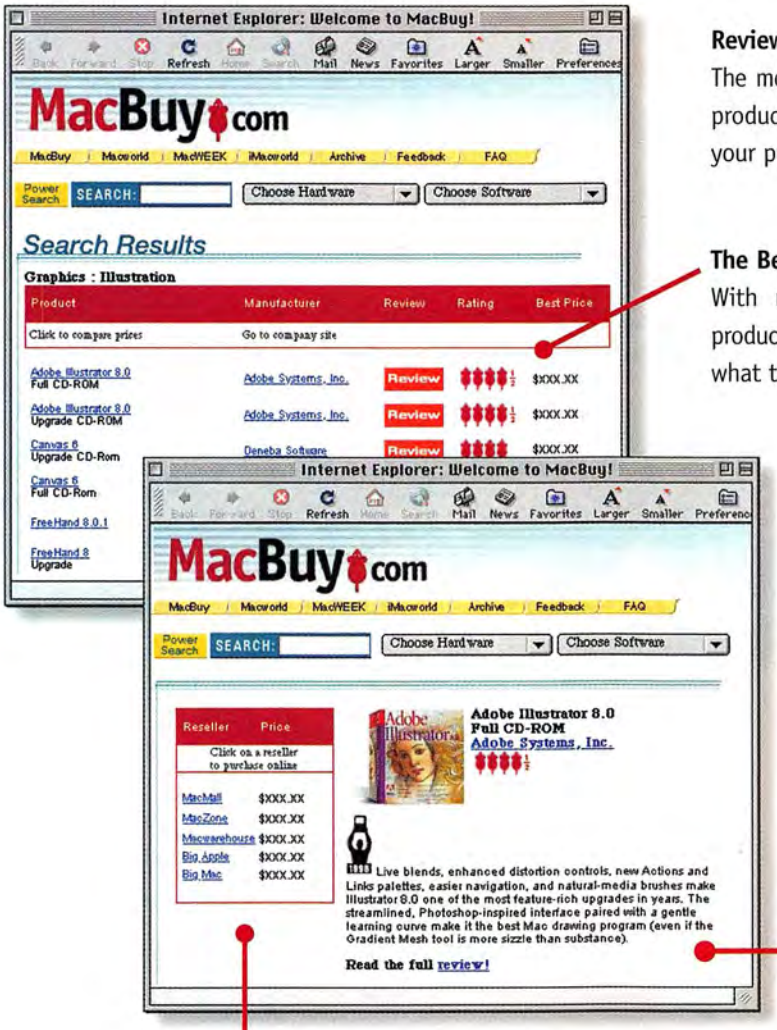

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Essential MAC TOOLS

Fifteen Utilities Sure to Keep You and Your Mac Working at Peak Efficiency

BY FRANKLIN TESSLER

Photographs by Neal Brown

Your Mac is the power tool you use every day. The one you rely on to get your work done. The one you simply can't live without. But if it's breaking or not working at peak efficiency, your work suffers. Whether you need to manage a stable of unruly fonts or repair an ailing hard drive, there are special software tools, called utilities, that can restore your Mac—your most essential tool—to good health. And even if your Macintosh isn't broken, you'll need at least some of these utilities on hand to make your computer work as efficiently as possible.

To help you assemble your tool kit of Mac utilities, we looked at more than 35 commercial products and picked 15 of the very best for making your Mac happy as well as for fixing it when it's broken. (To see reviews and ratings of all the utilities we evaluated, visit Macworld Online at www.macworld.com/1999/08/features/.) Read on to find fixes to almost all your Mac's problems.

Work Faster and Smarter

Even if you have the world's speediest Mac, you might still be wasting precious time performing mindless tasks such as searching for documents and typing return addresses. Although you'll probably always need to do *some* work, utility programs can automate your more repetitive chores and help you work more efficiently.

Find Files Faster

Even the most organized people can misplace a file or inadvertently save a document to the wrong folder. To solve this dilemma, Power On Software's Action Files adds hierarchical menus to every application's Open and Save As dialog boxes, providing fast access to recent items so you don't have to scroll through every folder.

Furthermore, enhancements to Action Files' proprietary Open and Save dialog boxes are even more compelling: the resizable window sports a Finder-like menu that lets you access recent files; sort the file list by name, size, kind, label, or date; and change viewing options. You can rename, duplicate, alias, label, or trash any item in the list, all without exiting the dialog box. And with Action Files' powerful search command, you can bypass the Finder's find function and look for files and folders based on multiple criteria (but you can't search by content).

Although Apple's new Navigation Services offer similar functions, the feature set of Action Files is much more complete and works even with applications that have not been updated to take advantage of those features.

ACTION FILES 1.2 / RATING: ♦♦♦♦ PROS: Expands functionality of Open and Save dialog boxes. CONS: Can't perform content-based searches. COMPANY: Power On Software (800/797-7382, www.poweronsoftware.com). PRICE: $40.

Automate Routine Tasks

A simple way to automate routine tasks such as checking e-mail or logging on to remote servers is to create shortcuts. CE Software's QuicKeys lets you easily design macros and keyboard shortcuts. Mac users familiar with QuicKeys will be pleased with version 4.0's new features, including a sequence editor that lets you build macros step-by-step, a setup assistant for helping novices, and timesaving tools designed for the Internet. For example, if you routinely send files via e-mail, you can create a one-step macro that takes selected documents and attaches them to a new e-mail message with just one keystroke.

In case you're not a fan of keyboard shortcuts, QuicKeys also lets you activate shortcuts by clicking on custom tool bars. QuicKeys doesn't do anything you can't already do manually, but using macros is much more efficient and should be a serious consideration for anyone who suffers from repetitive strain injuries (RSIs).

QUICKEYS 4.0 / RATING: ♦♦♦♦ PROS: Setup assistant simplifies macro creation. CONS: Limited room for button help. COMPANY: CE Software (800/523-7638, www.cesoft.com). PRICE: $100.

Create Easy Shortcuts

For those who'd rather click on a button, WestCode Software's OneClick provides several options for creating customized tool palettes. OneClick's standard button palettes provide single-click access to several common functions. With OneClick you can automate tasks such as launching and quitting applications, switching windows, and restarting the computer. And with OneClick's editor, you can create individualized tool palettes—complete with unique icons and help text for each button—for any application.

Accessing the full power of OneClick macros, however, demands that you learn EasyScript, WestCode's proprietary scripting language. If you haven't had any programming experience, this language can be daunting at first. Fortunately, OneClick's recording function is sufficient to automate many common tasks, thereby relieving you from having to use EasyScript. And if you're handy with AppleScript, you can even integrate OneClick commands into your AppleScripts.

In addition to supporting Mac OS 8.5 and above, version 2.0, which will be available by the time you read this, adds several new functions, including more EasyScript keywords, a faster way to create shortcuts, and a manager to keep track of all your shortcuts.

ONECLICK 1.0.3 / RATING: ♦♦♦ PROS: Inexpensive; customizable buttons. CONS: Scripting difficult for beginners. COMPANY: WestCode Software (800/448-4250, www.westcodesoft.com). PRICE: $50.

If you can't manage to buy a new Mac or an upgrade card, consider installing affordable software utilities to enhance your system's performance. Although the speed boost they offer usually isn't dramatic—it may not even be noticeable for many tasks—these utilities make sense if you have an older Mac or if you're on a very tight budget.

Supercharge Your System

Speed Up Your Old Mac

When Connectix's Speed Doubler was first released, it added more spunk to non–PowerPC-native software running on Power Macs. Now, with most applications running in native mode, that advantage has largely disappeared. Still, Speed Doubler's other features—faster file copying, smart file replacement, and file synchronization—offer tangible benefits for older Macs.

On local volumes, Speed Doubler's gains tend to be greatest when you copy many files. But over a network, file copying can be as much as three or four times as fast with Speed Doubler 8.1.2. When you copy folders, Speed Doubler's Smart Replace feature can save even more time by transferring only changed items, so you don't waste time copying identical files.

Folder synchronization, automated file copying, enhanced disk caching, and a simple but functional macro capability round out Speed Doubler's feature set. Although it won't really double the speed of your Mac, Speed Doubler is a worthwhile investment for older, non-G3 machines.

SPEED DOUBLER 8.1.2 / RATING: ♦♦♦½ PROS: Faster network copies; smart-replace feature saves time. CONS: Most applications don't benefit from speed boost. COMPANY: Connectix (800/950-5880, www.connectix.com). PRICE: $55.

Organize Your Hard Disk

Imagine how long it would take to do research in a library where the books were shelved at random. Searching for books in an unorganized library would be very similar to hunting for a file on a fragmented disk. Files get scattered around your hard disk as you use your Mac, so it takes your computer longer to find them. Thankfully, Alsoft's Disk Express Pro gathers up the pieces and puts them back where they belong, so your Mac works faster.

As with other performance-enhancing utilities, the speed boost from Disk Express Pro depends on the type of work you do. File fragmentation exacts the greatest toll on file servers and on documents created in certain applications, such as those used for digital video. Disk Express Pro works in the foreground or automatically in the background, and it lets you customize how you want your files organized. Disk Express is worth considering if your work demands peak disk performance or if you don't already have another defragmentation utility such as MicroMat's TechTool Pro.

DISK EXPRESS PRO 3.0.1 / RATING: ♦♦♦♦½ PROS: Flexible optimization options; works in the foreground or the background. CONS: Expensive. COMPANY: Alsoft (800/257-6381, www.alsoft.com). PRICE: $90.

Better Virtual Memory

True to its name, Connectix's RAM Doubler lets you effectively double or even triple the amount of memory in your Mac without cracking open the case. RAM Doubler works its magic by using physical memory more efficiently, occasionally swapping data between RAM and your hard disk. On Power Macs, another RAM Doubler feature, called file mapping, reduces the memory requirements for native applications. Apple's virtual memory also provides file mapping, but RAM Doubler is a better alternative, because it uses less disk space than virtual memory.

Although RAM Doubler is remarkably robust, enhancements to the Mac OS and dirt-cheap memory upgrades have made RAM Doubler much less compelling than it used to be. However, if you own an older Mac that's difficult to upgrade, buy RAM Doubler to speed up your system.

RAM DOUBLER 8.0.1 / RATING: ♦♦♦♦ PROS: Stable; reduces RAM requirements for native applications. CONS: Real memory often costs less. COMPANY: Connectix (800/950-5880, www.connectix.com). PRICE: $45.

Manage Resources and Prevent Data Loss

Managing hundreds of fonts, extensions, control panels, control-strip modules, plug-ins, and other start-up files can be a real headache. And with tens of thousands of files on a single volume, you also need utilities to maintain the integrity of your hard disk and recover your files when the inevitable accident happens.

Manage Your Fonts

Adobe Type Manager (ATM), which scales fonts for display and printing, is such an essential part of the Macintosh operating system that Apple even ships a version of it with the system software. In addition to basic font-smoothing functions, the antialiasing feature makes Type 1 PostScript easier to read on your screen. But what the Deluxe version of ATM really brings to the party is the ability to group fonts into sets and disable—or "turn off"—specific fonts.

When you use it for the first time, ATM Deluxe builds a database of all the fonts on your hard disk, allowing you to activate and deactivate fonts whenever you need to. And an added bonus is the program's ability to autoactivate fonts only when they're called for. With fewer fonts loaded into RAM, applications work faster, because they use less memory.

ATM Deluxe also provides another benefit: font substitution. If you open a document that includes a font that's not on your hard disk, ATM Deluxe simulates the missing typeface, using a special Multiple Master font. Font substitution isn't quite as good as the real thing, but it's a reasonable facsimile. If you use only a handful of fonts, you can probably get by with the basic version of ATM that came with your Mac. But if your fonts number in the hundreds, consider a font manager such as ATM Deluxe. And by the time you read this, version 4.5 will be available. (For coverage of Extensis's more robust, stand-alone font-management application, Suitcase 8, see *Reviews*, elsewhere in this issue.)

ATM DELUXE 4.0 / RATING: ♦♦♦♦ PROS: Saves memory; font substitution. CONS: Font-list point size and display type can't be adjusted. COMPANY: Adobe Systems (800/833-6687, www.adobe.com). PRICE: $100.

Repair Damaged Directories

What would you do if you suddenly couldn't access any of your applications or documents, even though they were still intact? That may sound far-fetched, but it can happen if your disk's directory—the catalog that tells your computer where all of your files and folders are stored—becomes corrupted. Other utilities detect and repair damaged directories, but Alsoft's DiskWarrior can handle directory damage that most other utilities are unable to touch.

DiskWarrior is more than a data-recovery tool. By running DiskWarrior on a regular basis, you can detect and repair problems before losing data. In addition to keeping your data safe, DiskWarrior can also speed up your drive by optimizing your disk's directory. So, even if you already have a data-recovery application, DiskWarrior can be a valuable addition to your utility collection.

DISKWARRIOR 1.0.2 / RATING: ♦♦♦♦ PROS: Excellent interface. CONS: Repairs only directory damage. COMPANY: Alsoft (800/257-6381, www.alsoft.com). PRICE: $70.

Doctor Your Mac

To keep your hardware and software in good health, you need to install a general-purpose diagnostic utility, such as MicroMat's TechTool Pro. In addition to offering comprehensive disk maintenance, repair, and defragmentation, TechTool Pro incorporates a broad variety of diagnostic tests that check everything from your computer's video memory to the integrity of your system software. If TechTool Pro finds something amiss, it tells you exactly what the problem is and what to do about it.

TechTool Pro lets you select an interface that matches your experience level. The beginner's level automatically runs a suite of basic tests on your Mac, without any interaction. TechTool Pro's two advanced levels let you specify exactly what tests to perform, including some that are relatively obscure. Rest assured—even at the higher levels, TechTool Pro's interface is admirably intuitive, and the program's technical advice is lucid and thorough.

As with DiskWarrior, it's a good idea to run TechTool Pro regularly, even if you are not experiencing any problems. Of course, no software-based utility can help you if you fry your Mac's power supply or zap your monitor. But even though it cannot repair or even diagnose every problem, TechTool Pro is worthwhile insurance. You can also download MicroMat's TechTool, a free utility that performs basic functions such as zapping parameter RAM and deleting your Desktop file.

TECHTOOL PRO 2.1.1 / RATING: 4 PROS: Three user levels; offers plain advice. CONS: Includes some obscure tests. COMPANY: MicroMat (800/829-6227, www.micromat.com). PRICE: $150.

Avoid File Discord

What can you say about a utility that already garnered a five-mouse rating several versions ago? Casady & Greene's Conflict Catcher was originally developed to ferret out annoying extension conflicts by automating the tedious process of finding which start-up files are at fault. But the latest versions of Conflict Catcher do much more. As in previous updates, Conflict Catcher 8 lets you manage your Mac's start-up files, including extensions, control panels, fonts, control-strip modules, Apple-menu items, and assorted plug-ins. Apple's Extensions Manager, which comes with the Mac OS, doesn't offer nearly the capabilities of Conflict Catcher. In addition, the Conflict Catcher file list can be extensively customized, which you can't do with Apple's Extension Manager, and it comes complete with an integrated reference database that displays valuable summary information when you click on any start-up file.

When you install or replace your system software, Conflict Catcher's Clean Install System Merge feature displays a list of files—non-Apple extensions, for example—that need to be transferred to the new System Folder. Simply deselect the files you don't want to move and click on a button, and Conflict Catcher does the work for you. If you've ever struggled with a manual system update, you'll find that this feature alone is well worth the asking price.

CONFLICT CATCHER 8.0.4 / RATING: 5 PROS: Customizes sets of start-up files; simplifies system updates. CONS: None. COMPANY: Casady & Greene (800/359-4920, www.casadyg.com). PRICE: $80.

Utility ROUNDUP

If the programs here don't solve your problems, there may be another utility that does. Log on to www.macworld.com/1999/08/features/ to find our comprehensive collection of more than 35 rated and reviewed Mac utilities.

Aladdin Systems Spring Cleaning
Alsoft Master Juggler Pro
Alsoft PlusMaker
Binary Software Square One
Binary Software KeyQuencer
Casady & Greene Speed Startup 1.0
DiamondSoft Font Reserve
Extensis Suitcase 8
FWB HardDisk Tool Kit
Insider Software Font Agent
Insider Software Update Agent
Magna Empower Pro
Network Associates Virex
Power On Software Action GoMac
Symantec Norton Utilities 4.0.3
Thursby DAVE
Total Recall MacMedic
Walnut Systems Cruise Control

Share Files Gracefully

With so many applications out there, it's only a matter of time before someone sends you a file you can't open. Whether it's a different Mac application or a file created in a Windows program, you need the following utilities so you can access and read all your documents.

Compress Your Files

If you've ever read an e-mail attachment that's reduced to gibberish, then you need to install a utility such as Aladdin Systems' StuffIt Deluxe. Most files require special processing before they can be sent electronically; unfortunately, every OS has its own formats. Processing usually entails encoding files for transmission as well as compressing them. This utility lets you work with encoded and compressed files in a variety of popular formats, including StuffIt (.sit), Zip (.zip), UU (.uu), BinHex (.hqx), and MacBinary (.bin).

StuffIt Deluxe also provides several convenience features, including the ability to compress or expand files by appending or removing a corresponding file-name extension. Unfortunately, StuffIt Deluxe 5.0 was hobbled by several bugs, including incompatibility with previous versions (see *Reviews*, April 1999). Since then, Aladdin has released an update that addresses most of these problems, as confirmed by our tests. However, if you don't need all of StuffIt Deluxe's features, Aladdin's DropStuff supports fewer formats for $40 less. And StuffIt Expander—available free on Aladdin's Web site—provides basic file-expansion capabilities.

STUFFIT DELUXE 5.1 / RATING: ♦♦♦½ PROS: Creates smaller files than previous versions. CONS: Previous versions incompatible with new file format. COMPANY: Aladdin Systems (831/761-6200, www.aladdinsys.com). PRICE: $80.

Translate Unreadable Files

A few years ago, a behind-the-scenes utility from DataViz, called MacLink Plus, translated word-processing and other documents on the fly. Since the release of Mac OS 8.5, however, MacLink Plus is no longer included with with the Mac OS. For about $100, though, MacLink Plus Deluxe offers the same functionality, along with a revamped interface and several new features, including support for Microsoft Office 98.

MacLink Plus's strength is providing translation services for various Mac and PC file formats. The new release adds several new translators; supports batch processing; and lets you specify default settings for word-processing, database, graphics, and spreadsheet files. A handy option in the MacLink Plus application window lets you preview the contents of any file the program recognizes.

MACLINK PLUS 10.1 / RATING: ♦♦♦♦ PROS: Reliable translation; preview function. CONS: Could be more transparent. COMPANY: DataViz (800/733-0030, www.dataviz.com). PRICE: $100.

