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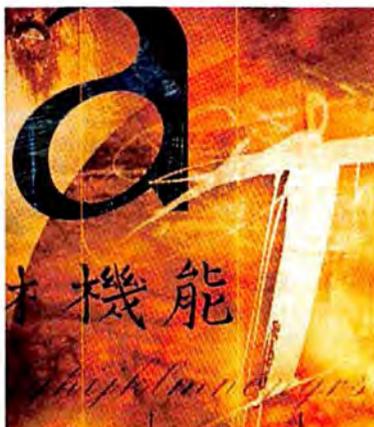
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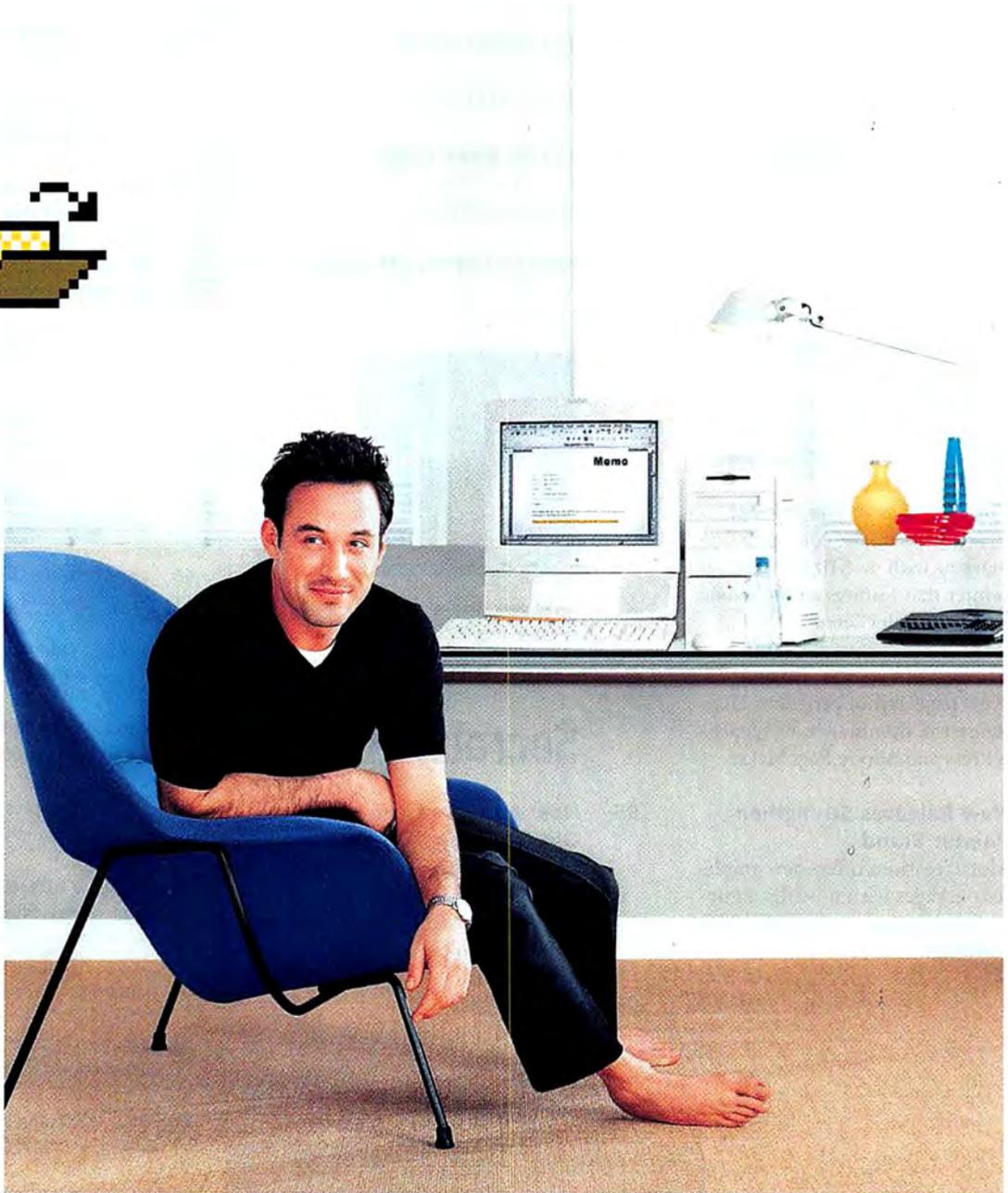
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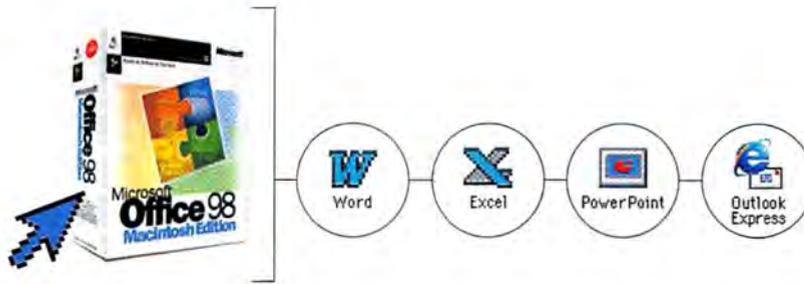
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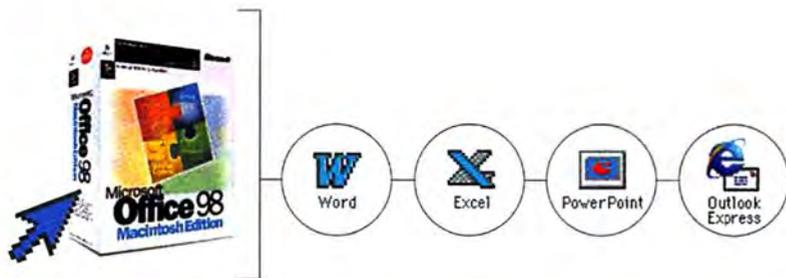
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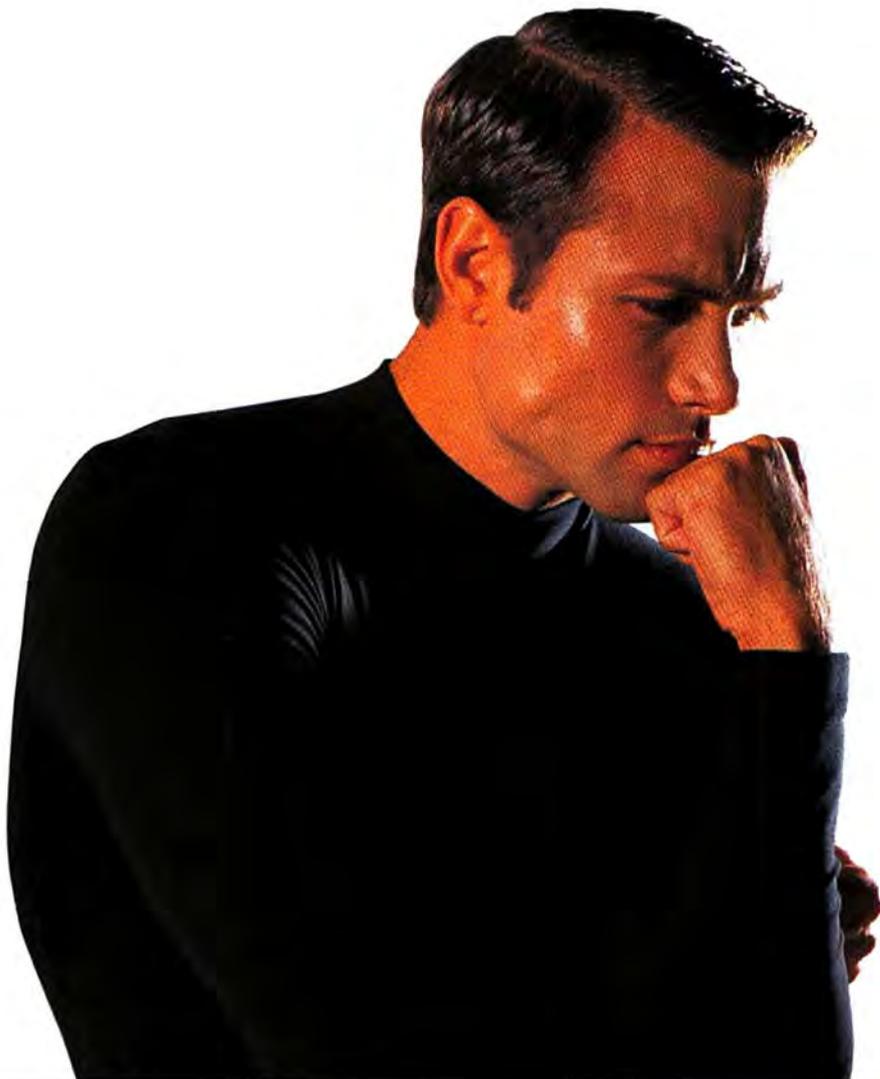
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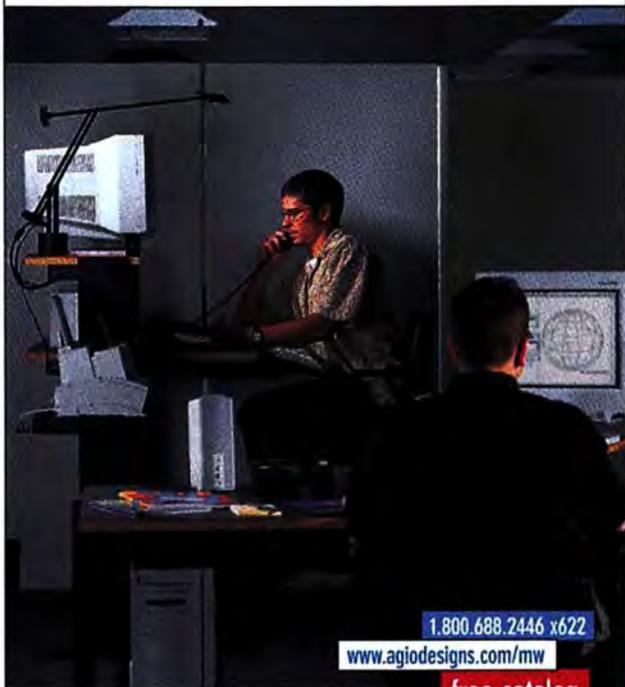
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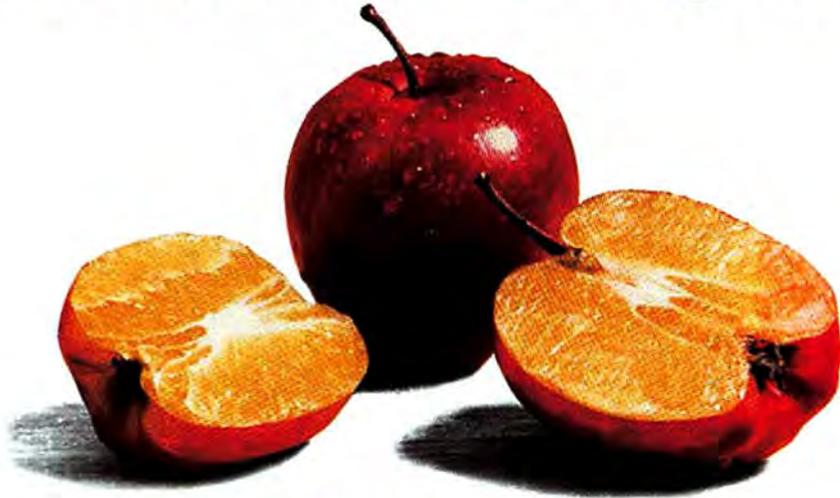
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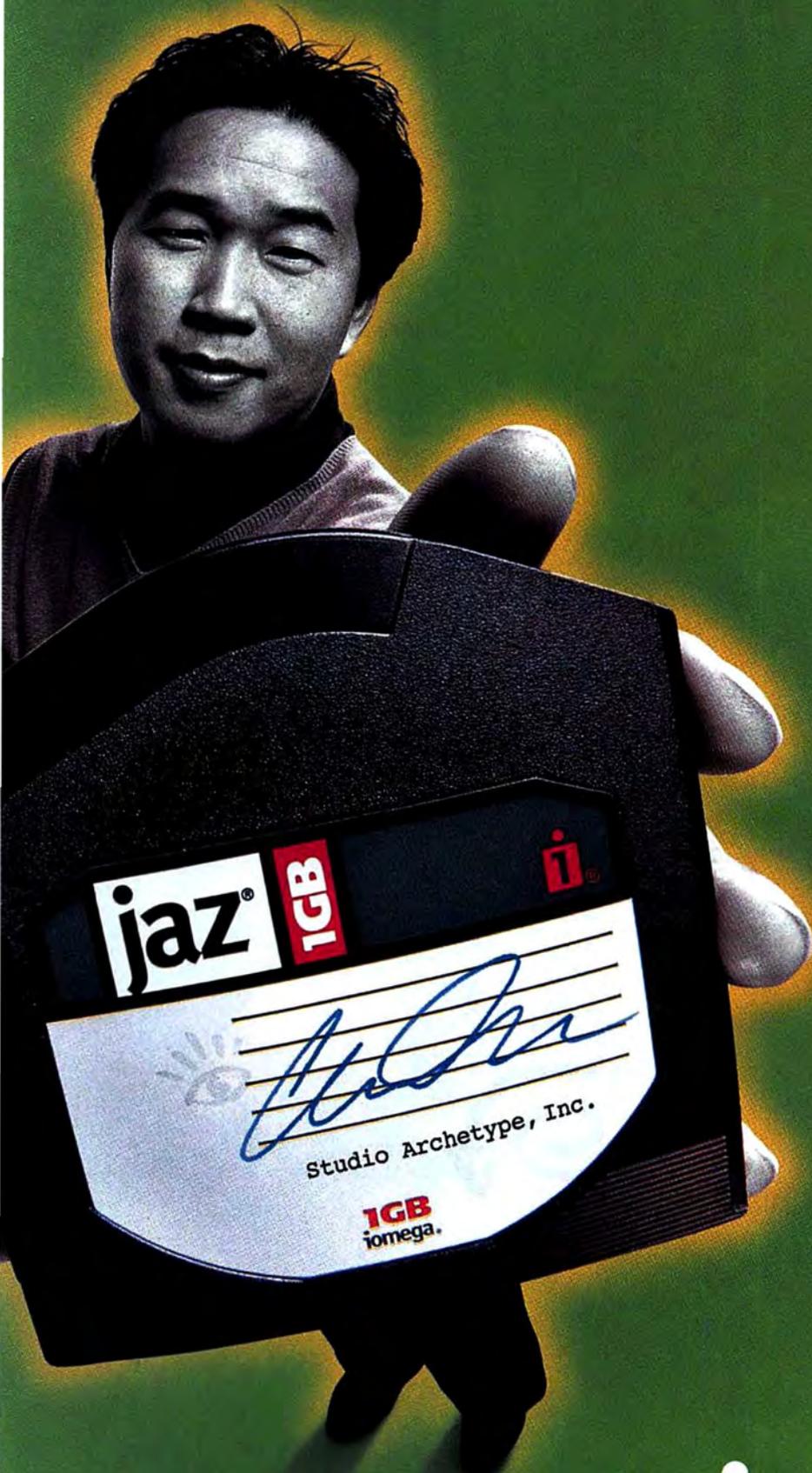
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# Letters