Run Windows on Your Mac

Sometimes, the only way to work with a PC document is to run the Windows application that created it. Here, too, utilities can help by letting you run Windows programs on your Mac. With Connectix's VirtualPC, you can run a full version of Microsoft's Windows 98 on your computer, using an emulated Intel Pentium processor. (Connectix also offers PC DOS and Windows 95 versions.)

However, although a Macintosh running VirtualPC Windows 98 captures the look of the genuine article, it can't match the feel or speed of the real Intel-compatible iron.

Naturally, the speedier your Mac's processor, the faster VirtualPC runs. On older, pre-G3 computers, performance will be poky at best. If you need to run only the occasional PC application, VirtualPC will do the job. But if you routinely need to use PC software, you're better off buying a PC or installing a card with an Intel-compatible processor, such as Orange Micro's OrangePC (714/779-2772, www.orangemicro.com).

VIRTUALPC WINDOWS 98 / RATING: ♦♦♦½ PROS: Runs most PC software. CONS: Much slower than a real PC. COMPANY: Connectix (800/950-5880, www.connectix.com). PRICE: $179.

Safeguard Your Computer

Even though Macs are less susceptible to viruses and worms than PCs, no Mac is completely immune, for any Mac can be attacked, bringing your work to a screeching halt. In addition to safeguarding your data from viruses, you may need a powerful protection utility to keep unauthorized people from sneaking peeks at your files.

Defend Against Disease

Unless your Mac is completely isolated, an up-to-date antiviral utility is an essential add-on. (Alas, John Norstad's excellent freeware Disinfectant is no longer supported.) Norton AntiVirus (NAV) provides automatic background virus checking and notifies you whenever it detects suspicious activity. A powerful scheduling function also lets you program NAV to scan volumes on specified days and times.

Of course, an antiviral utility is effective only as long as it keeps up with the constant stream of new viruses. Fortunately, you don't need a new version of the program to stay current—Symantec posts monthly virus-definition updates that you can download, free for one year, from its Web site. To save you the hassle of constantly checking for updates, NAV's LiveUpdate feature automatically downloads them from Symantec's servers. Unfortunately, these transfers are rather slow. Despite a few rough edges, though, Norton AntiVirus offers insurance you can't afford to be without.

NORTON ANTIVIRUS 5.0.3 / RATING: ♦♦♦½
PROS: Straightforward interface; scheduling function. CONS: Slow update feature. COMPANY: Symantec (800/441-7234, www.symantec.com). PRICE: $89.

Keep Out Peeping Toms

Just as you protect your home from prowlers, you need to secure your computer from voyeurs. If your Mac is open to tampering, consider installing additional security software to guard your programs and data.

ASD Software's FileGuard offers a broad range of options for limiting access to your computer. You can lock any rewritable volume with a password that prevents unauthorized access; unlike password-protected screen savers, FileGuard can't be circumvented by restarting with the shift key pressed or booting from an alternative start-up disk.

FileGuard also provides protection at the file and folder level, using a straightforward interface that's similar to that of Apple File Sharing. You can limit individual users' access to particular days and times, and you can prevent those users from copying data onto floppies or erasing files. For particularly sensitive files, you can provide maximum security with four different encryption algorithms; encrypted documents can be read only after a user has entered the correct password.

Although FileGuard does an excellent job of preventing unauthorized users from accessing your computer, it does so without being overly obtrusive. However, FileGuard is relatively slow on older non–Power Mac G3 models.

Once FileGuard has been installed and configured, you can continue to use your computer as you did before, confident that your data will be safe when you're not around.

FILEGUARD 3.2 / RATING: ♦♦♦♦ PROS: Easy to use; unobtrusive. CONS: Slow on older Macs. COMPANY: ASD Software (909/624-2594, www.asdsoft.com). PRICE: $149.

The Last Word

Choosing a set of utilities is like shopping at the hardware store: no single set of tools is right for every person and every job. Still, just as no tool chest would be complete without a pair of pliers and a screwdriver, your Mac-utility arsenal should include a start-up manager, antiviral software, a compression/decompression utility, and at least one data-recovery program. If you're thinking of going beyond the basics, keep in mind that utilities that load at start-up—QuicKeys, for example—use extra memory. And some utilities still ship on floppy disks, so you'll need to buy or borrow a floppy drive if you have a blue-and-white G3 or an iMac.

But whether you opt for the basic tool kit or you go all out, utilities will help you use your Mac more efficiently and with greater confidence. m

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Contributing Editor FRANKLIN TESSLER has been a Mac user since 1984. He still hasn't found the perfect utility.

Generation Gap

Bring Your Old Devices and New Mac Together with Macworld's SCSI Expert Guide

You don't know what you've got till it's gone. It may sound trite—it's even immortalized by a Joni Mitchell song—but no one knows this better than owners of Apple's latest computers. For 14 years, every Macintosh had a SCSI (short for *small computer system interface* and pronounced "scuzzy") connector on the back. Most Mac users take for granted this easy and familiar means of hooking up everything from scanners to hard drives to CD writers. Or, at least, they *did*.

Apple's decision to replace SCSI with USB on iMacs and both USB and FireWire on the new blue G3s means that now you need to think about something that was never an issue in the past: how do you connect your old SCSI devices to your speedy new Mac?

You might assume that you should bite the bullet and buy all new USB or even FireWire versions of your peripherals. But for once, money won't necessarily solve all your computer problems: USB is much slower than SCSI, and FireWire peripherals are still scarce. Actually, the answer may be as simple as adding in what Apple has taken out—a SCSI card.

If you haven't bought a new blue Power Mac G3 yet, there's an easy—if not perfect—way to reclaim SCSI connectivity. When you buy your computer from Apple's online store, you can ask to have a SCSI card (Adaptec's PowerDomain 2930U) added for an extra $49. Unfortunately, our tests revealed a software issue that can make this card very slow (see the benchmark, "It's No Race"). You can get something faster built into your new Mac by choosing Apple's $340 9GB SCSI hard-drive option. Along with the hard drive, you'll get a SCSI Ultra2 Wide adapter, the Adaptec PowerDomain 2940U2W.

What if you've already got a new G3 and your trusty old scanner is sitting forlornly by its side? Or what if you want a card that's faster (or of a different SCSI type) than what you can get from the Apple Store? We rounded up 16 SCSI cards to see which of them offer the most speed and the fewest problems (see the sidebar, "The Right Card for You," for the results). But we did not stop there: we also gathered tips to help you through every aspect of picking, installing, and troubleshooting the right SCSI card for your needs.

DECIDE WHETHER TO ADAPT

The first thing you might ask is why you'd want to bother opening up your new G3 to fill one of its three precious PCI slots with a SCSI card when you can buy a USB-to-SCSI adapter instead. Indeed, by the time you read this, there should be several of these adapters on the market. All of them let you connect your old SCSI devices to your computer through the USB port.

But there is a catch: if you use a USB adapter, your devices will slow to a crawl. The maximum speed you'll get is 1.5 MBps—the top speed of the USB port. This is pretty pathetic when you're used to at least 5 MBps—the speed SCSI ports on most older Macs can accommodate.

The Out-of-Luck *iMac* Slow or not, an adapter is the only option for most iMac owners with SCSI devices, because these computers do not have expansion slots. The only exception is the original Bondi blue iMac, which contains one *mezzanine* slot hidden beneath the plastic case. Formac's $139 iProRaid card

PHOTOGRAPHS BY MARK JOHANN

(925/855-1063, www.formac.com) takes advantage of this slot to add a SCSI port. Apple has removed the hidden mezzanine slot from the newest iMacs.

CHOOSE THE RIGHT TYPE OF SCSI

Once you've decided that you want a SCSI card, you're faced with a new question: what *kind* of SCSI? SCSI goes by many names: Ultra, Wide, Ultra2 Wide, Narrow, Fast, and LVD, to recall a few you might have heard of. But there are only two basic types—Narrow and Wide—and each is tailored to a different need: compatibility or power.

People who connect an external hard drive for extra storage space or who scan photos for a personal Web site need an inexpensive, compatible card—a Narrow one. Those who have lots of devices or who use digital-video gear require power and speed—a Wide card. Different varieties of Narrow and Wide SCSI offer various speed advantages and have individual quirks.

Narrow SCSI Narrow SCSI cards have 50 pins on their connectors—25 for transmitting data and 25 for grounding. The cards are inexpensive but relatively slow, offering speeds from 10 to 20 MBps.

Why do we say *relatively* slow? Because as slow as these cards are, they're still twice as fast as what came built into most old Macs. Before the iMac and new blue G3s, Macs came with SCSI-1—a type of SCSI so sluggish by today's standards that it is no longer available on the market.

Most scanners, removable drives (Zip, Jaz), tape drives, and CD-R drives use Narrow SCSI. The most common types are *Fast Narrow* and *Ultra Narrow*. A Narrow card allows you to attach as many as seven devices together in a chain—as long as you keep your cable lengths short. If the cables get too long, the signal begins to fade and you may end up with unmountable drives and frequent crashes. You can have 3.2 to 6.5 feet of total cable on your SCSI chain. This includes both the cables used to connect external devices *and* the ribbons used to connect internal devices.

Wide SCSI Don't be confused by the fact that Wide SCSI connectors are actually more svelte than the so-called Narrow ones. The name comes from the number of pins—68 in all—that are crammed into that small space and the greater amount of data that passes through them.

These cards are more expensive, but they're faster, supporting speeds between 40 and 80 MBps. They can also handle a greater number of devices—15 in all (only 7 can be Narrow). The most common Wide SCSI devices are hard drives. However, anyone who wants to use Wide devices or needs to connect more than seven devices on the chain will need a Wide card. Common varieties of Wide SCSI are *Ultra Wide* and *Ultra2 Wide*. The latter is also known as *low-voltage differential* (LVD for short).

Ultra2 Wide cards offer maximum speed for digital video or large graphics files and also allow longer cable lengths than Narrow or Ultra Wide SCSI. However, these days only a few high-end hard drives use this technology. Also, if you put a non–Ultra2 Wide device on your SCSI chain, the chain will drop back to the speed and cable limits of Ultra Wide.

Mixing and Matching So what should you do if you have several types of SCSI devices? You cannot reliably hook up a Wide device to a Narrow card. However, you can hook up a Narrow device to a Wide card. Because the Wide connectors have more pins, you will need at least one new cable to connect your Narrow devices to the new, wider port.

When you add Narrow devices to your chain, it won't automatically become slower, unless you're using Ultra2 Wide SCSI. But moving your Zip drive to a new Wide card will not make the drive faster, either. Devices have their own built-in speed limitations.

One warning: moving Narrow devices to a Wide card can cause problems. Wide chains are more prone to interference—loss of signal as the length of cable grows—so you'll need shorter, thicker cables with more shielding. Also, if you add a

Macworld LAB TEST

By Kristina De Nike and Jonathan Seff

Narrow device *and* you happen to have low-quality cables, cheap terminators, or multiple devices on a chain that's just a little too long, your new system may begin freezing at start-up or crashing during file transfers.

INSTALL YOUR CARD CORRECTLY

Installing a SCSI card, and indeed any card, on a blue G3 is pretty darn easy—but make sure to do it right.

Get Grounded Static electricity can fry the delicate electronics on your new card, so when you install it, make sure to discharge any static electricity in your body by touching metal (if you've got a metal casing around your hard drive, try touching that). Also, keep yourself grounded by winding a grounding strap around your wrist and attaching the end to metal. None of the cards we looked at came with a strap, but you can buy one at most electronics stores. Once you're sure you're not a lightning rod, pop the card into any available PCI slot.

Don't Skip the Software After the card is in, you'll probably need to install an extension in your System Folder; most of the cards we tested also came with software to set up—or format—a hard drive. Use this software *every time* you attach new hard drives to the SCSI port.

Adaptec supplied software on floppies only, which isn't particularly useful for computers without floppy drives. The company says it will soon ship software on CDs. In the meantime you can download it at www.adaptec.com/support/files/drivers.html. You must get Orange Micro's software from its Web site.

The Right Card for You

NOW THAT YOU KNOW ALL THERE IS TO know about SCSI, one question remains: which card should you buy? To find the answer, Macworld Lab tested 16 SCSI cards.

Seven of our cards were Narrow SCSI. We also tested nine Wide cards. To test their speed, we used MacBench 5.0 (see the benchmark, "It's No Race," for results); we also looked at the cards' ability to boot and their compatibility with scanners.

Mostly Steady Speeds Speed is determined more by what *category* of SCSI card you choose than by what company. Within each SCSI category, the cards performed very similarly. The only exception was the slow Narrow cards from Adaptec.

Adaptec's cards are the only ones you can get built into a new Mac when you buy one online from the Apple Store. Adaptec has been working closely with Apple and carefully fol-

Company	Product	Mouse Rating	List Price	Contact	Warranty (in years)	Bootable*	External Connector
FAST NARROW							
Adaptec	SCSI Card 2906	2½	$65	800/442-7274, www.adaptec.com	5	no	DB 25 pin
AdvanSys	ABP3925	3½	$69	800/525-7443, www.advansys.com	5	no	High Density 50
	EDITORS' CHOICE						
Orange Micro	Grappler SCSI 906F	4	$49	714/779-2772, www.orangemicro.com	1	yes	DB 25 pin
ULTRA NARROW							
Adaptec	PowerDomain 2930U	2½	$105	800/442-7274, www.adaptec.com	5	yes	50-pin Centronics
AdvanSys	ASB3940UA	3	$119	800/525-7443, www.advansys.com	5	no	High Density 50
Initio	Miles Bluenote	3½	$79	800/994-6484, www.initio.com	5	yes	High Density 50
Orange Micro	Grappler SCSI 930U	3½	$79	714/779-2772, www.orangemicro.com	1	yes	High Density 50
ULTRA WIDE							
Adaptec	PowerDomain 2940UW	3	$349	800/442-7274, www.adaptec.com	5	yes	Wide 68 pin
AdvanSys	ASB3940UW	3	$199	800/525-7443, www.advansys.com	5	no	Wide 68 pin
Atto	ExpressPCI PSC	3	$249**	716/691-1999 ext. 241, www.attotech.com	1	yes	Wide 68 pin
Formac	PowerRAID I	4	$119	925/855-1063, www.formac.com	2	yes	Wide 68 pin
	EDITORS' CHOICE						
Initio	Miles	4	$169	800/994-6484, www.initio.com	5	yes	Wide 68 pin
Orange Micro	Grappler SCSI 940UW	3½	$149	714/779-2772, www.orangemicro.com	1	yes	Wide 68 pin
ULTRA2 WIDE							
Adaptec	PowerDomain 2940U2W	3½	$499	800/442-7274, www.adaptec.com	5	yes	Wide 68 pin
Atto	ExpressPCI UL2S	3	$399	716/691-1999 ext. 241, www.attotech.com	1	yes	Very High Density Wide
Initio	Miles U2W	3½	$239	800/994-6484, www.initio.com	5	yes	Wide 68 pin

** Reflects cards' capabilities at press time. Check company Web sites for firmware updates that may solve this problem.* *** When bundled with Atto's ExpressRAID Solution Kit, which offers additional RAID*

Get Up-to-Date It's worth checking the company's Web site, as the software that ships with your card may very well be outdated. Updates can solve speed issues and compatibility problems. We had to update the software on the card (also known as *firmware*) for all three Orange Micro cards, all four Adaptec cards, and the Initio Miles Bluenote.

TAME YOUR SCSI CHAIN

Installing a card is easy, but by nature SCSI can be a temperamental beast. Here's how to deal with some common problems.

Missing Formatters The Orange Micro cards do not come with formatters in the box. Instead, you'll need to download a version of CharisMac's popular formatter Anubis from the Orange Micro Web site (www.orangemicro.com /bin/anubis.bin). Adaptec also did not include any formatters with the PowerDomain 2930U or SCSI Card 2906, but the company says it will have added them by the time you read this.

Cards That Won't Boot One handy thing about SCSI cards is that if you need to repair your main start-up drive, you can typically use a hard drive hooked up through your card to start, or boot, your computer (as long as that hard drive has system software installed on it). Unfortunately, not all the cards we tested were able to do this.

When new G3s look for the start-up disk, they don't necessarily see the SCSI card—and hence the drive attached to it—unless the card has the right firmware. During testing, we were able to boot up from only 12 of the 16 cards. The Adaptec SCSI

lowed the company's specifications to gain maximum compatibility with older SCSI devices. Unfortunately, this proves to be a disadvantage for the company's Narrow cards, at least for now.

The Narrow Adaptec cards check the driver for each connected device; if the driver doesn't clearly identify the speed of the device, the card drops to SCSI-1 speed —5 MBps. In our testing, Apple's Drive Setup installed a driver that did not correctly identify the speed of our test hard drive; performance dropped significantly. Adaptec plans to include updated formatting software at a future date.

MACWORLD'S BUYING ADVICE

If all you're looking for is an inexpensive means of getting your old devices on the bus, Fast Narrow SCSI will do the trick for you and Orange Micro's Grappler SCSI 906F will get you up and running with the least damage to your wallet. Its warranty isn't as good as those of its competitors, but the Grappler SCSI 906F was the least-expensive card in its category *and* the only one that was bootable.

If both speed and the ability to attach more devices are essential to you, then bump up to an Ultra Wide card, such as the Initio Miles. This card comes at a reasonable price, has a good warranty, is bootable, and includes RAID software. Understand, however, that by using Ultra Wide SCSI you'll be restricted to using shorter, higher-quality cables. Our advice is to avoid Ultra2 Wide for now—very few devices can actually take advantage of its potential for blazing speed, and the prices are too high.

One last word of advice: most of the Fast Narrow and Ultra Wide cards offer almost identical performance, so cost played an important part in our evaluations. Think about what features you can't live without, and then *double-check* prices before you decide which card to buy.

Comments
Driver problems may affect performance; not bootable.
Good performance; not bootable.
Inexpensive basic card; fastest in class.
Driver problems may affect performance.
Fastest in class; more expensive; not bootable.
Inexpensive; good performance.
Inexpensive; good performance.
Pricey; variety of cables; good performance; RAID.
Good performance; not bootable.
Good performance.
Good price and performance; RAID; no cables.
Fastest in class; good price; RAID.
Good price and performance; RAID.
Fastest in class; internal connectors and cables; expensive.
Good performance; no cables included.
Good price and performance; RAID; no internal Narrow connector.

software and an external cable, $350.

EDITORS' CHOICE

Best Narrow SCSI Card

Orange Micro Grappler SCSI 906F This Fast Narrow SCSI card lets you move your old SCSI devices to your new G3 with minimal damage to your pocketbook. **Company:** Orange Micro (714/779-2772, www.orangemicro.com). **List price:** $49.

Best Wide SCSI Card

Initio Miles This Ultra Wide SCSI card offers a respectable warranty, Wide and Narrow ribbon cables, and RAID software, all at a very nice price. **Company:** Initio (800/994-6484, www.initio.com). **List price:** $169.

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.