## Gadget Grumbles

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

GERALD A. RISKIN  
via Macworld Online

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

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

BRUCE MCLAUGHLIN  
Berkeley, California



## NT Inclusion . . . or Intrusion?

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

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

In the past month, I've spent countless hours trying to set up a RAS connection from a Mac to the NT server for e-mail, TCP/IP network access, and so

on. It has been frustrating, to say the least. The article "Macs and NT: Allies or Adversaries?" (*News*, February 1998) gave me the information that Apple tech people didn't know and Microsoft wouldn't answer without a \$190 tech-support package.

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

BEN KAUFFMAN  
New Holland, Pennsylvania

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

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

DANIEL P. B. SMITH  
Norwood, Massachusetts

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

*continues*

## CORRECTIONS

- *The Emblaze WebCharger review (March 1998) was cowritten by David Biedny and Nathan Moody.*
- *We incorrectly described Vicom Technology's features when referring to Vicom SoftRouter 4.0 ("The Mac's Brightest Stars," March 1998). SoftRouter is a remote-access server solution.*

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

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

BAYARD BELL  
Atlanta, Georgia

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

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

Twelve months ago I too believed the hype, but since then I have acquired con-

siderable experience in using NT with both PC and Mac clients. It stinks. Furthermore, NT 4 was a significant downgrade that reduced reliability and useful features in favor of marketing objectives.

BILL NORTHCOTT  
via *Macworld Online*

### Paying for It

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

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

KURT KRAUSE  
Houston, Texas

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

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

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

DEE GOLDEN  
Austin, Texas

### Hankering for NCs

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

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

LEE WALLS JR.  
Birmingham, Alabama

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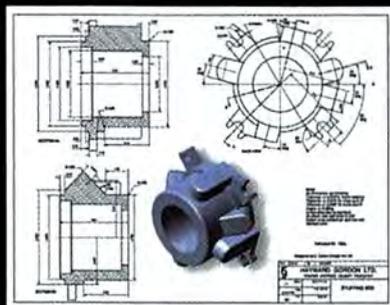
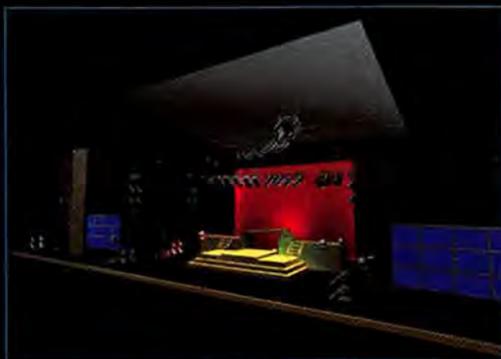
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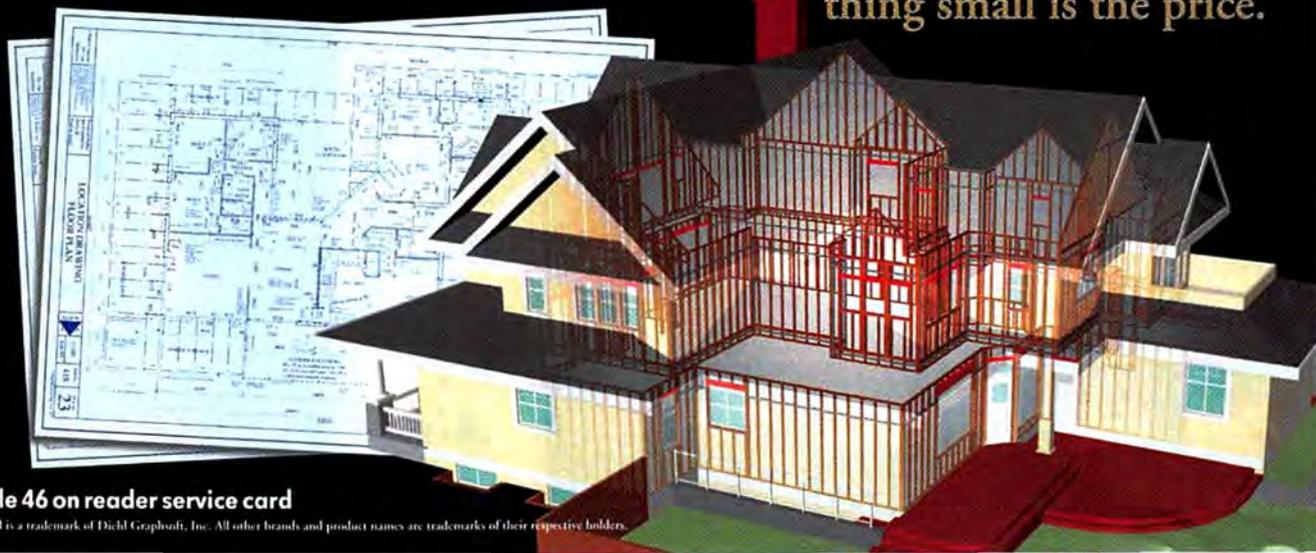
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# The Vision Thing

by Andrew Gore

## Feet of Clay

THE NEWTON'S DEATH SHOULD BE A LESSON FOR APPLE

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

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

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

### Ignoble Birth

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

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

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

Although the first MessagePad was deeply flawed and completely overhyped, that didn't mean the Newton was dead in the water. After all, the first two versions

of Windows were hardly barn burners, but Microsoft kept at it, chipping away at the product's flaws until customers finally started buying it.

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

### Think Small

Apple started on the right track. Rather than abandoning the Newton and starting over, it continued to make refinements. Most recently, the impressively powerful Newton OS 2.0 stood as a release whose

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

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

### Fear of Failure

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

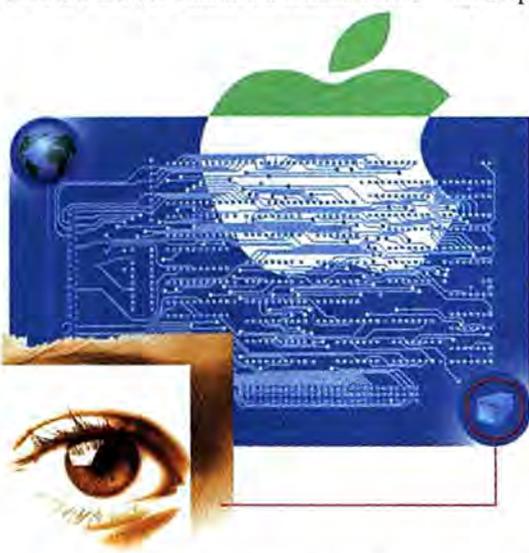
At Apple, it takes a hundred people to come up with a good idea but only one to kill it. Unless Apple can start encouraging intelligent risk taking, the company will be doomed to repeat the error it made with the Newton.

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

improve and extend the Mac.

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

Send messages of condolence to [visionthing@macworld.com](mailto:visionthing@macworld.com). In lieu of flowers, please send donations to the Museum of Dead Apple Technologies—we bear it's looking to expand.



technology still trumps anything that Microsoft or U.S. Robotics have to offer.

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

A lot of those people use PalmPilots



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# NEWS

online

## Mac Vendors Ponder Netscape Gambit

BROWSER DEVELOPER TO  
GIVE AWAY SOURCE CODE

by Cameron Crotty

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

So what does this mean for Macintosh users? Should you prepare yourself for an onslaught of exotic new Web browsers? Mac developers say they are excited about the

potential of Netscape's offer, and a few have offered hints about forthcoming products that might incorporate Netscape's browser technology. But they are also aware that the devil lies in the details, some of which Netscape is still working out.

**Murky Conditions** Netscape admits that it hasn't

established the precise terms under which it will make the source code available. Developers can sell packages that incorporate Communicator source code, says Netscape Communicator product manager Todd Goldman, but the company hasn't decided what requirements developers will have to fulfill, such as making

their improvements freely available to other programmers. Without that information, "we can't determine exactly what we would or wouldn't be able to do [with the software]," says Macromedia chief technology officer Norm Meyrowitz. As a result, he says, Macromedia will wait a couple of months



before deciding whether to follow Netscape's initiative.

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

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

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

**Better E-Mail?** For some developers, Navigator—the browser component of Communicator—is the least-interesting portion of the software suite. Netscape's e-mail client uses IMAP and LDAP, new processing and directory protocols that most in the industry believe are the future of Internet e-mail but that aren't available from most Macintosh e-mail clients. "Some enterprising company could take [Netscape's e-mail] code and build a cool application on top of that," says Eric Zelenka, WebStar product

*continues on page 26*

printing

## The Proof Is in the Ink-Jet

NEW EPSON PRINTER

WITH EFI RIP REDEFINES

DIGITAL PROOFING

by Stephen Beale

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

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

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

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

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

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

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

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

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



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

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

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

*continues*

from continuous-tone printers, but under a magnifying glass, you may notice minor banding and other artifacts that would not show up in an Iris print.

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

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

### publishing

## Pretenders to the Throne

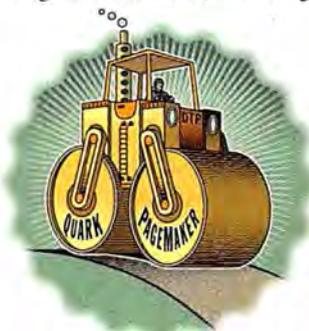
NEW PROGRAMS TAKE ON QUARKXPRESS AND ADOBE PAGEMAKER

by Stephen Beale

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

**Bold Claims** On its Web

site, SoftLogik boldly claims to have the best desktop publishing program on the market, and PageStream 3.3 (the first Mac release) certainly has a long list of features, including



character style sheets and Bézier drawing tools. It also has one glaring omission—it can't directly import Microsoft Word files—and some of its features, such as 3,000 percent zoom, are of dubious value.

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

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

This is a huge advantage, considering the mission-critical nature of publishing soft-

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

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

Quark's plug-in architecture is much more powerful

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

**Adobe Beckons** Adobe apparently recognizes this. *MacWeek*, citing anonymous sources, has reported that Adobe is working on a new page-layout application, code-named K2, that will be built from the ground up to challenge QuarkXPress for the wallets of graphics professionals. The new program will reportedly feature a revamped

*continues*



### Get 'Em while They're Hot?

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

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

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

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

## graphics

# New Releases Strengthen Painter Brand

PAINTER CLASSIC GETS BACK TO BASICS

by Cathy Abes

Attempting to broaden and consolidate the Painter family of products, MetaCreations (805/566-6200, [www.metacreations.com](http://www.metacreations.com)) is releasing a \$100 streamlined version of Painter aimed at intermediate users, as well as a new, renamed version of its

3-D paint software, Detailer.

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



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

late traditional media. Classic will include image hoses, the seamless tiling of images, and an extensive library of brushes, but much of Painter's complexity has been stripped away. You won't see Painter's confusing floaters, nor will you be able to create brand-new brushes, although existing ones will still be customizable via sliders.

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

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

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

## "MAC VENDORS PONDER NETSCAPE GAMBIT"

continued from page 23

manager for StarNine.

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

Says group cofounder Raven Zachary, currently in Prague working as the senior

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

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



## Celebrating Apple T-Shirts

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

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

Thygeson offers the \$40 book through his Web site, at [www.Appletshirts.com](http://www.Appletshirts.com).—STEPHEN BEALE

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- 80 PostScript fonts, 15 PCL fonts
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- PostScript® Level 2 compatible, PCL 5
- 80 PostScript fonts, 15 PCL fonts
- 8 MB RAM expandable to 64 MB
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- Ethernet® (10 Base T, 10 Base2)
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Three additional years Add \$468

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- 500 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 285 PostScript fonts, 15 PCL fonts
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## Elite XL 1208

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

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2nd Paper Feeder\* Add \$419  
(Includes 500 sheet Letter Tray)

Extra 8 MB memory Add \$49

### Platinum Exchange Warranty Program:

Additional year Add \$329  
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Business Lease: \$114 Month/36 month lease

## Elite XL 1208 PlateMaker

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# Reviews

## Virus-Protection Software

VIRUSSCAN'S BARE-BONES

FEATURES CAN'T MATCH

VIREX'S ROBUST SOLUTION

**N**EXT TO HARD-DRIVE MISHAPS, computer viruses are among the most pernicious things that can affect your Macintosh. But although both afflictions seem to be out of our immediate control, virus infections are preventable with a combination of common sense and the right antivirus software.

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

### A Virus Bestiary

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



RICHARD DOWNS

reappear occasionally within companies and online communities.

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

Many programs contain macro languages that let users add custom features specific to individual documents—a use-

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

Microsoft Word 98 and Excel 98—

REAL PRODUCTS  
REAL RATINGS

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

OUTSTANDING: ★★★★★

VERY GOOD: ★★★★

GOOD: ★★★

FLAWED: ★★

UNACCEPTABLE: ★

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

### Covering All the Bases

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

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

Virex’s control panel contains the same scan-and-repair engine as the application and adds the ability to protect against attacks by infected files. When, for example, an infected Word file is opened, a dialog box offers to repair the file before Word actually opens it. In



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

## On the Horizon:

### NORTON ANTIVIRUS FOR MACINTOSH

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

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

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

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

addition, Virex automatically scans newly created files, including archives from programs such as Aladdin Systems’ StuffIt. Although this feature sometimes makes Virex seem overzealous, it also means that any newly downloaded files are intercepted before damage can occur.

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

### Basic Functionality

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

VirusScan’s configuration wizard lets you modify the conditions required to trigger a scan, including defining a scanning schedule. VirusScan’s extension offers prevention features and contains the basic scanning engine. In fact, the application won’t run unless the extension is in the Extensions folder, which can be a slight problem if you have to move or disable the file, as you might before

installing new software. And unlike Virex, VirusScan isn’t particularly friendly about running scans in the background—doing so causes the foreground application to respond sluggishly.

### Macworld’s Buying Advice

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

### Virex 5.8.1

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

### VirusScan 3.0

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

# Claris Home Page 3.0

THE BEST BASIC WEB EDITOR GETS BETTER

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

## Database Publishing Made Easy

The big news in this release is integration with FileMaker Pro 4.0 databases (see "The Web Publisher's Essential Tool Kit," in this issue). Using the Lasso technology Claris acquired from Blue World

outs you want to include, and pick one of 18 preset styles for your pages. Although the FileMaker Connection Assistant creates rather bland pages, you can add a bit more style in either the Edit Page or Edit HTML Source mode. The sites I built with the Connection Assistant worked very well and allowed me complete access to FileMaker Pro databases.

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

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

## Think Globally, Not Locally

Unlike previous versions, Home Page 3.0 can work with a collection of pages as a unified site. Among its new site-management features are a Site Editor window that lets you import a site by dragging a folder from your hard disk; global search and replace; automatic link checking; and FTP capabilities that make it easier to upload files to, maintain files on, and download files from a remote server. You can also create a media folder for storing images, QuickTime movies, and Java applets, and Home Page will automatically consolidate all referenced files

in your site into the folder.

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

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

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

## Macworld's Buying Advice

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



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

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

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

**RATING:** **PROS:** Great connectivity to FileMaker Pro databases; improved interface; better table and frame support. **CONS:** Doesn't do DHTML or precise positioning. **COMPANY:** FileMaker (408/987-7000, www.claris.com). **LIST PRICE:** \$99.

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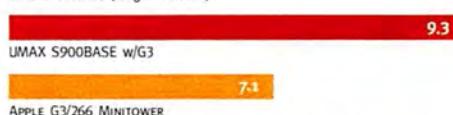
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#### Macworld Speed Mark Video Score



Both S900BASE w/G3 and Apple G3/266 tested with stock configuration.  
Tests conducted by Macworld Magazine. Details can be found at  
<http://macworld.zdnet.com/pages/march.98/Reviews.4207.html>

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Circle 99 on reader service card

# Elastic Reality 3.1

MORPHING SOFTWARE FOR EFFECTS PROS

**M**ORPHING, ONCE OVERUSED AS a monster shape-shifter, is now a vital part of producing special effects and visual graphics. Most of the good morphs you see today aren't even recognizable as morphs, and most of those—if they were done on a Macintosh—were likely created using Avid Technology's Elastic Reality. Designed to morph still and animated images and distort, shift, color-correct, and generate moving mattes, Elastic Reality 3.1 is the most advanced morphing software available for the Mac.

## Getting from Here to There

Elastic Reality lets you drag two images (still or moving) from the desktop onto the project window; outline the desired features with Bézier shapes; and trans-



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

form one image into the other, using the shapes as guides. You can also use shapes as multipurpose masks to constrain color corrections, path animations, and mattes. An assisted-tracing tool speeds masking by detecting color-contrast areas and snapping the Bézier line to the most likely edge. After you create the shapes, another set of tools helps you set up correspondences to link them.