Card 2906 is not a bootable card. The AdvanSys cards were also not bootable, but a firmware update that will fix this problem should be available from the company's Web site by the time you read this.

Mistaken Identity Each SCSI device on the chain must have a unique address so that your computer knows where to send the data. The address, or SCSI ID, is a number from 0 to 7 for Narrow cards and from 0 to 15 for Wide cards. Customarily, both types of cards come preset to 7. If two different devices have the same number, your system may freeze at start-up or only one of the devices may appear on the desktop.

If you're also going to add in old SCSI internal drives, remember that you'll need to pick IDs for them as well. External devices come with dials to pick the ID. Internal devices are trickier—you'll have to muck with the *jumpers*, little plastic caps that fit over pairs of pins. (By default, internal drives are set to 0.)

Termination Trouble As data travels down the SCSI chain, it needs to know when it's hit the end. For this reason you must *terminate* your SCSI chain at both ends. Otherwise, your computer might hang or might not see the drives.

If you're connecting only external devices, the card terminates the end of the chain it's on. All you need to do is terminate the other end by inserting a termination plug into the free SCSI port of your last device. If you have internal and external devices, the card detects this and turns termination off. You then need to terminate the last internal device and the last external device.

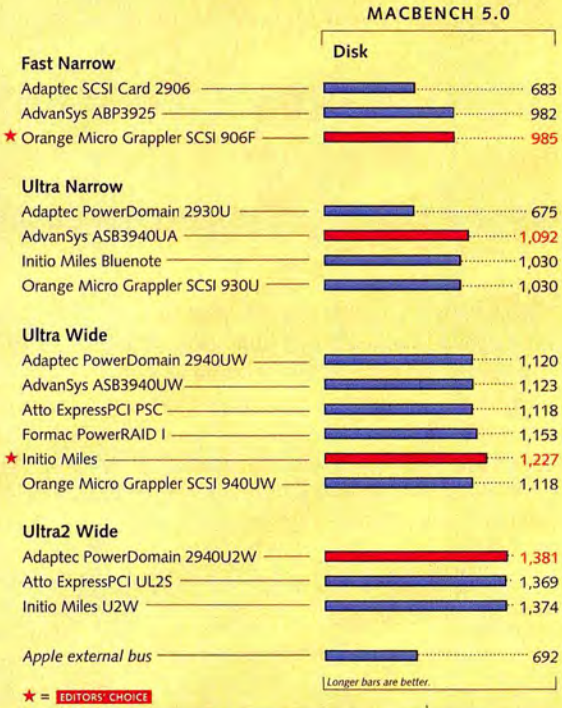
Old-Device Uncertainty Older SCSI devices, particularly scanners, relied on the way the Mac used to manage SCSI. We checked all these cards with the Umax PowerLook III and had no problems. But if you plan to connect an older scanner (made, say, three or more years ago), make sure the card you want supports the "old" or "classic" SCSI manager. Call the company to make sure *your* scanner is supported, or else it may be useful only as a paperweight.

Macworld LAB TEST

It's No Race

What makes one SCSI card faster than another? Usually the answer is the SCSI *category* rather than the card manufacturer. In each category, these cards achieved almost identical speeds, generally determined by the test drives to which we connected them. The use of generic device drivers tripped up Adaptec's Narrow cards. Our Editors' Choice winners offer a balance of price, compatibility, and speed.

Best results in each category in red. *Reference product in italics.* **MacBench 5.0 scores are relative to those of a first-generation Power Mac G3/300, which is assigned a score of 1,000 in each test.**



Behind Our Tests

We evaluated the SCSI cards in a Power Macintosh G3/350 running Mac OS 8.5.1 with 64MB of RAM. We used a Narrow Seagate 4GB drive to test the Fast Narrow and Ultra Narrow cards, an Ultra Wide 6GB Seagate drive to test the Ultra Wide cards, and an Ultra2 Wide 17GB Seagate drive to test the Ultra2 Wide cards. We also attached the Narrow Seagate drive to the external SCSI port of a first-generation Power Macintosh G3/300.—**Macworld Lab testing supervised by Kristina De Nike**

The Last Word

You don't have to shun the new Power Mac G3 just because you've sunk a lot of cash into SCSI-based scanners and hard drives. And you certainly don't need to buy USB versions of all your devices. With a modest budget, some common sense, and this guide in hand, you can bring your old SCSI devices and new Mac together and have the best of both worlds. **m**

Macworld Lab Director KRISTINA DE NIKE covers storage for the magazine. Assistant Editor JONATHAN SEFF savors all his moments with SCSI.

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Steve Jobs, Apple Computer, Inc., Interim CEO, July 21, 1999

The keynote address is open to all registered conference and/or workshop attendees.

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A great way to start the conference! Hosted by MACWORLD Expo conference chairperson Paul Kent and Mac industry stalwart Bob "Dr. Mac" LeVitus, this opening session of MACWORLD Expo/New York is your opportunity to hear experts from all corners of the Mac community speak on a variety of subjects. The MACWORLD Expo Town Meeting features lectures, debates, performances, cool demos and interactive discussions. *Open to all conference and/or workshop attendees.*

New to MACWORLD Expo/New York! – You can profit from these programs which made their debut at MACWORLD Expo/San Francisco!

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Try New Products, Learn New Skills, Exchange Ideas... and More-Visit the Special Interest Environments on the Show Floor!

- **Macintosh Gaming Championship and Exhibits**
- **Education District**
- **Consumer Showcase**
- **Developer Central**
- **Net Innovators**
- **Digital Media Studio Featuring QuickTime™**
- **MACWORLD Expo Digital Art Gallery**
- **Extensions Workshop for Creative Content**

Visit the MACWORLD Expo Web site frequently for an updated list of companies participating in the Special Interest Environments.

Register by June 21 and Save!

For more information, or to register, call 800.645.EXPO or visit www.macworldexpo.com

Macworld EXPO

MACWORLD Expo TWO Conference Programs!

Something for Everyone!

Macworld/Pro Conference

The Technical Conference for Macintosh Professionals

Get the most from your Mac- based products, learn about new and emerging technologies and explore hot topics. Delve into the new Mac OS products that are shaping the Mac market. The Macworld/Pro conference programs take you inside these fast-growing areas:

- **Macintosh Networking and Communications** - Learn techniques and technologies associated with deploying Macintosh LANs, WANs, Internet/Intranets and remote access. Get the most from your existing network or learn how to make it state-of-the-art.
- **Digital Video** - Sessions in this track will give you expert analysis and direction for producing video on your Mac and delivering video from your desktop.
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- **Web Development** - Make the most of your organization's Web presence with exciting techniques learned from these sessions.
- **Advanced Techniques** - Go inside some of the hottest Macintosh technologies in the Advanced Techniques Track and discover ways to extend the platform and make it work for you more powerfully than ever before.
- **Color** - Learn the basics of color theory and deployment of Apple's ColorSync technology; see how creative content designers are providing their customers precise color accuracy in their proofing and finished products.
- **PDF** - Attend sessions in this Portable Document Format (PDF) track to gain an in-depth understanding of how to successfully deploy PDF, work around it's limitations and maximize its potential.
- **Creative Industry Issues** - Hear from industry experts how to be more profitable, more efficient and more employable in the creative industries. You'll gain practical knowledge that will help you run a leaner, meaner and more productive creative group.
- **Managing the Mac Platform** - Features sessions that look at the needs of organizations using the Mac, and presents methods, practices and technologies that are defining the role of the Macintosh manager.

MACWORLD Expo Users Conference

Let the professionals teach you how to use your Mac at work, at home, in the classroom and on the road!

Whether you use your Mac at home or at work. In your home office, your classroom or on the road, this conference will show you how to get more out of the work you do, the things you learn or teach, the games you like to play and more. An array of information-packed sessions taught by world-class instructorsenhances your skills, raises your productivity, and makes your Mac experience more enjoyable with these Tracks:

- **Maxing Your Mac** - Put your Macintosh in full throttle and squeeze every bit of performance out of it. Whether you're working with an old Mac or the latest model, you'll get sound advice and useful tips from experts.
- **Inside Apple Technologies** - Inside your Macintosh are some of the most advanced and innovative system technologies. Gain in-depth understanding of these technologies and learn how to use them to develop some of the coolest computing solutions.
- **Top Tools** - These sessions will unlock the secrets of your favorite programs and get you up to speed quickly with advanced features you didn't know were available.
- **Crash Courses** - Attend the Crash Courses for a quick hit of technology explanations to help make you a more informed Mac user.
- **The Mac in Small Business** - It has never been easier to use Macintosh technology to launch and operate a small company, home-based business or telecommute from your home. Learn from experts how to put technology to work for you.
- **MACWORLD Expo Gallery** - Creative people have always chosen the Macintosh. This track features renown artists from the Mac community demonstrating their dazzling works and explaining how they use Mac-based tools to achieve stunning success.
- ***Macworld* Magazine Presents** - *Macworld's* editors, columnists and featured guest speakers present the hottest topics straight off the pages of the industry's premier publication.
- **Macs in Education** - The Macintosh paradigm for computing ease-of-use has made it the platform of choice for educators world-wide. This track showcases innovative applications and techniques that can enhance both learning and teaching opportunities.
- **Goodies** - These presentations and ideas will put a smile on your face and demonstrate things that are cool for cool's sake. Join fellow members of the Macintosh community as we celebrate technology in this wild, weird and wonderful track.

Pre-Conference Workshops

Make the most of your time at MACWORLD Expo/New York — spend an entire day getting in-depth training before the conferences and exhibits begin. Visit the Web at www.macworldexpo.com for complete workshop descriptions.

Register by June 21 and Save!

Early Discount Registration Form for MACWORLD Expo/New York 199

Jacob K. Javits Convention Center ● Town Meeting & Pre-Conference Workshops: July 20, 1999 ● Conference Sessions & Exhibits: July 21-23, 1999

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or a G
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on the Web a
www.macworldexpo.co

1 Customer Information

Early Discount Deadline - June 21!

Choose your package and fill out the form completely. Incomplete forms will be returned unprocessed. Please use one form per person; make photocopies for additional people.

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title

company

street address (please include apt #, suite, mail stop, etc.)

PRIORITY CO

P.O. box (if applicable)

city | state | zip code

country | telephone | extension

fax | internet/E-mail address

2 Registration Package Selection & Fees

Town Meeting and Pre-Conference Workshops: July 20, 1999 ● Conference Sessions and Exhibits: July 21-23, 1999. All Conference Sessions, Keynote Address and the Town Meeting are on a first-come, first-served basis with the exception of the Pre-Conference Workshops.

		Early Discount by June 21	Regular Price after June 21
W write in your workshop session code	❑ **Package 1: SUPER PASS**	$1,095	$1,195
	Includes: Pre-Conference Workshops, Macworld/Pro Conference Sessions, MACWORLD Expo Users Conference Sessions, Keynote Address, Exhibits, Town Meeting		
	❑ **Package 2: Macworld/Pro Conference**	$795	$845
	Includes: Macworld/Pro Conference Sessions, MACWORLD Expo Users Conference Sessions, Keynote Address, Exhibits, Town Meeting		
W write in your workshop session code	❑ **Package 3: MACWORLD Expo Users Conference & Full-Day Pre-Conference Workshop**	$515	$565
	Includes: Pre-Conference Workshop, MACWORLD Expo Users Conference Sessions, Keynote Address, Exhibits, Town Meeting		
W write in your workshop session code	❑ **Package 4: Full-Day Pre-Conference Workshop**	$395	445
	Includes: Pre-Conference Workshop, Keynote Address, Exhibits, Town Meeting		
	❑ **Package 5: MACWORLD Expo Users Conference**	$195	$225
	Includes: MACWORLD Expo Users Conference Sessions, Keynote Address, Exhibits, Town Meeting		
	❑ **Package 6: Exhibits ONLY**	$29	$45
	Includes: Admission to the exhibits ONLY. Does NOT include admission to the Keynote Address.		

3 Attendee Profile (must be filled out to process your registration)

For What Purpose Are You Purchasing/ Evaluating Products and Services?
- ❑ 1. For my Company/Organization/Department
- ❑ 2. For Myself as a Consultant/Sole Proprietor
- ❑ 3. For Myself as Consumer

What is Your Industry? (CHECK ONE ONLY)
- ❑ 4. Accounting/Finance
- ❑ 5. Aerospace
- ❑ 6. Architecture/Construction/Process Industries
- ❑ 7. Art/Design/Creative Services
- ❑ 8. Arts & Entertainment
- ❑ 9. Computer Reseller/VAR/VAD/Service
- ❑ 10. Consulting
- ❑ 11. Education: K-12
- ❑ 12. Education: Higher Ed
- ❑ 13. Education: Other
- ❑ 14. Engineering/R&D
- ❑ 15. Gaming
- ❑ 16. Government/Military
- ❑ 17. Health/Medical Services
- ❑ 18. Legal Services
- ❑ 19. Manufacturing (Computer Industry)
- ❑ 20. Manufacturing (Non-Computer Industry)
- ❑ 21. Marketing/Sales/PR/Communications
- ❑ 22. Printing/Publishing
- ❑ 23. Transportation
- ❑ 24. Utilities
- ❑ 25. Other _____

What is Your Job Function? (CHECK ONE ONLY)
- ❑ 26. Art Director/Graphics
- ❑ 27. Consultant
- ❑ 28. Controller/Treasurer/Accounting/CFO
- ❑ 29. Corporate Executive
- ❑ 30. DP/IS Management/CIO
- ❑ 31. Editorial/Writing
- ❑ 32. Educator
- ❑ 33. Engineering/Scientific/R&D
- ❑ 34. Human Resources
- ❑ 35. Management/Department Head
- ❑ 36. Marketing/Sales
- ❑ 37. Network Management
- ❑ 38. Professional (Lawyer, Doctor, etc.)
- ❑ 39. Programming/Analysis
- ❑ 40. Purchasing
- ❑ 41. Software Developer
- ❑ 42. Training
- ❑ 43. Other _____

What is the size of your Organization?
- ❑ 44. Under 50
- ❑ 45. 50-99
- ❑ 46. 100-499
- ❑ 47. 500-999
- ❑ 48. 1000 & Over

Which Personal Computers Do You Use? (Check all that Apply)
- ❑ 49. Macintosh Powerbook Series
- ❑ 50. Macintosh Performa Series
- ❑ 51. Macintosh Quadra Series
- ❑ 52. Macintosh Workgroup Series
- ❑ 53. PowerMac
- ❑ 54. iMac
- ❑ 55. PowerMac G3
- ❑ 56. PowerBook G3
- ❑ 57. IBM PC or Compatible Desktop
- ❑ 58. IBM Laptop/Notebook
- ❑ 59. Other _____

Are the Computers at Your Organization Networked?
- ❑ 60. Yes
- ❑ 61. No

4 Payment Method (You will be charged for all registrations received including duplicates.)

Payment must accompany form for registration to be complete. DON'T PAY FOR THIS EVENT TWICE! You will be charged for all registrations received and will not be refunded for duplicate registrations. Please use one method of registration only. **All Registration fees are non-refundable and credentials are non-transferable.** A $20 fee will be charged for all returned checks. Purchase orders will not be accepted.

❑ Check enclosed (make payable to MACWORLD Expo). Enclose both check and registration form in envelope.

❑ MasterCard ❑ Visa ❑ American Express Amount $ _____

Account Number _____ Expiration Date _____

If Card Holder is other than registrant, please print card holder's name below:

first name | m.i. | last name

5 Pre-Conference Workshop Key and Registration Information

WORKSHOP KEY:

Tuesday, July 20: 12:00 p.m. - 7:00 p.m.

- **WA:** Practical Introduction to Mac Networking
- **WB:** Desktop Publishing: The Big Picture
- **WC:** Creation of High Quality Photographic Web Conter
- **WD:** Macintosh Network Administration with the Appl Network Administrators
- **WE:** The QuickTime™! Professionals Workshop
- **WF:** How to be a Mac Power User
- **WG:** Getting Started with Applescript
- **WH:** An Introduction to WebObjects Development
- **WI:** Java Script and Dynamic HTML Wizardry
- **WJ:** Macintosh Audio Solutions for Real World Challenge

Workshops are subject to change, please visit the Web at www.macworldexpo.com for the most up-to-date information.

REGISTER NOW!

Use ONE of the following methods to register with this form

WEB: www.macworldexpo.com THROUGH 7/14/99. Registrations received after 6/2199 will be charged at regular pricing.

PHONE: 800-645-EXPO or 781-551-9800 outside of the U.S. ($5 service fee does apply) THROUGH 7/14/99. Registrations received after 6/21/99 will be charged at regular pricing.

MAIL TO: MACWORLD Expo/New York P.O. Box 9103, Ncrwood, MA 02062-9103. THROUGH 6/21/9 ONLY.

FAX: 781-440-0359. Faxed registration form must includ credit card information THROUGH 6/21/99 ONLY.

BADGE INFORMATION

- Confirmation of registration will be sent once registration is processed.
- U.S. badges will be mailed after 7/5/99 for registrations received by 6/21/99.
- All international (including Canadian) attendees must pic up badges on-site at the On-site Badge Pick-up counter.
- If you register between 6/21/99 and 7/14/99 you must pick-up your badge on-site at the On-site Badge Pick-up counter located in the Southside of Crystal Palace.
- On-site Registration/Badge Pick-up Hours:
  July 19: 2:00 p.m. - 6:00 p.m.
  July 20-22: 8:00 a.m. - 6:00 p.m.
  July 23: 8:00 a.m. - 4:00 p.m.

Secrets

Unmask Your Mac's Hidden Problems

SIX AGGRAVATING MAC PROBLEMS AND THE *HIDDEN* FILES THAT CAUSE THEM

by Ted Landau

Like stagehands working behind the scenes of a play, there's a hidden world of invisible files on your Mac. Don't be alarmed—they're *supposed* to be in hiding. What's more, without them your Mac might not even start up. So, why bother to shroud these files with a cloaking device? The usual reason is to protect them against inadvertent (or intentional) modification. However, on a few occasions, finding these files is necessary. An invisible file can get corrupted, preventing an application from working, or more rarely, it may be a virus. In such cases, you need to repair or delete the file. For the scoop on how to access invisible files, check out "Hide and Seek." Then take a peek behind the curtain of your Mac and learn how to solve a variety of Macintosh ills.

Faceless Files

Have you ever had files lose their custom icons? Invisible files may be at work or, more precisely, may not be working as they should. You can usually trace the loss of custom icons to the invisible **Desktop DB** and **Desktop DF** files at the root level of every drive. These two files get updated whenever you rebuild the desktop. In fact, that's exactly what you must do to fix them (hold down ⌘-option at start-up to do a rebuild). If that doesn't do the trick, you can trash these files altogether. The Mac builds new ones from scratch the next time you start up. The simplest way to trash them is with a utility such as TechTool, from MicroMat Computer Systems (800/829-6227, www.micromat.com), via its Desktop Rebuild command.