The extremely useful Group Editor lets you name shapes and groups of shapes. Within each group are several editable parameters: color correction, distortion, transparency, layer depth, shadows, path control, scale and rotation transformations, and more. You can save

or load the groups and edit them with the intuitive Curve Editor. With the Group Editor's layering options, you can assign the groups to individual layers. Some groups can block out other groups, which is useful for masking areas that move over one another during the course of an animation.

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

## Fear Not the Mask

A good level of control over masks is absolutely necessary in professional video production, and Elastic Reality delivers. By adjusting the Bézier mask shapes around the image you want to matte and keyframing those adjustments, you can quickly create a fairly decent traveling matte (an animated mask that tracks the object it's masking). You can group matte shapes and apply them to each other using Booleans, varying opacity, and edge sharpness and then export the mattes separately or embed them as an alpha channel within the rendered footage.

Motion paths in Elastic Reality let you animate images moving along predefined Bézier shapes. For example, say you want to combine a still overhead shot of a race car and animate it through a race-track: not only can you "trace" the car's predefined routes; you can also point the car in the direction it's moving. The sole drawback is that only two elements can appear on top of the background image. To get around this, you could render out portions of the animation and continue

to bring the rendered file into the background plate, compositing layer after layer until the animation is complete. You could also include all the elements to be animated in one image file, allowing multiple masks to be combined into groups that can be animated individually.

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

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

## Macworld's Buying Advice

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

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

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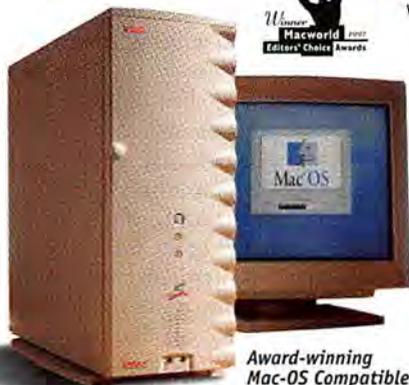
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# Visual Café for Java 2.0

A JAVA PROGRAMMER'S PARADISE

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

## Hotter, Sweeter Java

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

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

The HTML-based help system is a tutorial on object programming in its

own right; only the program's scope makes it daunting for first-time programmers. And applets can be not only created but also tested rapidly, since you can run them inside Visual Café without invoking a cumbersome browser.

## Data Automation

From the Mac perspective, there are really only two kinds of databases: FileMaker Pro, whose cozy confines are familiar to several million Apple customers, and everything else—SQL-capable databases



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

ranging from ACI US's 4th Dimension to Oracle and DB2. Visual Café for Java's Database Development Edition goes beyond the Professional Development Edition with two packages for connecting browser clients to databases on remote servers. By using the versatile Data-Aware Project Assistant, the first package, a trial version of Blue World's Lasso, makes it relatively easy to pass data back and forth between a client browser and FileMaker Pro running on a Mac server.

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

The tricky part is that dbAnywhere's

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

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

## Macworld's Buying Advice

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

### Visual Café for Java 2.0 Database Development Edition

**RATING:** ★★★★★/5 **PROS:** Easiest Java-based connection to SQL or FileMaker databases. **CONS:** Server software runs on Windows NT; Mac tools slower than Windows counterparts; needs at least 32MB of RAM. **COMPANY:** Symantec (541/334-6054, [www.symantec.com](http://www.symantec.com)). **COMPANY'S ESTIMATED PRICE:** \$499.95.

### Visual Café for Java 2.0 Professional Development Edition

**RATING:** ★★★★★/5 **PROS:** True visual programming for Java. **CONS:** Needs newest hardware and more than 32MB of RAM for acceptable performance. **COMPANY:** Symantec (541/334-6054, [www.symantec.com](http://www.symantec.com)). **COMPANY'S ESTIMATED PRICE:** \$299.95.

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# Usenet News Servers

THE NEWS IS GOOD: SERVERS ABOUND FOR THE MAC

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

## Newsfeed versus Active Pull

Traditional news servers require a *newsfeed*—an upstream server that delivers news at scheduled intervals. Because the newsfeed server contacts your downstream server, this approach requires a dedicated Internet connection; it also means you'll get news you don't want. An

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

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

## The Big Feeds

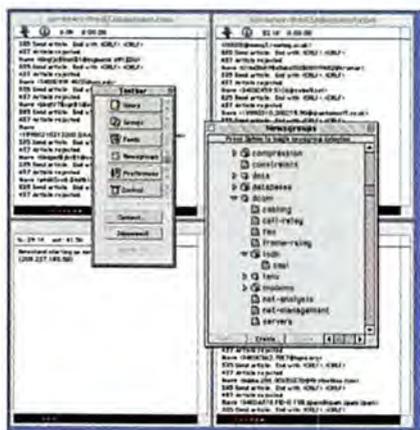
An industrial-strength news server with a graphical interface that makes for easy setup, Imagina's Newstand 1.0 is notable for its blazing speed—this server captures news faster than the others. It comes in two forms: a Lite version for small, single-server organizations, and a Pro version for companies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

Stairways Software's RumorMill 1.1, which supports both newsfeed and Active Pull, isn't nearly as fast as Newstand. It's

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

## Macworld's Buying Advice

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



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

alternative to newsfeeds is Active Pull. It's slower than a newsfeed, but because your news server initiates contact with the upstream server, Active Pull doesn't require a dedicated Internet connection.

NetWin's DNews 4.4 takes the Active Pull approach by default (it also supports traditional newsfeed delivery), but it

## DNews 4.4

**RATING:**  $\frac{3}{4}$  **PROS:** Active Pull; on-demand group retrieval. **CONS:** Difficult to configure; delays in retrieving new newsgroups. **COMPANY:** NetWin (303/347-8657, www.netwinsite.com). **LIST PRICE:** \$485.

## NewsRunner 1.0

**RATING:**  $\frac{3}{4}$  **PROS:** Active Pull; e-mail distribution; HTML output. **CONS:** Doesn't support newsreader applications; slow news collection; no reply capability. **COMPANY:** Hi Resolution (508/543-6955, www.hi-resolution.com). **LIST PRICE:** Individual license, \$99.

## Newstand 1.0

**RATING:**  $\frac{4}{4}$  **PROS:** Easy to configure; fast, multiple-newsfeed connections; downstream feeds. **CONS:** No Active Pull. **COMPANY:** Imagina (503/224-8522, www.imagina.com). **LIST PRICE:** Newstand Lite, \$498; Newstand Pro, \$998.

## RumorMill 1.1

**RATING:**  $\frac{2}{4}$  **PROS:** Active Pull; downstream feeds. **CONS:** Slow; streaming-delivery mode nonfunctional. **COMPANY:** Stairways Software (news-server@stairways.com.au, www.stairways.com). **LIST PRICE:** Individual license, \$35; site license, \$500.

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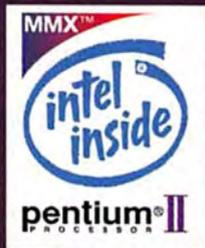


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# Internet Explorer 4.0

MICROSOFT'S BROWSER ADDS NEW FEATURES—AND NEW BUGS

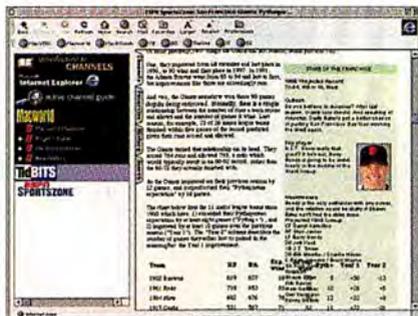
**W**HEN MICROSOFT RELEASED the first Macintosh version of the Internet Explorer Web browser, it was a revelation. Unlike Netscape's slow and bulky browser, Explorer was small and speedy (albeit missing some of Navigator's features). With Internet Explorer 4.0, Microsoft has caught up with Netscape: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

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

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

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

For all its innovations, however, Explorer 4.0 still offers plenty of disappointments, from stability problems to incompatibilities with Web pages that take advantage of new HTML features. Support for Dynamic HTML is poor at best; many of the DHTML pages I visit-



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

ed didn't display correctly, and most animations took more than twice as long to display as in either Navigator or the Windows version of Explorer.

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

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

## Macworld's Buying Advice

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

**RATING:** \$\$\$½ **PROS:** Nice interface touches; strong offline-browsing features; fast Java engine. **CONS:** Buggy HTML and DHTML rendering; crash-prone. **COMPANY:** Microsoft (425/882-8080, www.microsoft.com). **LIST PRICE:** Free.

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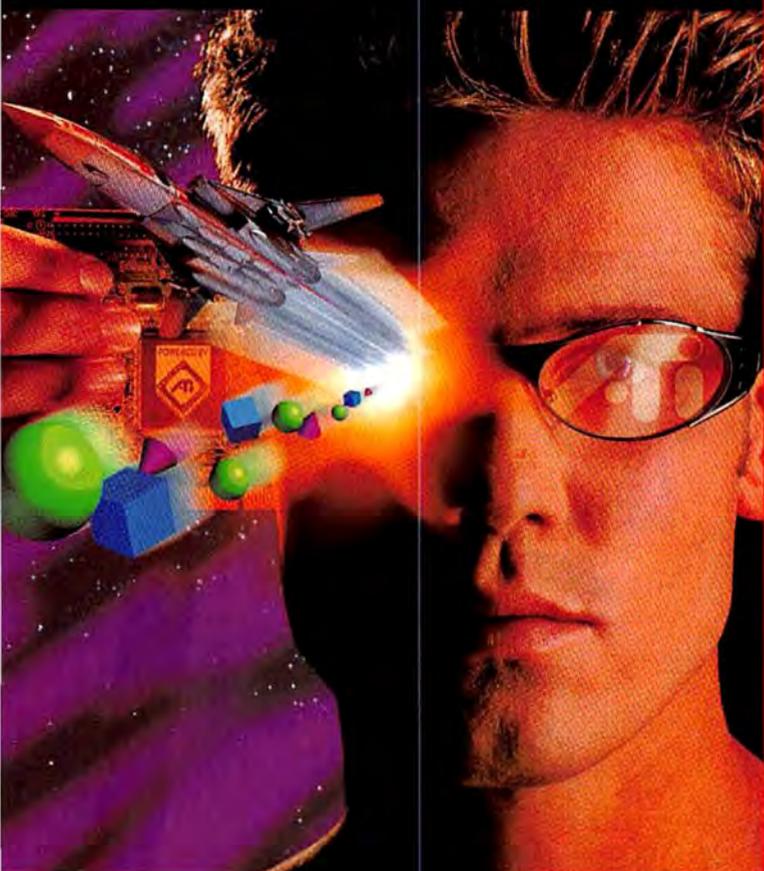
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**C**OMPLEX WEB SITES WITH hundreds or thousands of pages pose special problems for site builders. Redesigning such sites means changing every page by hand—unless you separate the content of the pages from their style by using templates. Until recently,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

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

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

SiteWarrior's tag database makes working with HTML easier. You can drag tags from the database into the document window, where you can modify their attributes. Because tags can be added to and deleted from the database, you can update the file when the HTML standard changes. SiteWarrior also lets you define tag nicknames: snippets of HTML you use throughout your site can be defined once and then referenced by a simple tag. JavaScript, Dynamic HTML, and Cascading Style Sheets are not so much supported as simply ignored. You can add any of these to a page, and SiteWarrior will



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

just pass them through the rendering process. Given that the goal of Cascading Style Sheets is to separate form from content, it would be nice if SiteWarrior had a tool to help you build style sheets.

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

But SiteWarrior isn't for people who prefer WYSIWYG Web editors. To take advantage of its powerful features, you need to be able to learn not only HTML

but also SuperTags. Unfortunately, a non-Mac-like user interface and lack of support for standard Mac features such as drag and drop make SiteWarrior more difficult to learn. Improved documentation would help ease the learning curve. And although SiteWarrior is powerful, it isn't bug-free; one of my SiteWarrior files became corrupted, and I encountered minor screen-redraw problems.

## Macworld's Buying Advice

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

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

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# Final Effects Complete

TOP VIDEO-EFFECTS COLLECTION GROWS, GOES CROSS-PLATFORM

**V**IDEO PRODUCERS WHO USE Adobe After Effects have a vast selection of third-party plug-ins to choose from when they need to expand After Effects' repertoire.

MetaCreations has taken two of the best of these collections, KPT Final Effects and Studio Effects; thrown in more than a dozen new filters; and wrapped it all up in a \$1,195 package called Final Effects Complete. True to its name, this is the most complete set of After Effects filters you can buy.

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

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

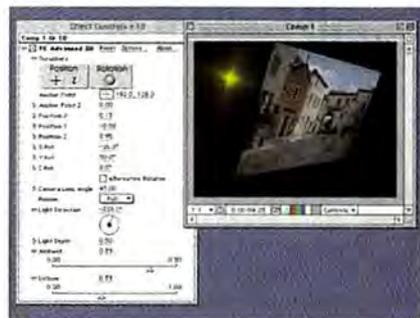
Two of Final Effects Complete's new filters create 3-D perspective effects. The Cylinder effect wraps a layer around an imaginary cylinder whose dimensions you can customize. More impressive is the Advanced 3D effect, which makes short work of creating tilting, rotating, and spinning effects. Advanced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

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

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

## Macworld's Buying Advice

At \$1,195, Final Effects Complete costs almost as much as Adobe's After Effects Production Bundle. If you already own either Final Effects or Studio Effects, MetaCreations' upgrade price of \$495 (or \$195 if you own both) will make your day. If your wallet still whines, investigate DigiEffects' Aurorix and Berserk—although they can't match Final Effects



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

Complete in breadth, at \$289 each they cost far less. But if you've got a *Titanic* budget and want the most complete array of After Effects plug-ins available, you'll want Final Effects Complete.—JIM HEID

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

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## StuffIt Deluxe 4.5.1

MINOR BUGS, MAJOR USEFULNESS

**A**S THE INTERNET BECOMES more popular, the gulf between the Mac's ease of use and the Net's Unix-descended complexity becomes ever wider. Fortunately, the problem of downloaded and e-mailed files in bizarre formats is fading, thanks to Stuff-It Deluxe. If a file's name ends in .sit, .cpt, .pkg, .zip, .arc, .gz, .tar, .Z, .lha, .uu, .hqx, .bin, or MIME, StuffIt Deluxe 4.5.1 can turn the file back into something usable faster than ever before.

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

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



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

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

Unfortunately, Deluxe 4.5's birth has been rough. The first release, according to Aladdin's Web site, treated users to such phenomena as "a multicolored patch appearing in the menu bar" and system crashes. Yet even the free 4.5.1 updater fails

to nail several embarrassing bugs: SpaceSaver doesn't work with Mac OS 8.1; the MIME-unstuffing feature conks out if you highlight more than a handful of files; the ⌘-U and ⌘-S keystrokes sometimes stop working; and the glorious, sanity-saving "Delete archive after expanding" option doesn't work for some kinds of Internet-downloaded files—such as MIME. (Aladdin says it's working on fixing the problems.)

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

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

## EtherPeek 3.5

STATE-OF-THE-ART NETWORK ANALYZER

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

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

The basic analyzer captures every packet on your LAN at 10 or 100 Mbps, letting you filter based on any packet element; context-sensitive triggers start and stop packet



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

capture and generate sound, pager, or AppleScript alerts. EtherPeek displays traffic summary histograms by protocol or node and presents network use and error rates in real time. A name-resolution feature automatically looks up device names to make the displays more meaningful. And the new EtherPeek OT Module system extension dramatically improves performance by working with Open Transport to take advantage of PCI Fast Ethernet adapters.

EtherPeek's most useful new feature is its Summary Statistics window, which lets you capture and save baseline statistics for your network when it's operating normally

and then compare those statistics with current measurements when the network bogs down. At a glance you can see unusually high traffic or error rates and quickly isolate the cause of performance problems.