Inflexible Folder Icons

Just as icons can disappear, they can also refuse to go away. If you can't replace or delete a particular folder's custom icon, the problem may be a hidden file named **icon.** Your Mac creates one of these files every time you give a folder a custom icon and stores the file in that folder. If you have trouble trying to change a folder's icon, just delete its icon file.

Finder Crashes

Finder freezes and crashes can happen for any number of reasons. One possibility is that you may have a misplaced copy of the invisible **OpenFolderListDF** file. This file, which comes with Mac OS 8.0 and later versions, keeps track of which Finder windows you leave open at shutdown and whether they are pop-ups. Normally, the Preferences folder of your start-up disk holds one copy of this file and other copies appear at the root level of every other disk. Sometimes an extra copy shows up at the root level of the

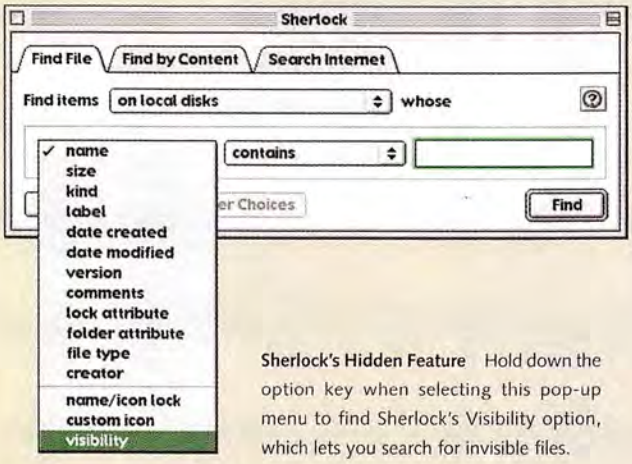
continues

CHRISTIAN NORTHEAST

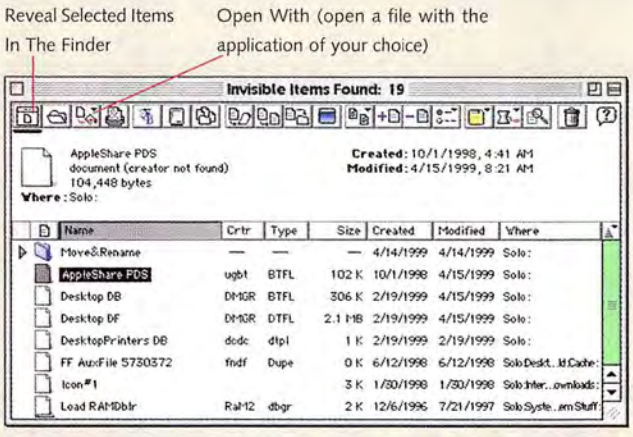
Hide and Seek

APPROPRIATELY ENOUGH, THE EASIEST WAY TO GET A LIST OF ALL the invisible files on your drive is to use an *invisible* feature of Sherlock. From Sherlock's Find File panel, hold down the option key when clicking on the Name pop-up menu. The very last item is Visibility (see "Sherlock's Hidden Feature"). Select it. Then click on Find and you'll get the list. To delete a file, select it and press ⌘-delete.

Unfortunately, Sherlock doesn't let you do much else with this list. To work extensively with invisible files, you'll need a utility such as File Buddy, which you can get from www.macdownload.com. Start by selecting Find Invisible Items from File Buddy's Cleaning menu and then clicking on Search. You can now use File Buddy's button bar to manipulate the files (see "File Buddy's Magic Tricks"). For example, to make a file visible, click on the Reveal Selected Items In The Finder button. However, be careful: some invisible files function only when they're invisible. If you want to examine the contents of the file, open it via File Buddy's Open With button, assigning an application such as BBEdit to open the file.



Sherlock's Hidden Feature Hold down the option key when selecting this pop-up menu to find Sherlock's Visibility option, which lets you search for invisible files.



File Buddy's Magic Tricks With File Buddy, you can reveal, open, copy, move, or delete any invisible file. You can also access a file's Get Info window.

start-up disk. Apple has stated that the extra copy presents no problem. However, many Mac users have found that deleting it eliminates the freezes.

Erroneous Crash Message

After a system crash, if you have Shut Down Warning enabled in the General Controls control panel, your Mac displays a message at start-up informing you of the crash. But your Mac isn't supposed to display this message after *every* start-up. If you have this problem, the likely invisible culprit is the **Shutdown Check** file.

The Mac creates this file at each start-up and then deletes it at each proper shutdown (one performed with the Mac's Shut Down command). When the Mac finds this file at start-up, it assumes there was an improper shutdown and displays the warning message. If this message appears at every start-up, it may be that the Shutdown Check file has become corrupted and the Mac can't delete it automatically. The solution is simply to delete the file yourself.

Unloadable Extensions

When a particular extension doesn't load at start-up, damaged or misplaced invisible files are often the culprits. For example, when Adobe Type Manager refuses to load, claiming that it requires more memory, you may have a corrupted **ATM Temp.ATM** file. You'll find this file in the Preferences folder. Delete it, and ATM creates a new one.

If you move Connectix's RAM Doubler control panel to a new System Folder and find that it no longer loads at start-up, it's probably because you didn't move the invisible **Load RAMDblr** file (located at the root level of the System Folder) along with it. To get things working, you need to either reinstall RAM Doubler from its master disk or drag the Load RAMDblr file to the new System Folder.

Virus Attack

Excessive disk activity, corrupted files, and unexpected restarts are just some examples of the possible symptoms of the AutoStart virus (so named because it is able to infect your Macintosh only if you have QuickTime 3.0's AutoPlay feature enabled). The virus typically arrives on your disk in the guise of two invisible files: **DB** (located at the root level of your start-up disk) and **Desktop Print Spooler** (which is found in the Extensions folder).

The names of these files make them sound harmless. Indeed, there is a valid *visible* file in your Extensions folder called Desktop Printer Spooler—but don't let the monikers fool you. If you find these files, trash them instantly. Or use any up-to-date antivirus utility to get rid of them.

Once you take some time to become familiar with the Mac's invisible world, you'll see Mac troubleshooting in a whole new light. **m**

Contributing Editor TED LANDAU is clearly visible every day at the MacFixIt Web site (www.macfixit.com).

Tips, Tricks, and Shortcuts

by Lon Poole

How would you like to print a particular file, but skip the Print command, not open the file, and not even launch an application—yet use your custom print options every time you need to print it? It's easy if your printer has a desktop icon, says Anne Mitchell Green, of Buenos Aires, Argentina. Say you have a file that you need to reprint regularly—for example, a customized envelope layout featuring your logo and address. Every time you need a few envelopes, you have to open the file, select your print options (five copies, best quality, color, and so forth), and send it to print.

Make it easy on yourself. The next time you open the file, select all the print options you want, click Print, and immediately open the desktop printer. Select the print request for that document, and click the red Hold button (it looks like a VCR's pause button). If the print request is at the top of the printer window, you can also put it on hold by dragging it to the bottom of the window.

Now duplicate the print request by pressing ⌘-D or choosing Duplicate from the File menu; you can instead control-click the print request and choose Duplicate from its contextual menu. This makes a copy of the print request, with all of its particular settings. Next, send the duplicate print request to the printer, by dragging it to the top of the printer window or selecting it and clicking the green Resume button (it looks like a VCR's play button). The original print request remains on hold, ready for the next time you need to use it.

You can repeat this procedure for other documents (or for the same document with different print options, such as more or fewer copies) and put as many print requests on hold as you need.

GENE GREIF

Dispose of Duplicates

Q. A friend used Aladdin Systems' Spring Cleaning to find duplicate files, and it reported that Adobe Illustrator and Adobe Photoshop carried the same plug-ins. Can he delete the duplicate plug-ins from one program? Also, if I keep two versions of the same program in different folders, can I delete duplicate program files from one version's folder?

CLETO CRISTE
Molokai, Hawaii

A. If you merely remove plug-ins or other files from an application's folder or subfolders, you'll lose the features they provide. But you can replace some Illustrator plug-ins with aliases of Photoshop plug-ins, thus using the same plug-in for both.

The plug-ins you can replace are in two subfolders of each application's main plug-ins folder. In Illustrator, the subfolders are Photoshop Effects and Photoshop Filters. In Photoshop, the subfolders are Effects and Filters. Rather than deal with individual files, you can replace the two subfolders in Illustrator with aliases of the two subfolders in Photoshop.

To be safe, don't immediately delete files or folders you're replacing with aliases. Keep the originals in an archive folder or on a removable disk until you're sure the replacements work correctly.

Aliases of Photoshop plug-in files also work in Adobe PageMaker (where the folder path to the replaceable files is PageMaker: RSRC: Plug-ins: Effects), Macromedia Director (folder path Director: Xtras: Filters), and Macromedia FreeHand (folder path System Folder: Macromedia: Xtras). A similar maneuver works with duplicate plug-ins in Web browsers.

You may run into trouble if you apply this tactic indiscriminately with duplicate auxiliary files in different versions of a program. Files that look like duplicates may not be, and replacing one file with an alias of the other may cause one or both versions of the program to malfunction. If you replace one auxiliary file with the alias of another, absolutely identical one that's housed with a different version of the same application, both versions may not run at the same time. (This restriction may already exist if both versions use the same preferences file from the System Folder.)

Pick Up Any Color

Q. Do you know of any software that can let me pick up a color with an eyedropper from anywhere on the screen and then apply the color to my Web page?

continues

What's Your Outlook On E-mail?

Still Using Freebies?

Those free E-mailers are fine if E-mail isn't all that important to you. But if your business depends on E-mail, QuickMail Office is the smart move.

Feature-packed and easy to use, QuickMail Office gives you the power that comes only with a professional's E-mail program. You can settle for crippled freeware or you can get serious. QuickMail Office 2.0. E-mail for people who need to get things done.

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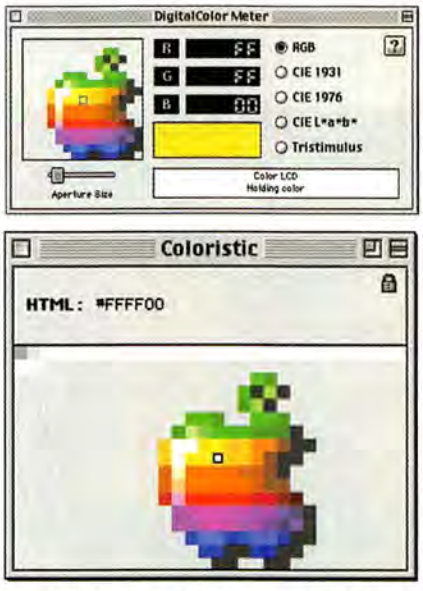
I'd like to be able to pick up a color in Adobe Photoshop and apply it to a background color in Adobe GoLive and vice versa.

JOHN TOMLINSON
New York, New York

A You don't need any extra software. Simply click the Apple Colors tab or the Real Web Colors tab in GoLive's Color Palette, hold down the option key to turn the pointer into an eyedropper, and drag over any color on the screen; release the mouse button when you have the color you want.

A similar trick works in any application that uses Mac OS 8.X's Color Picker, but instead of option-dragging, you option-click to pick up a color. For example, you can set Photoshop to use the Apple Color Picker (File: Preferences: General: Color Picker). Then click the foreground or background color box in the Photoshop tool bar (or double-click the foreground or background color in the Photoshop Color palette) to bring up the Apple Color Picker, and option-click anywhere on screen.



Web Color Pickup Apple's DigitalColor Meter 1.2 (top) and Bubble Pop's Coloristic (bottom) can grab the HTML value of any currently displayed color. In DigitalColor Meter, select the RGB option and choose Show RGB As Hex Value from the Meter menu. In Coloristic, set the Color Format option to Internet (HTML), using the Preferences command on the Edit menu.

For more-precise color pickup, use Apple's free DigitalColor Meter 1.2 program (included with Mac OS 8.5—check the Monitors Extras Folder in the Apple Extras folder) or the freeware Coloristic from Bubble Pop Software (download it from www.bubblepop.com) to measure the HTML value of any displayed color, as shown in "Web Color Pickup." Point to the color you want, and press ⌘-H in DigitalColor Meter to hold the color, or press caps lock in Coloristic to lock onto the color. Copy the color value by pressing ⌘-C. Then switch to GoLive, select the Value field in any of the three Web Colors tabs in the Color Palette, and paste.

Get Digital Ruler Readouts

TIP Here's a way to get precise measurements of items in Microsoft Word 6 and 98 documents. The ruler in these versions of Word normally gives you an analog reading for the position of tabs, indents, columns, and table cells. If you'd like to set the position of these items digitally, just hold down the option key while dragging a ruler item. A precise numeric display of the distance between adjacent ruler items replaces the normal ruler markings.

WILL PEARCE
Durham, North Carolina

Protect Your Online Database

TIP If you use FileMaker Pro's Web Companion plug-in to publish your database on the Web, be careful what permissions the passwords allow. Even if your database Web pages have no visible means of deleting records (such as a Delete button), you're at risk. Anyone who views your database from a Web browser and uses a password with permission to delete records can easily do so by making a simple change to the URL in the browser window.

For example, when a browser displays a product record from the Shopping Cart database sample included with FileMaker Pro, a URL like the following appears in the browser's address bar or location bar: www.yourdomain.com/shopping_cart/FMPro?-db=products.fp3=33071&-find.

If all the passwords for this database allow permission to delete records (or if the database doesn't require passwords),

continues

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HOWARD BELL
Christchurch, New Zealand

Make Sherlock Snappier

TIP There's no doubt that Mac OS 8.5's Sherlock is a much better searching tool than older systems' Find File feature. However, here's a problem I've had with Sherlock, as well as a slick workaround.

When searching for a file by name in Mac OS 8.1, I fell into the habit of pressing ⌘-F in the Finder and immediately typing the file name before Find File opened. I still use the same process in Mac OS 8.5, but since Sherlock takes even longer to open (at least on my machine), my advance typing ends up in the Search Internet tab or whichever tab opened last. I discovered I could combat this tab-of-the-moment syndrome by using Sherlock's keyboard shortcuts for selecting a tab: ⌘-F for Find File, ⌘-G for Find By Content, and ⌘-H for Search Internet. Now I press ⌘-F twice in the Finder to open Sherlock and preselect the Find File tab. While Sherlock is launching, I type the entire file name, press return, and see the results almost as soon as Sherlock finishes opening.

JONATHAN WOOLSON
Oakland, California

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld Mac OS 8.5 Bible* (IDG Books Worldwide, 1999).

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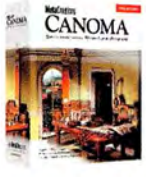

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QuarkXPress Advanced Type Workshop

TAKE COMMAND OF YOUR TEXT WITH XPRESS TAGS

by David Blatner

Everything in the good old days was better, right? Take typesetting, for example. From the early 1970s until desktop publishing took off in the early 1990s, typesetting was done on a computerized compositor. It was a lot like hand-coding HTML today—you formatted text with codes such as **<*cp>**, **<*cf>**, and **<*il>**. It sounds cumbersome, but as long as you remembered all those codes, you could knock off pages and pages of formatted text.

Actually, I wouldn't go back to those old days for anything—I like today's WYSIWYG typesetting. Still, every so often I long for the power of codes. Fortunately, QuarkXPress gives you the option of using typesetting codes for heavy-duty text processing via a little-known feature called XPress Tags. If you use QuarkXPress to create anything longer than a small pamphlet, you'll find Tags useful.

What Are They? XPress Tags are basically HTML-like codes that tell QuarkXPress how to format text—created in QuarkXPress or imported from a text editor, word processor, spreadsheet program, or database. The codes range from simple (**<B>** for bold, **<I>** for italic, **<U>** for underline) to complex (**<*t(36,0,"1")>** to place a basic tab stop at .5 inches).

To see text in a QuarkXPress document described with XPress Tag codes, you need to export it out of QuarkXPress. To do this, select the text, choose Save Text from the File menu, and open this file in a text editor or a word processor (see "XPress Tags Prep Course").

Why Use Them? There are several great reasons to use XPress Tags. First, you can perform complicated search-and-replace operations on your text—say, replace every regular tab with a right-align tab (see "Project 1: Massage the Table of Contents"). You can also format text imported from a database or a spreadsheet, even if your database or spreadsheet software doesn't support formatting (see "Project 2: Format Imported Data").

Additionally, you can alleviate some of the tedious tasks you previously would have done by hand, such as horizontally scaling em dashes to 75 percent. Even someone using an old PC or Unix machine that supports only unformatted ASCII text can assign formatting (including style sheets) to a file, and the formatting shows up when you import it into QuarkXPress.

On the following pages are several XPress Tags projects that make laborious tasks quicker and easier. You can also find two additional projects on Macworld Online: one for quickly converting capitalized text to small-caps style, and one for creating tables with alternating tints in QuarkXPress (see www.macworld.com/1999/08/create/).

Keep in mind that XPress Tags control only text formatting: Anything you can do to text in QuarkXPress using menus and dialog boxes, you can also do using codes. But XPress Tags can't help you with page layout or with graphical elements such as images and lines.

continues

WHAT YOU NEED

QuarkXPress

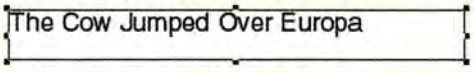
Text editor or word processor

Optional: Search-and-replace utility, FileMaker Pro, Microsoft Excel

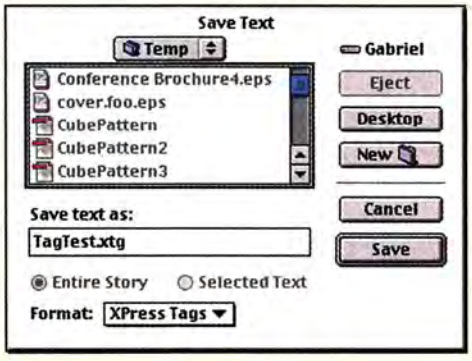
RICHARD DOWNS

XPress Tags Prep Course

THE BEST WAY TO LEARN HOW TO USE XPRESS TAGS IS TO export some text in the XPress Tags format and examine it. At first the codes may look intimidating, but with a little practice, you'll begin to understand them. Here's where to begin.



1. In QuarkXPress, select the Content tool and click in a text box, or highlight the text you want to export. Then choose Save Text from the File menu or press ⌘-option-E.



2. Choose XPress Tags from the Format pop-up menu, give the file a name, and click on Save.

3. Now open the file you just saved in a text editor or word processor. (You can also reimport it into QuarkXPress using the Get Text dialog box, but make sure you turn off both check boxes in the Get Text dialog box.)