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

**Macworld's Buying Advice** Network problems can be hard to track down and correct. With its encyclopedic protocol knowledge, helpful online documentation, sophisticated plug-ins, and handy comparative statistics, EtherPeek is the instrument of choice for serious diagnosis and treatment.—MEL BECKMAN WITH JASON EGGLESTON

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



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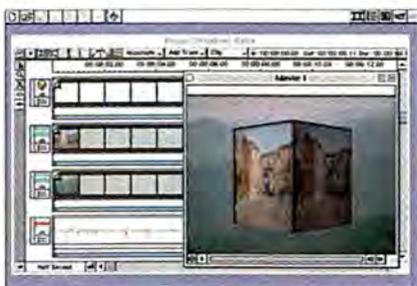
# VideoShop 4.0/3D

VETERAN VIDEO EDITOR ADDS 3-D SUPPORT, MUSIC MAKER

**T**HE OLIVER TWIST OF VIDEO editors, VideoShop is an appealing but troubled orphan that has bounced from one home to another. Settled now into the Strata family, VideoShop 4.0.1/3D sports 3-D features and an enhanced interface. It still falls short of Adobe Premiere in many ways, but it also has some unique strengths that make it a good choice if you're on a budget and want to create multilayer video compositions.

The biggest interface change in the Power Mac-only VideoShop 4.0.1 is the addition of a Premiere-like Bin window that holds a project's imported media. (Previous VideoShop versions used a confusing folder-and-desktop metaphor.) As in earlier versions, you arrange imported media in the Project window, where you can view a production as a timeline or as a storyboard that displays one frame of each clip. The storyboard view is useful for assembling rough edits and rearranging clips, and it's unique to VideoShop.

Another VideoShop feature you won't find in Premiere is a window that lets you



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

layer and resize clips and draw motion paths for clips to follow as they play, opening up more motion-animation possibilities than Premiere offers. All the usual transitions are here, along with an array of filters that's more interesting than Premiere's.

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

bersome than similar products, but it works.

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

**Macworld's Buying Advice** VideoShop 4.0.1/3D is a runner-up to Premiere for most uses, though the \$89 promotional price may make its weaknesses easier to live with. It will still cost less than Premiere when the price reverts to \$495, but its shortcomings won't be buried under quite as much savings.—JIM HEID

**RATING:** ★★★½ **PROS:** Easy to learn and use; novel QuickDraw 3D support. **CONS:** Doesn't support Premiere plug-ins; some design lapses. **COMPANY:** Strata (801/628-5218, www.strata.com). **LIST PRICE:** \$495 (\$89 through June).

# Surf Express

THE SLOWER YOU SURF, THE BETTER THE ACCELERATION

**O**NE OF THE MOST COMMON complaints about the Internet is the speed at which Web pages download. The new Surf Express 1.0, from Connectix, tries to improve your surfing experience by helping your browser display frequently visited pages faster. It's no panacea, but it does help, especially if you have a slow Internet connection.

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

I tested Surf Express on three Internet connections—a 33.6-Kbps modem, a dual-channel ISDN line, and a cable modem



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

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

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

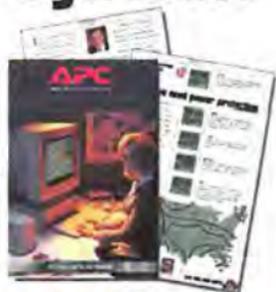
**Macworld's Buying Advice** For modem users, Surf Express makes the wait for Web pages less painful, especially for frequently visited sites. If you have an ISDN connection, you'll still find Surf Express useful, though you'll perceive less improvement; if you're lucky enough to have a truly high-speed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

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

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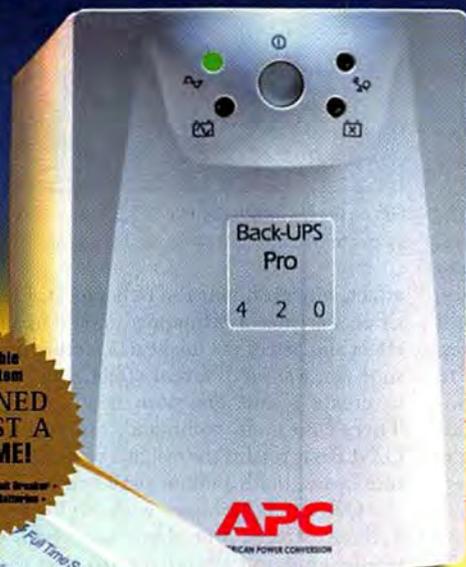
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## QX-Effects 3.0

SPECIAL EFFECTS FOR QUARKXPRESS

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

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

Once you have the effect you want, you can save all the settings for later use. Effects are automatically added to the QX-Effects menu for easy access (you can also delete them from the menu). Once you create an



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

effect, however, you can't change it; QX-Effects creates a bitmapped image of the effect and places the image in a picture box, so if you want a different effect, you have to create a new one with new settings. There's no undo command, but because QX-Effects retains the original text and picture boxes, that's a minor omission.

QX-Effects comes with eight predefined effects, but don't use them if you're applying the effects to text that overprints bitmapped images; you'll want to blend the effect into the image (which must be a TIFF file), something the canned effects can't do. If you don't blend the effect, the picture box that contains it ends up under the original text and on top of (and thereby obscuring) the bitmapped image. If you do blend the effect, Quark-

XPress creates a new picture box containing the effect blended into a copy of the original, underlying image. Once you're happy with the effect, you can delete the original image's picture box to save disk space and printing time.

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

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

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

## Hard Disk Toolkit 2.5

FORMATTER GETS A SMOOTHER LOOK

**T**YPICAL MAC USERS DON'T EVEN think about hard-disk drivers. Indeed, hard disks usually come preformatted with a driver installed, and many users have no idea of the virtually invisible, but crucial, software that lets the operating system talk to their hard disks and removables. But as essential as these unsung heroes are, FWB's Hard Disk Toolkit (HDT)—a veteran Mac disk-tools package—offers more than just a driver.

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

HDT 2.5 comes on a single, bootable CD-ROM, which also sports a "crisis tool"



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

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

Although ease of use is important when setting up a disk, a driver should be reliable and get the highest performance possible out of the drive—in that order. HDT's overall reliability track record has been

good, and version 2.5 adds a new Event Monitor feature that alerts you if your drive's hardware looks as if it's about to go south. If a disk begins to encounter read or write errors, or something similarly untoward, HDT 2.5's new driver can alert you that something is amiss.

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

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

**RATING:** ★★★½ **PROS:** Polished user interface; monitors drives' health. **CONS:** Can't use Disk First Aid with removables; no SCSI Disk Mode for newer PowerBooks. **COMPANY:** FWB (650/482-4800, www.fwb.com). **LIST PRICE:** \$199.

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## Test Strip 2.02

COLOR PLUG-IN GAINS FEATURES

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

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

One Color displays variations of a single primary color. By default, the image is divided into five vertical strips showing



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

reduced and increased amounts of that color; the software also provides horizontal and three-strip layouts. A Flip Layout button lets you rearrange the strips, making it easy to see the effects of color adjustments on different parts of the image. A similar Saturation mode lets you increase or decrease saturation with a slider.

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

Test Strip's Before & After panel allows

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

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

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

**RATING:** ★★★★★/5 **PROS:** Speedy; intuitive; inexpensive. **CONS:** Thumbnails available only in color-correction mode; no panning in magnified views. **COMPANY:** Vivid Details (805/646-0217, www.vividetails.com). **LIST PRICE:** \$149.

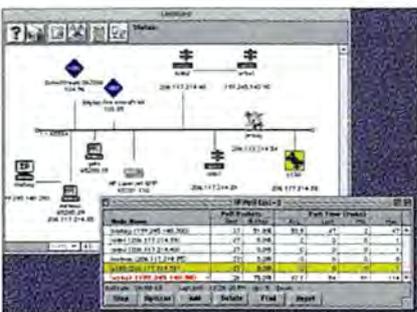
## LANsurveyor 4.0

NETWORK MONITOR WEAK ON IP

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

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

New in this release are the tallying of hardware and software components for on-demand inventory reports, scheduled file distribution, SNMP-mail notification, and the ability to launch and quit applications running on remote machines. Also new is



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

the ability to identify IP-based services. Unfortunately, because you need the Responder application to collect most IP-oriented information, automatic discovery and monitoring are limited to Macs. IP-based printers, non-Macintosh file servers, and routers are all invisible to LANsurveyor unless you configure them manually.