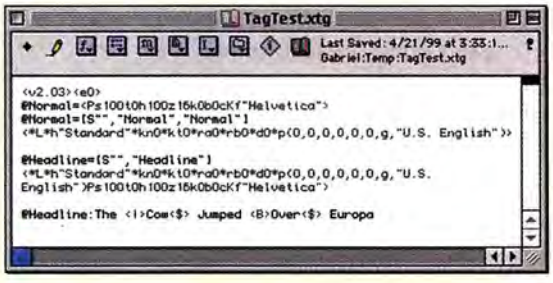
The first line of the tags simply tells QuarkXPress which version and language of XPress Tags you're using. You can usually ignore this.

Lines beginning with **@stylenamehere=** are style-sheet definitions. When you export XPress Tags, the program always includes them, but you can omit them if you're writing your own tags for style sheets you've already defined in QuarkXPress.

Lines beginning with **@stylenamehere:** tell Quark to apply this paragraph style sheet to the paragraph. The tag **<@stylenamehere>** applies a character style. To return to the regular character style, use **<@$p>**.

As with HTML, you can bold text with **<B>** or italicize it with **<I>**. Unlike HTML, these tags are case-sensitive, and to turn off boldface or italics, simply type **<B>** or **<I>** again (it's like a toggle switch) or type **<$>** to return to Normal style formatting.

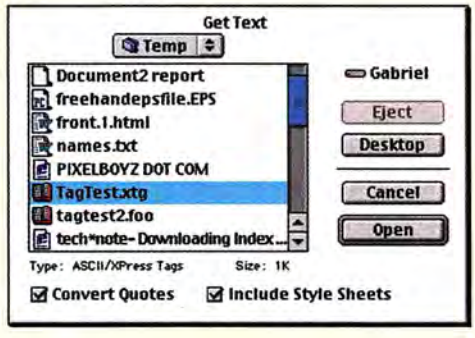
Once you get the hang of these basics, you can delve into the more complicated and powerful tags. Download a full list of XPress Tags from www.macworld.com/1999/08/create/.

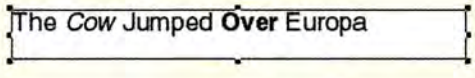


4. After making changes to the tags and saving the file, import the updated file into QuarkXPress using the File menu's Get Text (⌘-E).

In the Get Text dialog box, if you check both the Convert Quotes and Include Style Sheets check boxes, the program interprets the tags and displays the formatted text (shown below at right). If you have both check boxes unchecked when you import the text file, QuarkXPress imports the tagged file and leaves the tags as text instead of interpreting the codes.

Specifically, the Include Style Sheets check box determines whether QuarkXPress interprets the codes. However, if you're importing a tagged file as text and you convert straight quotes to curly quotes, you'll mess up the codes—just like HTML, XPress Tags require straight quotes to work. It's a good idea get into the habit of turning *both* check boxes on or off.





Expand Your Toolbox

The most common use for XPress Tags is for performing a search and replace that's too sophisticated for QuarkXPress's Find/Change command. To perform very specialized tasks, sometimes you need a combination of tools to aid you.

For instance, let's say you have a 15-page table of contents and you want to change the typeface for the numerals only. Usually you can't tell most programs to look just for numbers—but the right tool makes this possible. In this case, you could export the contents in XPress Tags format and then use a text editor such as Bare Bones Software's $119 BBEdit (781/687-0700, www.barebones.com) or a word processor such as Nisus Software's $100 NisusWriter (800/890-3030, www.nisus.com) to do the search and replace.

Another tool is Greg Swann's $50

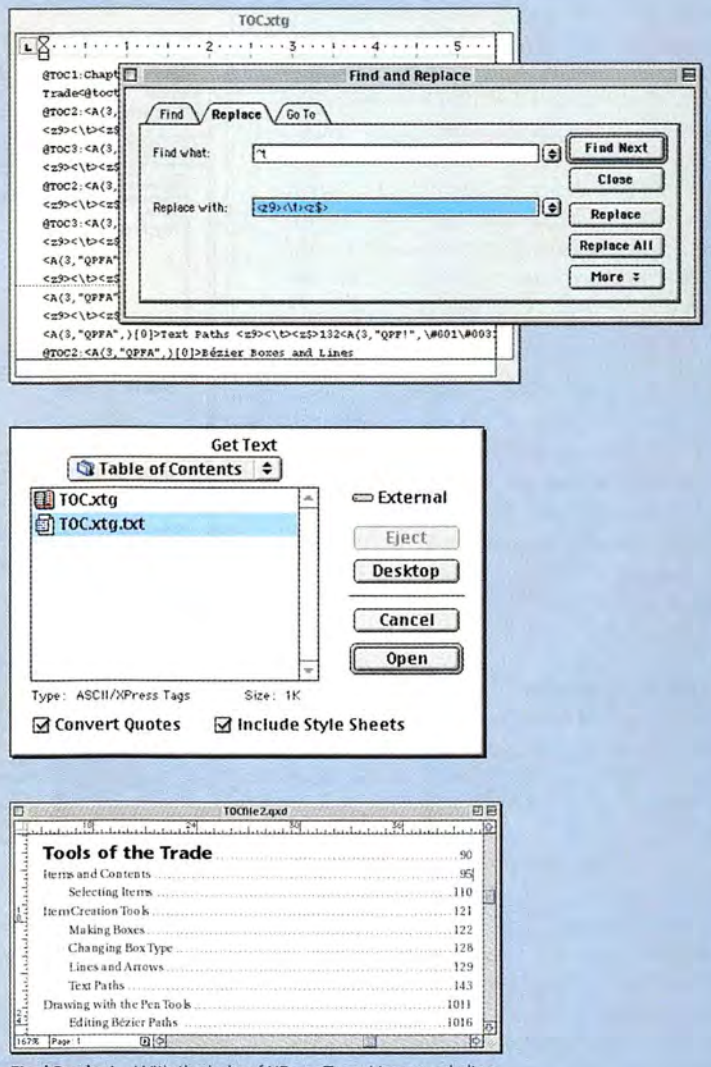
Project 1:
Massage the Table of Contents

LET'S SAY YOU HAVE A 20-PAGE TABLE OF contents you need to wrestle into shape quickly. Maybe you want to replace every regular tab with a right-align tab (option-tab, which always aligns on the right margin) and make the tab leader characters smaller by reducing the tab character. Here's how.

1. Export the table of contents as XPress Tags and open it in a text editor such as BBEdit or SimpleText or a word processor such as Microsoft Word or NisusWriter. (If you use Word 98, open the XPress Tags file by pressing ⌘-O and choosing Recover Text From Any File from the List Files Of Type menu in the Open dialog box. This will ensure that all codes appear as text and are not interpreted by Word.)

2. Search for all the tab characters (^t), and replace them with the codes **<z9><\t><z$>**. This sets the size to 9 points, inserts a right-align tab, and then sets the text back to the original size. (In BBEdit, search for **<\t>** and replace it with **<\\t>**—this changes all regular tabs to right-align tabs.)

3. Save the file (make sure it's still text only), and reimport it into QuarkXPress via the File menu's Get Text command. In the Get Text dialog box, make sure you have the Include Style Sheets and Convert Quotes check boxes selected.



Final Product With the help of XPress Tags, I improved alignment and made smaller tab characters (dots).

shareware utility Torquemada the Inquisitor (www.primenet.com/~gswann/software.html). Torquemada can perform very complex wild-card searches—for example, it can search for any letter followed by any punctuation, and apply 20 units of kerning to spread them apart. It uses its own obscure codes for this—for instance, ^± finds any single letter, ^# finds a number, and so on.

Learning how to use these tools can be even more complex than learning how to use XPress Tags, but if you do a lot of work on long documents, it's worth the time and effort up front to save yourself future hassles.

If you decide to go deeper into the complexities of XPress Tags, also check out Em Software's $240 XTags XTension (740/264-0583, www.emsoftware.com), which lets you do even more with codes—including importing anchored text and picture boxes.

The Joys of Control

While only a die-hard code-loving Unix user would really want to go back to the old days of typesetting, there are times when code-based typesetting comes in quite handy. XPress Tags let you take advantage of the best of both worlds—fine control over type manipulation, and WYSIWYG controls.

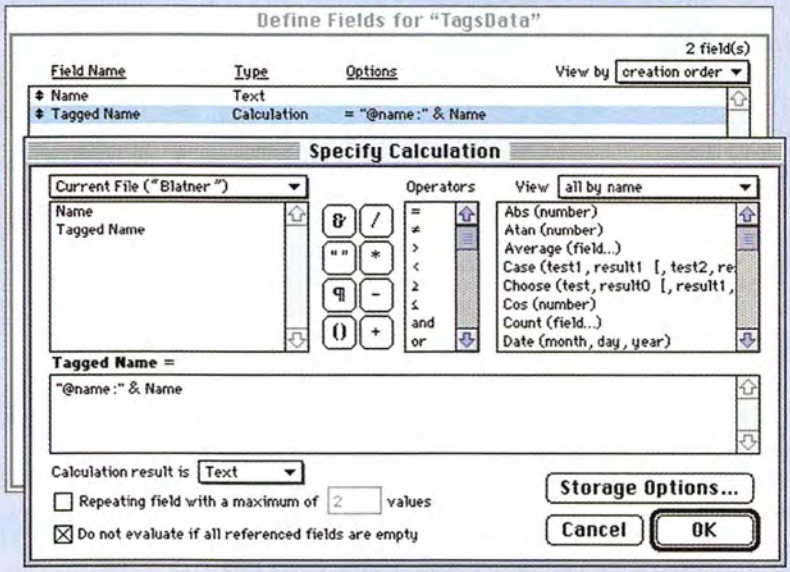
If you're just learning to use XPress Tags, experiment with the examples on this page and the following page to get up and running. It doesn't take long to realize how fast you can format text properly when you dive into the precise world of codes. **m**

DAVID BLATNER (david@moo.com) is the author of *The QuarkXPress 4 Book* (Peachpit Press, 1998) and *The Joy of Pi* (Walker and Company, 1997).

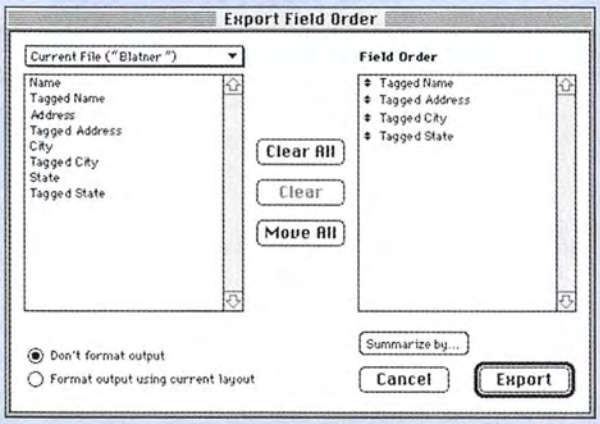
continues

Project 2:
Format Imported Data

IMPORTING DATA FROM A DATABASE OR A spreadsheet is usually a chore because you have to format all the data manually in QuarkXPress. If you do this task daily or weekly, it's worth taking the time to modify your database or spreadsheet to export XPress Tags alongside the data you're exporting. That way, when you import the text file into QuarkXPress, the text gets formatted automatically. Here's a quick example of how you could do this with a FileMaker Pro database.



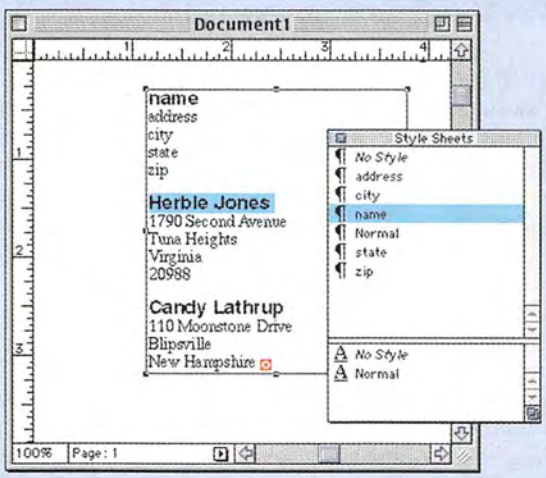
1 FileMaker Pro lets you create *calculated fields,* constructed from data in other fields. For every field you're going to export, use the Define Fields dialog box to create a new calculated field that attaches an XPress Tag (for example, **"@name:" & name**). Note that you can make calculated fields invisible so they won't interfere with how your database looks.



2 When you export your data from FileMaker, specify in the Export Field Order dialog box to export only the calculated fields, not the original data fields.

3 Import the text file into QuarkXPress via the File menu's Get Text command. In the Get Text dialog box, check the Include Style Sheets and Convert Quotes check boxes, and QuarkXPress interprets your tags and applies the formatting.

If you're using a spreadsheet program such as Microsoft Excel instead of a database, the basic concept is the same. Set up the original data on Worksheet 1, the XPress Tags codes on Worksheet 2, and the final calculated fields on Worksheet 3. When you're ready to export the data, export it from Worksheet 3.



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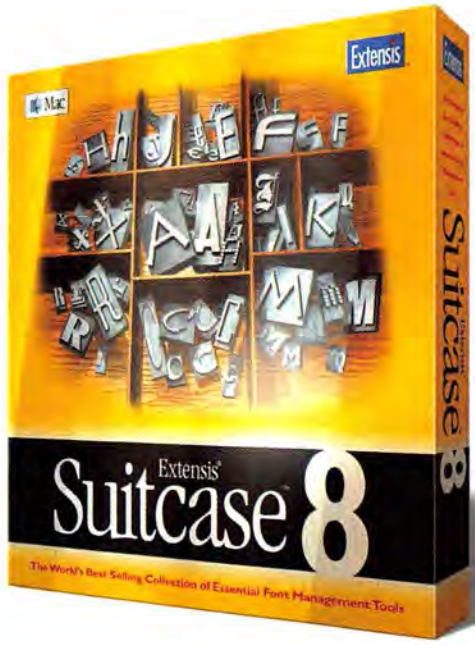

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Create

GRAPHICS

Merge Art and Life

BRING YOUR PERSONAL WORLD INTO DIGITAL CREATIONS

by Mike Wooldridge

Digital-illustration, painting, and image-editing applications give artists powerful new tools for creating, but sometimes the software's slick effects and filters can crowd out an artist's personal style. Plus, with stock imagery so readily available, artists may get disconnected from their traditional-media roots, as well as overlook items from everyday life that can contribute nicely to a project.

As a classically trained illustrator, San Francisco artist Pamela Hobbs takes care not to let the digital tools she uses command center stage. This collage she created for *Red Herring* magazine's third-anniversary party is typical of her hybrid style of merging intimate material (a hand-drawn illustration, real flowers, a vacation photo) with the power of her digital arsenal and stock-photo archives. She's used this hybrid style for such clients as Sony, Nickelodeon, Absolut Vodka, the *Village Voice*, and Tori Amos.

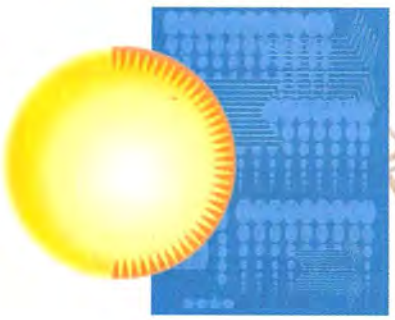
Here, Hobbs created the centerpiece drawing of the Hindu god Siva with pen and ink. Instead of working with a graphics tablet, she does all of her line drawings by hand and digitizes them with a scanner. She also likes to experiment with using real objects—such as the daisies she scanned in for this piece—to give polished digital art a more spontaneous feel.

For this project, Hobbs used Adobe Photoshop 5.0, Illustrator 8.0, and Dimensions 2.0; Macromedia FreeHand 5.5; stock imagery from PhotoDisc; an Apple Power Macintosh G3; and a Linotype-Hell Saphir scanner. **m**

MIKE WOOLDRIDGE (www.mediacosm.com) is a freelance writer and new-media designer living in Berkeley, California.

Make It Personal Pamela Hobbs mixed intimate items, such as a vacation photo and a pen-and-ink drawing, together with stock imagery and digital illustrations to create this piece. The final result is a mélange of software effects, traditional media, and personal elements that produce an image rich with character.

1 Hobbs first drew the image of the Hindu god Siva with pen and ink. She scanned in the drawing and added color to it in Photoshop, using gradient color fills to give it a 3-D look. Next, she created the blue background shapes in FreeHand, successively scaling colored circles in equal increments to generate patterns of shrinking dots. To make the spiked orange half-circle behind Siva, she created a triangle and a circle in Illustrator and duplicated the triangle around the circle's perimeter in 5-degree increments. Then she added a radial gradient fill in Photoshop to create the yellow sunburst.



2 Hobbs then scanned in red and white gerbera daisies. She laid the flowers on the scanner and covered them with a white cloth to minimize shadows and facilitate masking them in Photoshop. She then used Photoshop's Color Balance feature to change the red daisies' color to a golden orange that echoed the hues of the sunburst and frame.

3 Next, Hobbs co-opted the saxophone, guitar, globe, martini glass, and picture frame from PhotoDisc stock-image collections. She trimmed the frame's edges and reassembled it in Photoshop, and she used a Photoshop layer mask and black-to-white gradient to fade the musical instruments into the background.

4 The Buddha image is from a photo the artist took while on vacation in Japan. After scanning in the photo, Hobbs clipped the Buddha from its background in Photoshop, added highlights with the Dodge tool, and adjusted the color in the Saturation dialog box. She then created the three-dimensional *3* in Dimensions and exported it to Photoshop, adding highlights with the Dodge and Burn tools.

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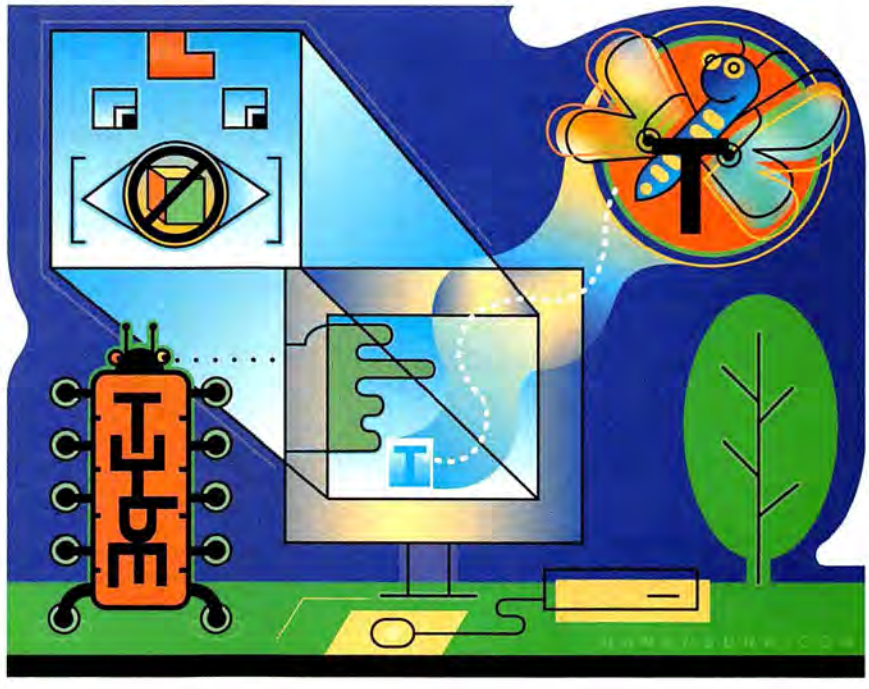
Elegant Web Pages with Dreamweaver 2

GET PRECISE ALIGNMENT THE EASY WAY WITH LAYERS AND TABLES

by Lynda Weinman



Those used to the flexibility of QuarkXPress or Adobe PageMaker are likely to experience culture shock when learning to create designs for the Web. That's because alignment tags in HTML simply don't support anything beyond left, right, or center justification. You can get more-precise alignment with Cascading Style Sheets (CSS), but it comes with a high price—CSS layers aren't compatible with browsers earlier than version 4.0, and Netscape Navigator and Microsoft Internet Explorer support CSS differently. If you use CSS, you have to write the code differently for each browser.

HTML tables come to the rescue. Tables are the next best thing to CSS when it comes to giving you precision alignment. They're also much better than CSS in compatibility, working consistently with multiple platforms and with all version 2 or later browsers.

While tables work beautifully for creating precise alignment, they're not intuitive to program. Fortunately, many WYSIWYG HTML editors, such as Macromedia Dreamweaver and Adobe GoLive, make creating tables a lot easier than doing it by hand-coding.

Dreamweaver's Novel Approach

Dreamweaver 2 is notable for its innovative approach to alignment—it's the first HTML editor to offer a tracing feature. A *tracing image*, as Dreamweaver calls it, lets you use an image as a reference for designing a Web page. For example, if I wanted to position all my links around a half circle, I could first draw the half circle in an image editor; save it as a GIF, JPEG, or PNG file; and then bring that drawing into Dreamweaver as a tracing image. Once I have the half-circle tracing image in Dreamweaver, I can use it to position my links along a precise path. Dreamweaver also lets me change the transparency of the tracing image so I can control how much of the image shows through. In addition, I can change its position and hide the tracing image. When I publish my page to the Web, the links show up along a half-circle path, but the tracing image does not appear.

Learn by Example

This article shows how to use a page layout created in Adobe Photoshop as a tracing image in Dreamweaver (see "The Magic of Dreamweaver 2's Tracing Images"). Dreamweaver uses CSS layers to create my sample layout. Since I want all my site visitors to be able to view my page, whether they have a current browser or not, I show how to take an additional step—converting layers into tables. Dreamweaver lets me do this almost effortlessly, giving me the best of both worlds: the precision of layers and the compatibility of tables. m

LYNDA WEINMAN (www.lynda.com) has written several top-selling Web design books and is currently writing *Dreamweaver 2 Hands-On Training* (Peachpit Press, August 1999).

continues

WHAT YOU NEED

Macromedia Dreamweaver 2

Image editor (such as Adobe Photoshop)

Web browser

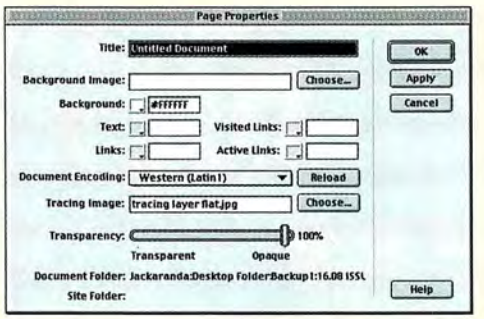
HANK OSUNA

The Magic of Dreamweaver 2's Tracing Images

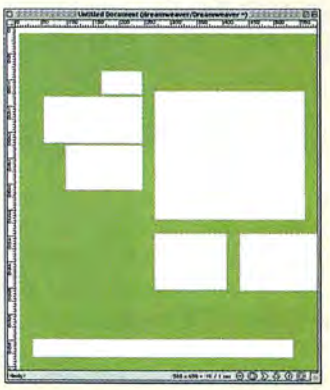
DREAMWEAVER 2 MAKES IT EASIER TO CREATE ARTISTIC LAYOUTS on your Web pages. That's because it has a new feature, the *tracing image*, that lets you use a mock-up image created in Macromedia Fireworks, Adobe Photoshop, or any other image-editing application as a guide for setting up your layout. The following steps illustrate how to use a tracing image to lay out a page. To prepare your mock-up layout for this process, create it in an image editor and save it as a GIF, JPEG, or PNG file.

1 Apply a Tracing Image

A Open a new untitled HTML document in Dreamweaver. Save the document. Select Page Properties from the Modify menu. Click on the Choose button next to the Tracing Image text box. Navigate to the tracing image you created. Select it and then click on OK.



B The tracing image appears in the background of your page.



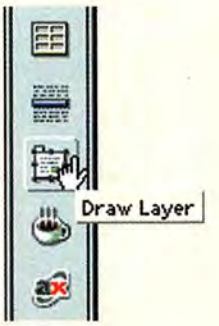
Note that you can change various settings for the tracing image by selecting Tracing Image from the View menu. The Show setting toggles the tracing image layer off and on. This is helpful when you want to view your background color or image. The Align With Selection setting lets you align the upper left corner of the tracing image with the upper left corner of a selected object. The Adjust Position setting lets you adjust the exact position of the tracing image by *x* and *y* coordinates. By default, an 8-by-11-pixel offset accommodates the offset in the browser window. The Reset Position setting lets you reset the position of a tracing image if you move it and then decide you liked it better where it was.

2 Create Layers

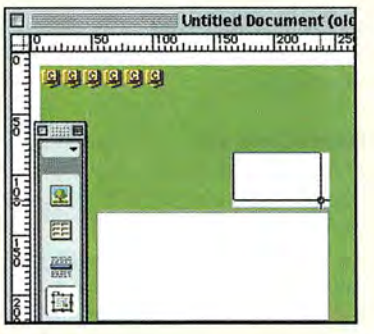
Now that you've got a tracing image in place, you can start setting up the page layout using layers. This is where the true power of tracing images and layers begins to reveal itself.

Layers make it possible to get absolute positioning of objects on a page. You can insert images and text inside layers and move them around the page by simply clicking on and dragging the layer. Here are the steps for working with layers in Dreamweaver:

A Click on the Draw Layer button in the Objects palette.

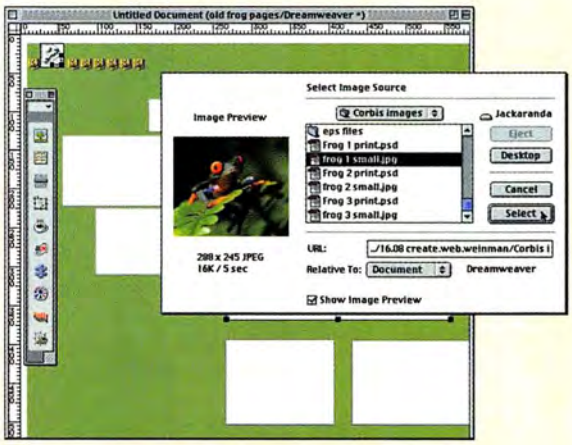


B Draw a layer around each area in which you want to place an image. (In this example, I started with the top box.)

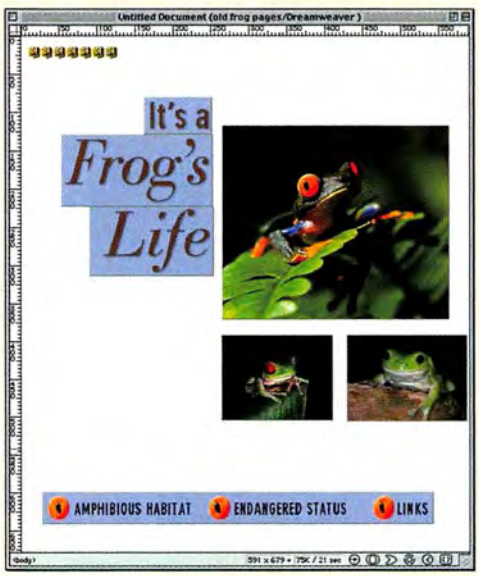


TIP As you draw the layers on your page, small yellow icons appear in the upper left corner of the screen. These icons represent the layers you've added. If you prefer to have them hidden, select Invisible Elements from the View menu.

C Click inside a layer and click on the Insert Image button in the Objects palette. Browse to the image you want to insert and click on OK. If you want to add HTML text to a layer, simply click inside the layer and begin typing.



TIP If you want to move layers around the page, make sure you grab them by the handle (the small box in the upper left corner of the layer). If you click and drag in the middle of a layer and try to move it, you will more than likely remove the contents from the layer.

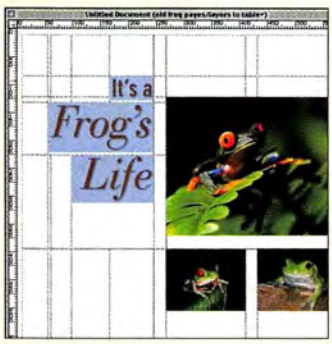


The Layered Look This is what my page looks like when I use layers to construct the layout.

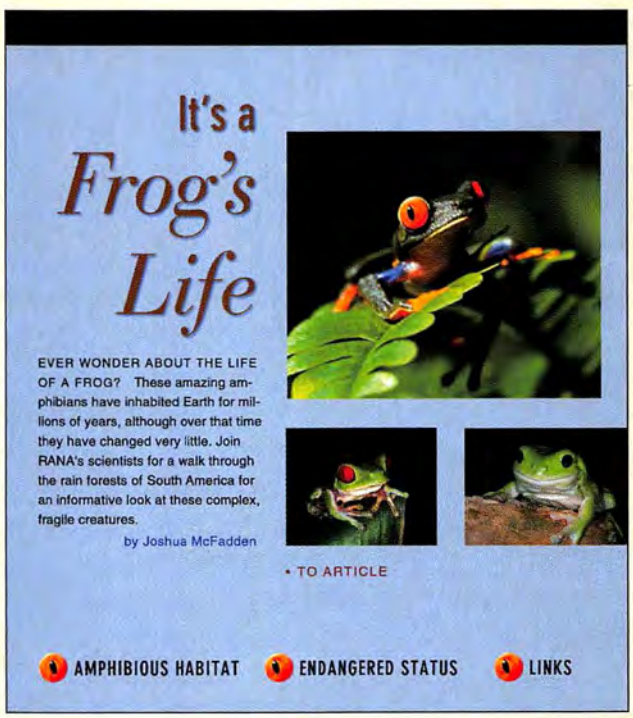
3 Convert Layers to a Table

Layers are cool, but they don't work on anything less than a 4.0 Web browser. Don't worry—Dreamweaver has a great feature that ensures your Web pages are compatible with earlier Web browsers. With just a few clicks you can convert the layout you created with layers into a table (see "Setting the Table"). Version 2.0 and later Web browsers can handle tables.

All you have to do is select Convert and then 3.0 Browser Compatible from the File menu. Then select Layers To Table. That's it. Dreamweaver automatically creates a new document and converts your layers into tables. This is nice if you want to save the layers version and the tables version as separate documents.



Setting the Table This table would be tricky to build from scratch. By using the Layers To Table function in Dreamweaver 2, you can create it in a snap.



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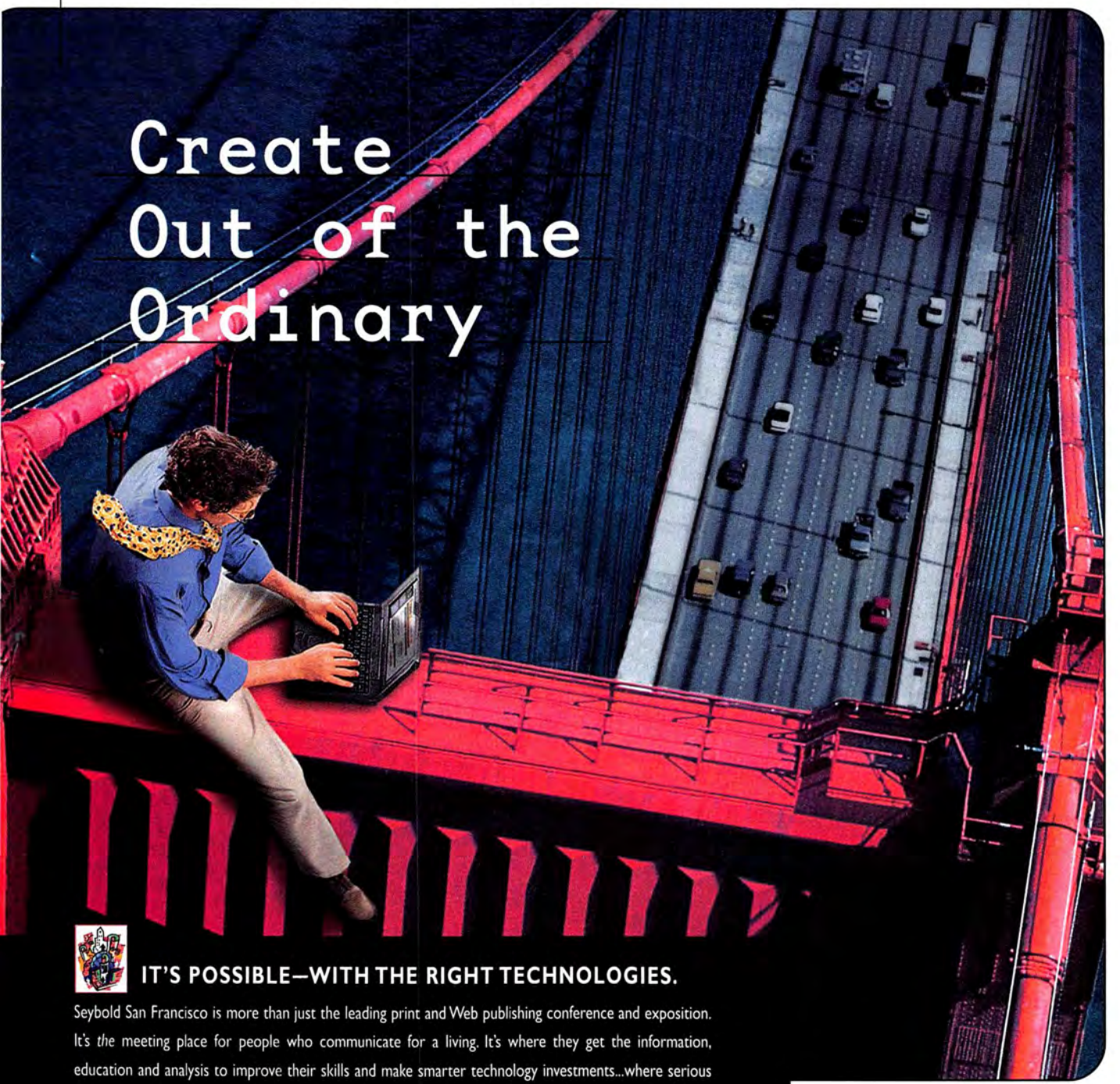

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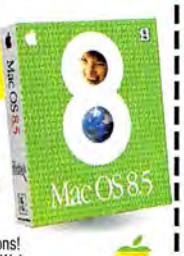

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JVC GR-DVM70 DIGITAL VIDEO CAM

- 10X Optical Zoom with 200X Digital Zoom with Spline Interpolation technology
- Hi Resolution Digital Recording (4:1:1 Digital Component Recording)
- 680,000 pixel CCD with Digital Image Stabilizer to eliminate "camera shake"
- 2.5" Color LCD Monitor
- Removable Multimedia Card technology for Snapshot capability
- Mac and PC compatible

Only $1499.95!
Item # IN7863

PHASER 740 COLOR LASER PRINTER

Tektronix

- 600 dpi color, 1200 dpi black
- 16 ppm black, 5 ppm color
- 10Base-T Ethernet
- Adobe Postscript 3, PCL 5C

Only $1995!
Item # PR14297

PAGE 2 OF 9

- 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, NJ and OH residents add applicable sales tax.
- Overnight delivery just $9.95 per order up to 5 pounds. For all orders over 5 pounds, shipping is $9.95 plus an additional $1.75 per pound or fraction thereof. (Example: shipping for a 6 pound order is $11.70). Please add an additional $3.00 for all orders $50.00 and under.
- Orders for "in-stock" items placed on weekdays up until 12:00 midnight (E), 10:00 pm (E) for Internet orders, ship same day for overnight delivery (barring system failure, etc.). We anticipate being able to ship "out-of-stock" items within 30 days.
- All items we sell come with the MacWAREHOUSE 30-Day Guarantee Against Defects. Call our Customer Service Department at 1-800-925-6227 for a Return Merchandise Authorization (RMA) number within 30 days of the original invoice date. Defective software will be replaced immediately upon receipt of the defective product. Defective hardware will be replaced or repaired at our discretion, except for products from Apple 1-800-SOS-APPL (1-800-767-2775), or Tektronix (1-800-835-6100). These manufacturers must be contacted directly, and will repair or replace products at their sole discretion. Should you return hardware to MacWAREHOUSE from Apple or Tektronix, you will be assessed a 15% restocking fee which will be charged to your account. All returns are subject to the following: 1. All products must be returned in original packaging. 2. Shipping and handling charges are not refundable. 3. Software and consumables are not refundable unless returned unopened in original packaging with documentation. 4. Custom orders and cables are not refundable. 5. Products designated as "all sales final" are not refundable.

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Mactell • Apple • Epson • AGFA • QPS • Nikon

Monitor sold separately.
Model shown is CPU1384.

		Regular MacWAREHOUSE Price	Price with FREE* 64MB RAM
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400MHz PowerPC G3/64MB SDRAM/6.0GB HD/ DVD-ROM drive/1MB Backside Level 2 Cache	LeaseIt! for as low as $69/mo.[5]	$1999 Item # CPU1383	$2028.95 Item # CPU1394
400MHz PowerPC G3/128MB SDRAM/12.0GB HD/24X max. CD-ROM drive/Zip Drive/1MB Backside Level 2 Cache	LeaseIt! for as low as $87/mo.[5]	$2499 Item # CPU1384	$2528.95 Item # CPU1395
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*$29.95 installation fee required.

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AGFA

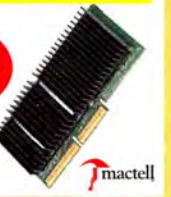
Only $129.95! IN7659

- 36-bit
- Translucent Bondi Blue
- 600 x 1200 dpi
- 8.5" x 11.7"

While Supplies Last!

Mactell PowerJolt G3 Pro Upgrade Card

Only $699.95! DRI3264



- 400MHz
- 1MB cache running @200MHz

mactell

Epson Stylus Color 900 Printer

10ppm Color!

Only $449.95! PR14811

- 12ppm black; 10ppm color
- 1440 x 720 dpi
- Smallest ink droplets
- Optional networking

EPSON

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Nikon

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- Twice as bright as typical CRT displays
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- Built-in composite and S-video connectors

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$120!

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WAR0480 ..... $180

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USB CD-RW 4x2x8 for iMac and Power Mac G3s

Only $299.95! DRI3342

- USB interface
- 2MB buffer RAM
- 700KB/sec data transfer rate
- Includes software, media, and bag

QPS

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Upgrade only $39.95! UPG0810

- Includes Microsoft Windows 98 full version!
- Fully integrated with Mac OS 8 and OS 8.5
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Includes:
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- USB compatible only
- 9ppm black; 6.5ppm color
- PhotoRET II technology

USB compatible

iMac Add-on!

iMac USB Hubs

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- Provides 4 to 7 additional USB ports for expanding your peripherals.
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Astra 1220u Duo Color Scanner

USB compatible

Only $129.95! IN7260

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- 600 x 1200 dpi resolution
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NEW LOW PRICE!

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iDock, from CompuCable, expands iMac's connectivity. iDock is a swivel base with an integrated 3-port USB Hub plus 2 Apple Serial/Geo Ports and 1 Parallel Port. With iDock, iMac can be connected to Mac serial devices and multi-platform parallel devices. iDock is molded in "Ice" to match any iMac perfectly. $199.99

Adds Serial and Parallel ports to your iMac!

Ask for item # DEH4621

CompuCable iSpeakers for iMac $34.99
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CompuCable

See the complete line of G3s at www.apple.warehouse.com

Visit us at: buymacgames.warehouse.com for our full selection of great games for the Mac!

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64MB SDRAM
Only $169.95! each
Item # CHP0657

- 66MHZ
- 144 PIN SODIMM

CHP0659: 128MB.....only $299.95

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- Challenge your puzzle-solving skills in the Island world that is Myst!

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ORBIT USB FOR MAC

$15 REBATE!

As low as $34.95!* with iMac or USB Power Mac G3 purchase

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- Designed specifically for use with USB
- Fits the natural shape of your hand

*Price after manufacturers' $15 mail-in rebate. Price before rebate is $49.95. Orbit USB and iMac or USB PowerMac G3 must appear on the same invoice. Coupon is available at www.warehouse.com/rebate/kensington or call us at 1-800-390-0706 to request one. Offer good 4/1/99 through 9/30/99.

USB compatible

iMac Add-on!

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HP LASERJET 2100M PRINTER

Only $795.95!

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- 1200 dpi
- 10ppm
- Mac LocalTalk connectivity

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Sony Digital FD73 Mavica NEW!

Only $499.95! SONY

Ask for item # IN7834.

- 10x optical zoom • E-mail mode
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- Picture effect • File copy/disk copy

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for your iMac G3! only $1199† ea.

See below for details.

Epson • Connectix • Imation • Farallon • Microsoft • Asanté • Symantec • Intuit

- 333MHz G3 Processor
- Built-in 15" Color Monitor (viewable size: 13.8")
- 32MB (256MB max.)
- 6.0GB hard drive
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- 6MB of Video RAM
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- Built-in 56Kbps Modem
- Built-in 10/100 Base-T Ethernet
- 2 USB Ports
- Mac OS 8.5

Regular MacWAREHOUSE Price:
Blueberry: item # CPU1336
Grape: item # CPU1337
Lime: item # CPU1338
Strawberry: item # CPU1339
Tangerine: item # CPU1340
$1199! ea.
LeaseIt! for $42/month†

Price with FREE† 32MB RAM installed:
Blueberry: item # CPU1371
Grape: item # CPU1372
Lime: item # CPU1373
Strawberry: item # CPU1374
Tangerine: item # CPU1375
$1228.95! ea.
LeaseIt! for $43/month†

† 67 monthly payments of $27.45. 14.89% Annual Percentage Rate subject to increase or decrease. Payments deferred for the first 120 days subject to interest of $32.71 and a loan origination fee of $49.96 charged on day 91. No prepayment penalty. Subject to approval of credit. Based on Estimated Retail Price of $1,199. Tax and shipping not included.

New Imation SuperDisk USB Drive

Only $169.99! DRI3350

- Now faster than ever! • 120MB capacity
- USB interface and hot-swappable

Imation LS-120 SuperDisks
Only $7.99 each, in 10-pack with SuperDisk Drive purchase. BND3240

Farallon EtherMac iMac iPrint Adapter with built-in PhoneNet!

Only $109.99! DEP1734

- Connects your iMac to LocalTalk printers and other Macintosh computers
- Easy plug-and play installation

Ethernet iPrint Adapter for Stylewriter: DEP1739 ..... $109.99

AsantéFast 10/100 Adapter

Only $49.99! DEC3794

- 10/100 PCI adapter (Mac/PC)
- Auto negotiation

10/100 PCI Adapter 5-pack (Mac/PC): Item # DEC3344, only $239.99. ASANTÉ

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- Automatically flows to editable accounting features, including invoices, paychecks, and reports!
- Time tracking integration for business users who bill by the hour or need to track employee time by job.

Intuit

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Upgrade Only $49.95!* after rebate Item # UTI1383

- HFS Plus compatibility
- Power PX native
- Enhanced SCSI/IDE support

*Price after publisher's $50 mail-in upgrade rebate. Price before rebate is $99.95. Proof of ownership of previous version of Norton Utilities for Mac required. Limit one per customer. Rebate expires 30 days after purchase date. Copy of invoice required.

MICROSOFT OFFICE 98

Microsoft

- Includes: Word 98, PowerPoint 98, Excel 98 and Outlook Express

Upgrade only $239.95! Item # UPG0778

BUS1150: Microsoft Office 98 Full Version ..... only $399.95

EPSON STYLUS COLOR 740i PRINTER

Price: $279.95
Manufacturer's mail-in rebate*: -30*
Your final Cost: $249.95 after rebate

EPSON NEW!

- Comes in Blueberry or can be customized to match your iMac flavor
- 1440 x 720 dpi w/smaller ink drops
- 6ppm black; 5ppm color
- USB/Mac serial compatible

*Rebate coupon available at www.warehouse.com/rebate/epson or call us at 1-800-390-0706 to request one.

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a $29.95 value!**

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- Challenge your puzzle-solving skills in the Island world that is Myst!

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USB Serial Converter

Only $79.95! DAD1577

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74 Minute CD-Recordables

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- Branded single with Jewel Cases
- 650MB capacity

Kodak digital science

Olympus D-400Z 1.3 megapixels

PRICE SLASHED!

Now only $699.95! was $799.95 IN7514

- 1280 x 960 ppi resolution
- 3X optical lens
- 8MB Smartmedia card

OLYMPUS

SupraExpress V.90 Modem

Only $99.99! DMD3503

DIAMOND MULTIMEDIA COMMUNICATIONS DIVISION

- Supports 56K* ITU standard V.90 & K56flex technology
- Serial interface

*Capable of receiving data up to 56Kbps. Actual send and receive speeds may vary.

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HP LaserJet Printers

HEWLETT PACKARD Expanding Possibilities

HP LASERJET 8000N Only $2489.95! Ask for item # PR13724. LeaseIt! for $86/mo.§
- Prints 24ppm • 1200 dpi max. resolution
- 133MHz RISC processor

HP LASERJET 2100M $795.95! Item # PR14691 LeaseIt! for $28/mo.§
- Prints 10ppm
- 1200 dpi resolution
- HP PostScript Level 2
- LocalTalk connectivity

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BLACK TONER CARTRIDGE Only $109.95 ea. Item # PA1871

HP LASERJET 8100 SERIES BLACK TONER CARTRIDGE Only $219.99 ea. Item # PA1662

HP LASERJET 8500 SERIES BLACK TONER CARTRIDGE Only $109.99 ea. Item # PA1644

HP LASERJET 4050N Only $1399 NEW!
Ask for item # PR14947. LeaseIt! for $49/mo.§
- Prints 17ppm
- 1200 dpi maximum resolution
- 100MHz RISC processor
- Ethernet 10BaseT/10Base2 + Localtalk

BLACK TONER CARTRIDGE Only $94.95 ea. Item # PR13025

HP LASERJET 5000 SERIES BLACK TONER CARTRIDGE Only $169.99 ea. Item # PR13742

NEW! HP LASERJET 8100N
- Prints 32ppm • 1200 dpi

Item # PR14315 .....LeaseIt! for $97/mo.§ $2809.95

NEW! HP COLOR LASERJET 8500N
- Prints 24ppm/6ppm color • 600 dpi

Item # PR14213 ....LeaseIt! for $220/mo.§ $6359.95

HP LASERJET 5000N (not shown)
- Prints 16ppm • 1200 dpi • Prints 3" x 5" thru 11" x 17"

Ask for item # PR13443.....LeaseIt! for $69/mo.§ $1999.95

OPTIQUEST V73 17" MONITOR

Optiquest OPTIMIZE YOUR IMAGE

- 17" (16" viewable) screen
- .26mm dot pitch
- 1152 x 870 resolution @ 75Hz
- Manufacturer's 3-year warranty

Only $349.95!

Item # MON0725

IOMEGA JAZ 1.0GB CARTRIDGES

jaz drive 1GB

Only $84.95! ea., in 6+ quantity

Item # MED0177

Quantity	1-2	3-5	6+
Price per disk	$99.95 each	$89.95 each	$84.95 each

OMNIPAGE PRO 8.0 UPGRADE

FREE!* Adobe PhotoDeluxe 2.0 when you purchase OmniPage 8.0.

HURRY, WHILE SUPPLIES LAST!

- Optical character recognition (OCR) software enables you to quickly and easily convert scanned pages into computer editable documents.

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Item # UPG1023

*Adobe PhotoDeluxe shipped in promotional packaging.

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- Jewel cases included

As low as 59¢!* each

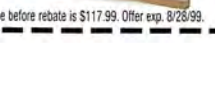
Ask for item # BN5936.

*Price each, after manufacturer's $20 mail-in rebate on 10-pack. Price for 10-pack before rebate is $25.99. Limit 3 rebates per name or mailing address. Offer expires 6/30/99.

3Com U.S. Robotics V.90 56K* FaxModem

Only $97.99**!

Ask for item # BND3179



- Manufacturer's lifetime warranty

*Capable of receiving data up to 56Kbps. Actual send and receive speeds may vary.
**Price after manfacturer's $20 mail-in rebate. Price before rebate is $117.99. Offer exp. 8/28/99.

Amazon Inkjet Cartridges

Free Nova Software 3,000 images** with the purchase of 2 inkjet cartridges.

As low as $15.99! each, in 2-pack

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As low as **$2499!**

Leaselt! for $87/mo.§

ASK FOR ITEM # CPU1359.

- Up to 400MHz PowerPC G3 processor
- 64MB SDRAM
- Up to 6.0GB hard drive
- 24X CD-ROM or DVD ROM Drive
- 56K V.90 modem
- 10/100 Base-T Ethernet
- Up to 1MB Backside Level 2 Cache
- 14.1" Active-Matrix Color Display
- 2 USB ports
- 8MB Video Memory

APPLE POWERBOOK G3/333MHZ

- 333MHz PowerPC G3 processor
- 64MB SDRAM • 4.0GB hard drive
- 24X CD-ROM drive
- 56K V.90 modem
- 10/100Base-T Ethernet
- 512K Backside Level 2 Cache
- 14.1" Active-Matrix Color Display
- 2 USB ports • 8MB Video Memory

Only **$2499!**

Item # CPU1359

Leaselt! for only $87/mo.§

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- 400MHz PowerPC G3 processor
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- DVD-ROM drive • 56K V.90 modem
- 10/100Base-T Ethernet
- 1MB Backside Level 2 Cache
- 14.1" Active-Matrix Color Display
- 2 USB ports • 8MB Video Memory

Only **$3499!**

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32MB POWERBOOK G3 MEMORY UPGRADE

Upgrading your memory is the most cost-effective way to increase the performance of your system!

PowerBook Memory only $99.95! each

Item # CHP9820

POWERBOOK G3 DVD-VIDEO KIT

- DVD-ROM drive reads CD-ROM discs up to 12X, DVD at up to 1.5X
- DVD-Video PC Card
- DVD player software
- Works with 1998 PowerBooks

Only **$499.95!**

Item # DRI3206

VST Zip 100 Drive

Only **$179.95*!** AAP0552

Put a little Zip in your PowerBook!

*When purchased at the same time as a 6-pack of Iomega Zip disks. Both items must appear on same invoice. While supplies last.

VST TECHNOLOGIES Incorporated

Iomega Zip Disks (6-pack) MED0394 ..... $79.95

Targus Notepac Plus Black Carrying Case

Only **$59.95!** each AC19972

TARGUS

Call for other cases!

PowerBook G3 Battery

As low as **$139.95!** ACC3728

- Lithium-Ion

ACC3728 (fits new 1999 models) $139.95

ACC3307 (fits 1998 models) shown, $199.95

56K* V.90 FaxModem PC Card

Only **$159.99!** DMD3824

- K56 Flex and V.90 technology
- Send, receive, view, print, and manage faxes right from your PowerBook

*Capable of receiving data up to 56Kbps. Actual send and receive speeds may vary.

GLOBAL VILLAGE

Newer BookEndz PowerBook Docking Station

Only **$199.95!** DRI2765

- Easily connect your PowerBook to your desktop peripherals
- Works with 1998 PowerBooks

PowerBook sold separately.

§Leases are only available to business customers with approved credit on product orders where at least one product totals $750, or more. Lease payments are based on a 36-month, Fair Market Value. Call today to see how you can qualify. Lease terms are subject to change.

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- 2.1 Megapixel
- 1600 x 1200 resolution
- 3X optical zoom
- 8MB SmartMedia Card included!

NEW!

Print out your digital photos on the new Olympus P330 Stylus Photo Printer
PR14784 ..... $399.95

OLYMPUS

32MB SmartMedia Cards

Only $129.95! MY11858

NEW 32MB!

- Digital film for digital cameras
- Compatible with new digital cameras with SmartMedia slot

Microtek ScanMaker 4

Only $599.95! BND3356

- 600 x 1200 dpi
- Built-in transparency bay

NEW LOW PRICE

MICROTEK

MacWAREHOUSE EXCLUSIVE!
FREE Mac G3 compatible SCSI card
when you buy a ScanMaker 4, while supplies last!

3Com Palm V Connected Organizer

EASY TO READ — WITH NEW MAC PAC

- Clearer backlit display
- Holds up to 5 years of appointments, 6,000 addresses, 15,000 to-do items, and more!
- Rechargeable Lithium-ion batteries last up to one month!*

*Estimated battery life varies with usage

Only $429! BN6356

3Com

Palm IIIx Connected Organizer
BN6334 ..... $349

Authorized Catalog Reseller

Apple 333MHz iMacs

Only $1099!* each

Apple 333MHz iMacs: 5 colors to choose from!

RECONDITIONED

Blueberry, shown.

- 333MHz PowerPC G3 processor
- 32MB SDRAM (256MB max.)
- 6.0GB hard drive
- 24X CD
- 56K modem
- 15" color monitor

Blueberry: Item # RCPU1336
Grape: Item # RCPU1337
Lime: Item # RCPU1338
Strawberry: Item # RCPU1339
Tangerine: Item # RCPU1340 ....

Only $1099!* each

APPLE POWER MAC G3 300MHZ MINITOWER

only $1399!*
Ask for item # RCPU1282.

- 300MHz/64MB SDRAM/6.0GB HD/24XCD

Power Mac G3/ 350MHz/ 64MB SDRAM/ 6.0 GB HD/DVD ROM
RCPU1283 ..... $1799*

Power Mac G3/ 350MHz/ 128MB SDRAM/ 12.0GB HD/24XCD/Zip Drive
RCPU1284 ..... $2299*

zip BUILT-IN

RECONDITIONED

Monitors sold separately. Model shown is RCPU1284

Many other reconditioned Power Mac G3 models available. Call for details.

*Reconditioned system. Reconditioned computers may not include original application software. 90 day parts and labor warranty. All sales final. While supplies last.

POWER MAC 7100/80MHZ

- 80MHz PowerPC 601 processor
- 16MB RAM (exp. to 136MB)
- 500MB HD • 4X CD

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Item # RCPU1356

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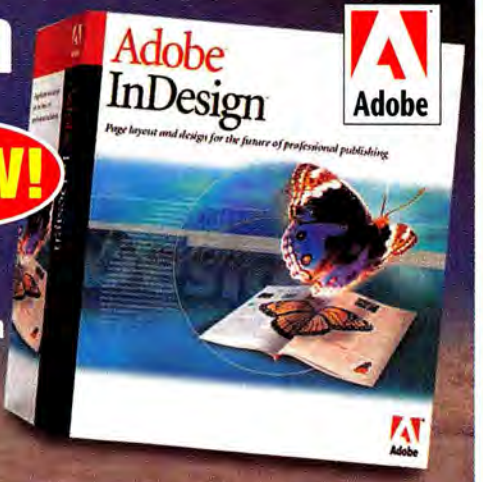

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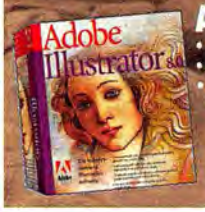

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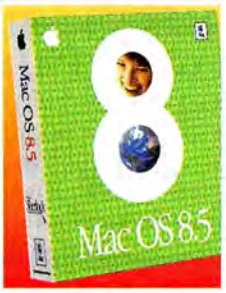

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- 333 or 400MHz PowerPC G3 processor—*fastest performance ever in a notebook!*
- 66MHz system bus
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- Internal 4 or 6GB IDE hard drive
- 24X CD-ROM (#46939) or 2X DVD-ROM drive (#46938) for use in expansion bay
- Hot-swappable expansion bay supports CD-ROM, DVD, Zip, SuperDisk or hard drive

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- 2 USB ports, SCSI port, power adapter port
- Built-in 10/100BASE-T Ethernet
- RJ-11 modem port, 4Mbps Infrared (IrDA) port
- Support for a Zoom Video PC card
- S-Video port
- 24-bit video output port (VGA-style)
- PC Card Slot for one Type I or Type II card

Graphics, Video & Sound

- 14.1 inch (diagonal) display features built-in TFT XGA active matrix display, supporting millions of colors at 1024 x 768 resolution
- 8MB SDRAM video memory
- 2D/3D graphics, through integrated ATI RAGE LT Pro video controller
- S-Video port
- 24-bit video output port (VGA-style)
- 16-bit CD quality stereo input/output
- Two built-in stereo speakers

Portability

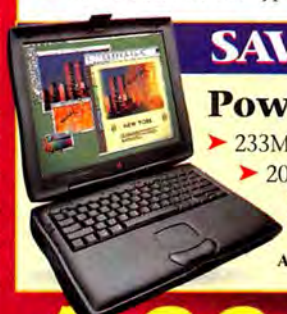
- Includes one Lithium-ion battery for up to 5 hours of normal use; supports two batteries for as much as 10 hours of use (depending on configuration and usage)
- Kensington cable lock slot and keyboard lock

Software (Pre-installed)

- Mac OS 8.6

Size and Weight

- Width: 10.4"; Height: 12.7"; Depth: 1.7" long Weight: 5.9lbs. (w/CD-ROM + battery installed)



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- 512K backside Level 2 cache on processor module
- 133MHz dedicated 64-bit backside bus
- 66MHz system bus
- Integrated floating-point unit and 64K on-chip level 1 cache (32K data and 32K instruction)
- 32MB of SDRAM; two SODIMM slots support up to 256MB
- 64-bit memory bus

Storage

- Internal 6GB IDE hard disk drive
- Internal 24X (maximum) CD-ROM drive

Connectivity

- Two high speed Universal Serial Bus (USB) ports (12 Mbps), which support USB devices such as keyboards, mice, printers, storage devices and USB hubs

Communications

- Built-in 10/100BASE-T Ethernet
- 56Kbps modem supports K56flex and V.90 standards

Multimedia capabilities

- Incredible, high resolution display... MultiScan, tiltable shadow mask color display: 15-inch (13.8-inch diagonal viewable image size), .28mm dot pitch
- Supports millions of colors at up to 1024 x 768 resolution (24-bit)
- ATI RAGE PRO TURBO accelerated 2D/3D graphics controller and 6MB video memory
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MHz	333	333	333	333	333
RAM	32MB	32MB	32MB	32MB	32MB
HD	6GB	6GB	6GB	6GB	6GB
Modem	56K	56K	56K	56K	56K
CD-ROM	24X CD-ROM	24X CD-ROM	24X CD-ROM	24X CD-ROM	24X CD-ROM
Price	$1,198	$1,198	$1,198	$1,198	$1,198
Lease	$48/mo.	$48/mo.	$48/mo.	$48/mo.	$48/mo.

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- PowerPC G3 processor running at 350, 400 or 450MHz
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- System bus running at 100MHz (instead of the 66MHz bus on earlier models) boosts performance speeds, reduces bottlenecks
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- 24X CD-ROM drive or DVD-ROM drive with DVD-Video playback
- Built-in 10/100BASE-T Ethernet networking; optional Gigabit Ethernet

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- Two high speed FireWire ports for digital video and still cameras, printers, scanners and other multimedia peripherals
- Two USB ports for keyboards, mice, printers—up to 127 devices at once
- Two additional bays let you store over 100GB internally (varies by model)
- Four PCI slots (three 64-bit slots and one 32-bit for ATI card)

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- Translucent case, inspired by the iMac
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Great graphics and video features.

- ATI RAGE 128 Graphics Accelerator provides incredible 2D/3D performance for graphics intensive games
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Cache	1MB	1MB	1MB	1MB
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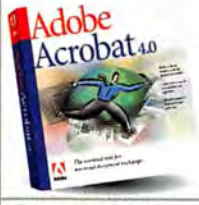

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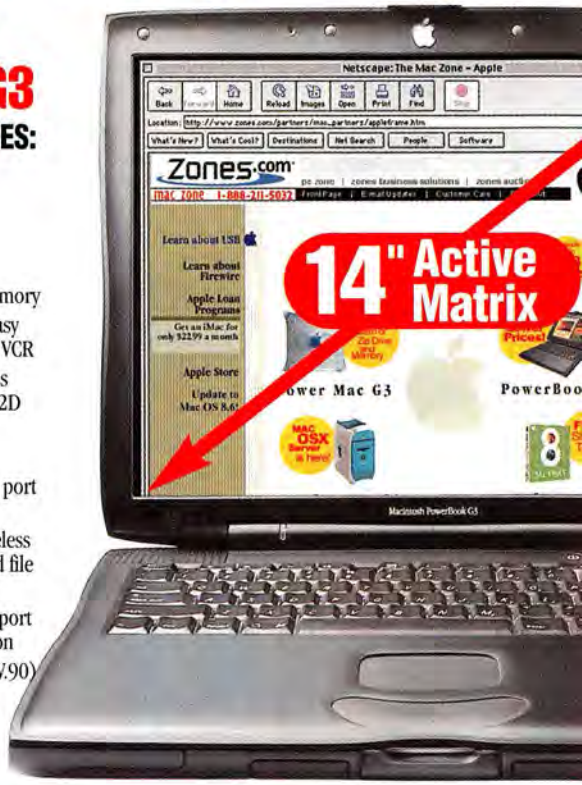

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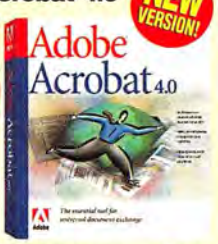

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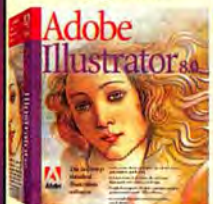

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External Configuration

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External Configuration

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APS HyperDAT™ II	DDS-2/DAT (4-8GB)	599.95
APS HyperDAT™ III	DDS-3/DAT (12-24GB)	949.95
APS HyperDAT™ IV	DDS-4/DAT (20-40GB)	1,249.95
APS DDS-3 Autoloader	4mm DDS-3 AutoLoader (96-192GB)	2,999.95
APS DLT40	DLT 4000 (20-40GB)	1,999.95
APS DLT70	DLT 7000 (35-70GB)	3,999.95
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APS AIT Autoloader	8mm AIT, 200GB on 4 tapes	4,799.95

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- A staggering two gigabytes of removable storage
- Perfect for multimedia producers, graphic designers and service bureaus

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APS JAZ II $439.95

APS Pro Enclosure

APS HyperDAT® II

- Backup and restore speeds as high as 46MB per minute
- Up to 4GB of storage per 120m DAT/DDS-2 tape cartridge

The APS HyperDAT II is perfect for desktop backups. With standard 120m DDS-2 tapes the APS HyperDAT II can backup up to 4GB of data. The HyperDAT II can also use economical 60m and 90m tapes. Ships with backup software and includes a two-year warranty.

Desktop backup just $599.95

External Configuration

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External Configuration

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External Configuration

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- Reliable DDS-3 technology

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EL Configuration

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- 10,000 rpm Cheetah III LVD SCSI
- Blazingly fast hard drive for high-end servers, especially digital video
- 20.1MB/s sustained internal transfers

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$1,289.95
Internal Configuration

APS I 9.1GB LVD/U2W SCSI

- 10,000 rpm Ultrastar LVD Drive
- 9.1GB capacity for content creation servers

This 10,000 rpm mechanism provides high-performance for demanding file and application servers. With outstanding internal data transfer speeds and an Ultra2 Wide LVD SCSI interface, the I 9.1GB races through data-intensive projects like graphic design, imaging, multimedia, even digital video.

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Internal Configuration

APS ULTRA SCSI HARD DRIVES

Model	Description	EL	Int.	Pro
APS ST 4GB	Seagate Medalist Pro, 4520MB, 7200 rpm	209[95]	219[95]	279[95]
APS ST 9GB	Seagate Medalist Pro, 9140MB, 7200 rpm	319[95]	329[95]	389[95]
APS I 18GB	IBM Ultrastar, 17501MB, 7200 rpm	699[95]	709[95]	769[95]

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- Brand-new Barracuda mechanism gives you the highest performance and top reliability
- 7200 rpm and over 49GB for graphics, 3D, digital video and enterprise servers

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Internal Configuration

APS HIGH-PERFORMANCE LVD SCSI HARD DRIVES

Model	Description	Int.	Pro
APS Q 9GB LVD	Quantum Atlas IV, Ultra 160/m, 7200 rpm	393[95]	469[95]
APS I 9GB LVD	IBM Ultrastar, 8705MB, 7200 rpm	349[95]	419[95]
APS ST 9GB LVD	Seagate Barracuda, 8683MB, 7200 rpm	429[95]	499[95]
APS I 9.1GB LVD	IBM Ultrastar 9LZX, 8705MB, 10,000 rpm	549[95]	619[95]
APS Q 9GB 10K LVD	Quantum Atlas 10K, Ultra 160/m, 10,000 rpm	569[95]	639[95]
APS ST 9.1GB LVD	Seagate Cheetah III, 8694MB, 10,000 rpm	539[95]	609[95]
APS I 18GB LVD	IBM Ultrastar 18XP, 17501MB, 7200 rpm	699[95]	769[95]
APS Q 18GB LVD	Quantum Atlas IV, Ultra 160/m, 7200 rpm	729[95]	799[95]
APS ST 18GB LVD	Seagate Barracuda, 17366MB, 7200 rpm	729[95]	799[95]
APS Q 18GB 10K LVD	Quantum Atlas 10K, Ultra 160/m, 10,000 rpm	969[95]	1,039[95]
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APS ST 36GB LVD	Seagate Barracuda, 36.1MB, 7200 rpm	1,279[95]	1,349[95]
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- Ideal for home desktops, entry-level workstations, & budget-conscious storage

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Internal Configuration

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LaCie EKO 10GB USB

- Among the first hard drives with USB
- Easiest way to add over ten gigabytes of storage

Adding more capacity to your desktop, workstation or server is a snap with this USB hard drive. It's hot-swappable; just hook it up and go.

LACIE EKO 10GB USB $299.95
EKO Enclosure

LACIE EKO 20GB USB $499.95

LaCie USB CD-RW

- Finally, a rewritable CD drive with a USB interface
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Sony DSC-D700 Digital Camera

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SONY DSC-D700 $1,699.95

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108356	BP420S	420	260	12-18 MIN	3	3	6.6 X 4.7 X 14.5	219.95
108357	BP650S	650	410	35-40 MIN	3	3	6.6 X 4.7 X 14.5	269.95
108717	BP1000	1000	670	10-15 MIN*	6	N/A	8.5 X 6.7 X 17.3	365.95
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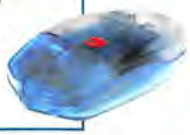

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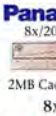

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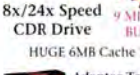

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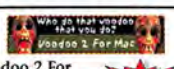

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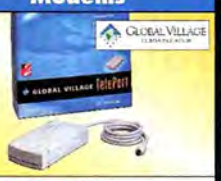

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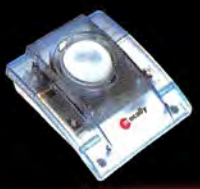

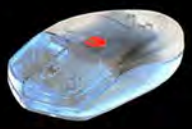

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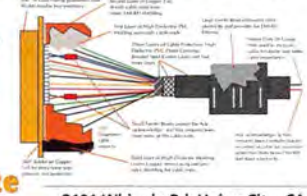

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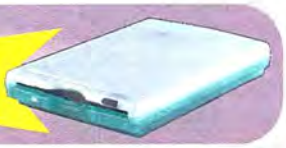

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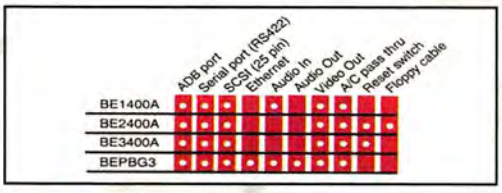

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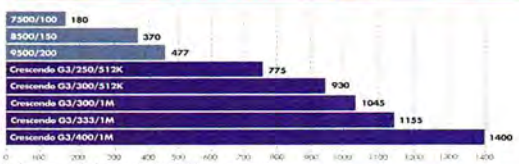

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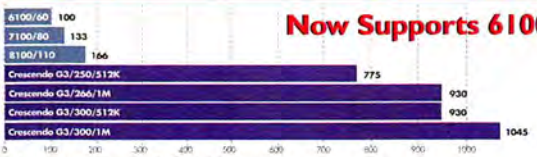

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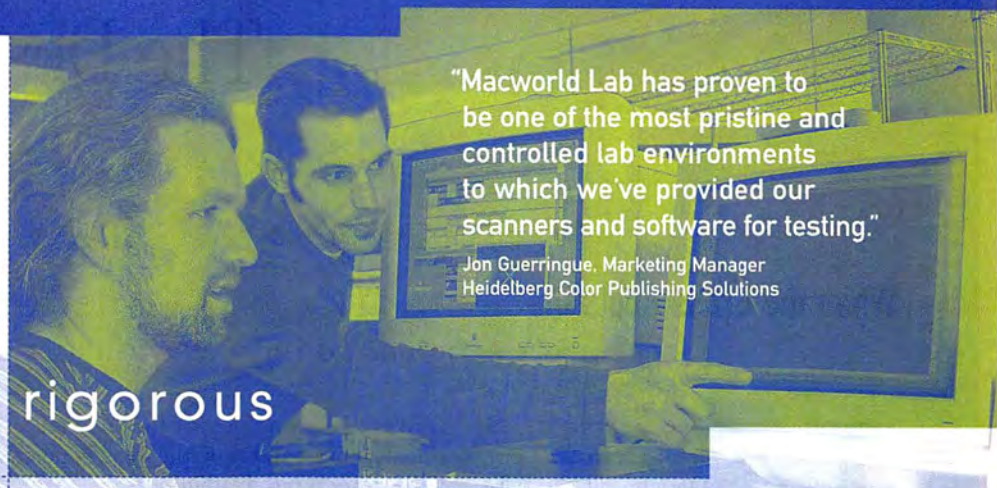

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The Desktop Critic

by David Pogue

When the Grass Roots Die

WHAT'S HAPPENING TO THE MACINTOSH USER GROUPS?

KNOW WHY I AM still a Macintosh guy, despite all the hard times? Because I got my start in a Mac user group. In 1985, right out of college, I was the office manager for the New York Mac User Group (NYMUG), and the counterculture spirit of the time still shapes my attitude. Deep down somewhere, I'm still cheering as the sledgehammer in the "1984" ad smashes Big Brother's face.

But something is going on. One by one, the big user groups are dying. The biggest user group on earth, the Boston Computer Society, shut down a couple of years ago. In January, the Los Angeles Macintosh Group (LAMG) filed for bankruptcy, $250,000 in debt. NYMUG was also bankrupt when, two years ago, it was taken over by a Manhattan consulting firm and remade as a for-profit entity. Even BMUG—the hippest, most famous MUG of all; the one with the 400-page newsletter—recently fired its staff and closed its Berkeley, California, office.

It's not just user groups; the EvangeList has closed shop, too. This 40,000-member e-mail list was started by Guy Kawasaki three years ago. Its purpose was to spread good Mac news, to combat the mainstream-media Apple bashing.

What's happening here? Why are all these useful, grassroots institutions dropping like gnats after a blast of Raid?

Kawasaki says he shut down his because it had "served its purpose" in countering Apple bashing. But that explanation holds about as much water as a thimble. The media still teem with anti-Apple bigots. The battle is far from over.

The actual reason for the EvangeList's demise is more mundane. In 1998, both Kawasaki and the EvangeList's editor, John Halbig, left Apple to join a start-up company. They agreed with Apple to continue the list for one year after leaving—and now the year is up. More important, Halbig says, is that dozens of Web sites and mailing lists, such as MacMarines (www.macmarines.com), now fulfill precisely the same mission as the EvangeList—and with far more editorial freedom. MacMarines can call a dog a dog, without worrying about ruffling some Apple partner's feathers.

But what about the user groups? Why are they collapsing all at once? Former LAMG president (and *Macworld* contributing editor) Tom Negrino sees user groups' current financial problems as a delayed reaction to Apple's dark days of 1995 to 1997. "User groups are a trailing indicator of Apple's health," he says. "As Apple's ocean rises, it will lift all the boats." LAMG's declining revenue was compounded by what he calls "end-stage user-group disease," in which jaded veteran group leaders fall into endless cycles of bickering but take no action.

The bigger story, though, is once again the Internet. BMUG's motto was, "We're in the business of giving away information"—but that's not much of a business when the Internet offers 200 quadrillion times as much. In the old days, you'd go to a user-group meeting to buy a shareware disk, hear industry gossip, and see software-company demos. But the Net offers infinitely better access to shareware, news, and rumors. And downloading trial software is often more pleasant than sitting through live software demos, especially those that involve excruciating PowerPoint presentations by wooden vendor reps.

But user groups aren't dead, nor are they irrelevant. Smaller groups, in cities such as San Diego, Kansas City, and Detroit, are thriving; their social nature still draws enthusiastic crowds. Even among the megagroups, survival is still possible; the successful ones decentralize, responding to the Internet as just another competitive pressure. BMUG, for example, lives on through smaller, more spontaneous meetings—in fact, Raines Cohen, cofounder of BMUG, says there are more meetings per week now than before the group's official closing. He calls it the "open sourcing" of the group; now members don't have to wait for permission or a schedule slot to undertake a new project.

In other words, BMUG plans to survive the Internet age by both embracing the Web—moving BMUG's newsletter and BBS operations there—and exploiting its greatest weakness: the lack of live social contact. LAMG, meanwhile, is returning to its roots as an all-volunteer operation. In both cases, these big groups are starting to resemble smaller, all-volunteer Mac user groups, which generally don't face the same problems of political infighting, high rent, and staff costs. "Small and medium user groups have always been the most effective," says Cohen. "The spirit is what's important." m

DAVID POGUE (www.davidpogue.com) wrote *The iMac for Dummies* (IDG Books Worldwide, 1998).

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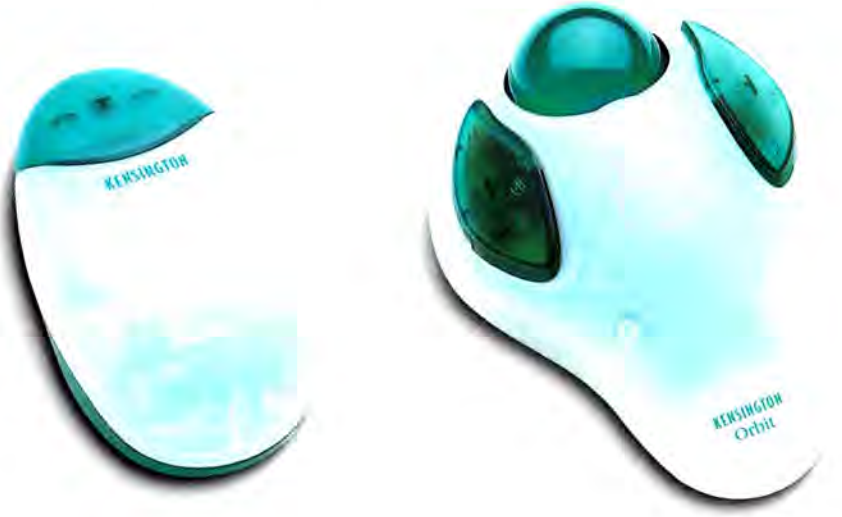

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