Part of LANsurveyor's new IP compatibility includes support for SNMP, the standard network-management language spoken by IP devices. Using SNMP, LANsurveyor can query any SNMP-capable device and read traffic counters that measure the amount of data the device is moving. But because LANsurveyor reports only

the current value of the traffic counters, you have to write down numbers and manually compute data rates in bytes per second. Worse, LANsurveyor lets you specify only one SNMP community name; if your network has several community names, you can't monitor every device. Worst of all, LANsurveyor itself still uses the obsolete AppleTalk protocol to talk to its remote-Mac Responders. That means you can't use any of LANsurveyor's new inventory features across a TCP/IP-only router.

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

**RATING:** ★★★/5 **PROS:** Generates hardware and software inventory reports; remote application launching. **CONS:** Weak IP discovery and monitoring; no SNMP traffic-rate monitoring; single SNMP community name. **COMPANY:** Neon Software (510/283-9771, www.neon.com). **LIST PRICE:** Five zones, \$295; unlimited zones, \$495.

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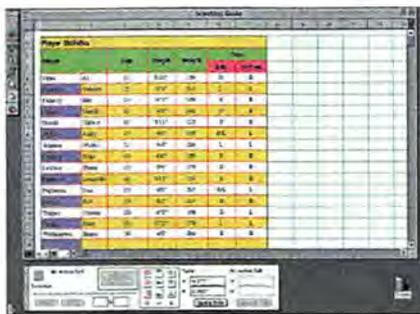
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## Entable

UNEVEN TABLE TOOL FOR QUARKXPRESS

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

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



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

more quickly than similar tables created with the Tableworks XTension.

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

XPress users will find much to like about Entable. Besides an XPress-like interface and compatibility with some of XPress's most powerful features, it has some powerful features of its own: it lets you cre-

ate multipage tables, slant the cells in rows and columns, flow text horizontally or vertically, embed XPress text boxes and picture boxes within tables, and create 3-D cells.

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

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

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

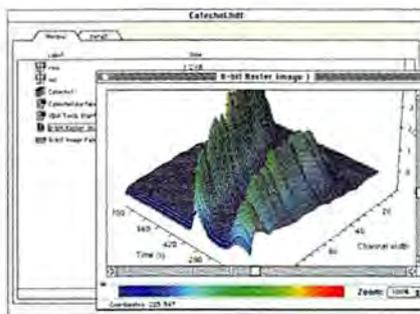
## Noesys 1.1

VISUALIZE YOUR DATA

WHEN YOU SEE IMAGES FROM space or a weather map on the evening news, you may be looking at data that's coded in HDF (Hierarchical Data Format).

Because an HDF file can contain a data directory, annotations, definitions, and multiple raster images in addition to basic floating-point numeric tables, HDF has become the most common format for graphically representing scientific and other technical information. An indispensable program for handling HDF data is Noesys 1.1.2, from Fortner Software. Actually a bundle of three data-visualization tools—Fortner's Plot, Transform, and T3D—Noesys is now the Mac and Windows standard for visualizing numerical data.

Using numbers in a spreadsheetlike table format as a two-dimensional slice for input, Noesys produces colorful 2-D and 3-D graphics. Unlike Microsoft Excel, Noesys can gracefully accept multimillion-point data sets, work with structured subsets of gigabyte-size arrays, organize 3-D data into neatly ordered sets of 2-D slices, view and edit original data in decimal or



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

hexadecimal mode, and use a huge set of easily customized 8- or 24-bit color palettes (included) to represent your numbers. In practice, finding the right color scale for representation is often the key to seeing the one important fact lurking in a set of three million data numbers, and Noesys is the right tool for this job.

Noesys includes a FORTRAN 90-based macro language for processing the data in your tables. Although the macro interpreter is quite fast, Noesys's raw speed at adding or differencing megabyte-size tables is even more impressive. And because switching color palettes is nearly instant-

aneous, searching for the most revealing visual representation of your data is more a pleasant activity than a chore.

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

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

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



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# Movioke

LIGHTS . . . CAMERA . . . OVERDUB!

**M**AKING FUN OF BAD MOVIES is a pastime with a long and respectable history. If you've ever seen the hecklers on *Mystery Science Theater 3000* or giggled at Woody Allen's overdubbed dialogue in *What's Up, Tiger Lily?*, you know how much fun movie-mocking can be. Movioke, a new CD-ROM from Bandai Digital Entertainment, lets you record new dialogue onto 12 clips from hokey old movies. Movioke is even funnier in practice than it is on paper. As software, however, it needs polish.

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

But the novelty of rerecording the original dialogue wears off faster than you can say "Plan 9 from Outer Space." It's much more fun to dub in completely *different* dialogue, doing your best to match the



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

length, mood, and even lip movements of the original lines. One of the examples on the CD turns a condemned man's melodramatic march to the electric chair into a desperate quest for toilet paper; another turns a mobster into a traveling salesman. The CD includes a good mix of ludicrous sci-fi scenes and generic two- or three-person scenes that offer much more flexibility.

Unfortunately, the CD's host—the ordinarily hilarious Dennis Miller—looks bored and unprepared, obviously reading from a TelePrompTer. Worse, the same handful of tiresome Miller remarks brackets every recording and playback. Movioke would be dramatically improved by a no-name host with the time and patience to

record a nonrepeating collection of quips.

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

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

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

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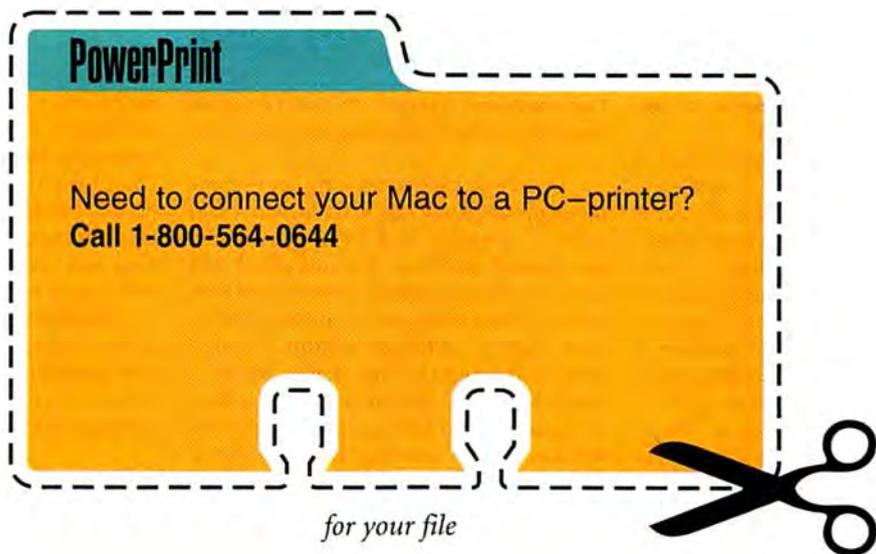
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# Deadlock

A SIM WITHOUT THE WORK

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

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

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



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

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

*Deadlock* offers multiple conditions that allow you to win, and its cornucopia of variables keep the game interesting. You

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

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

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

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**Alsoft PlusMaker**

PlusMaker Manual Conversion

Effortlessly makes current Mac disks into HFS Plus disks without erasing and restoring from backups	YES	NO
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Optimizes directory performance	YES	NO

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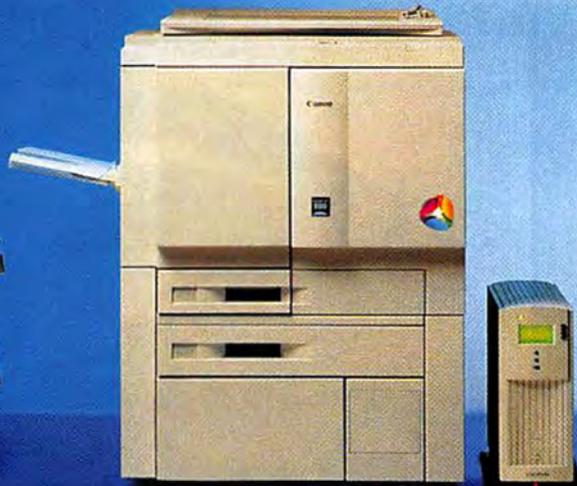
# Choosing a quality color system

1

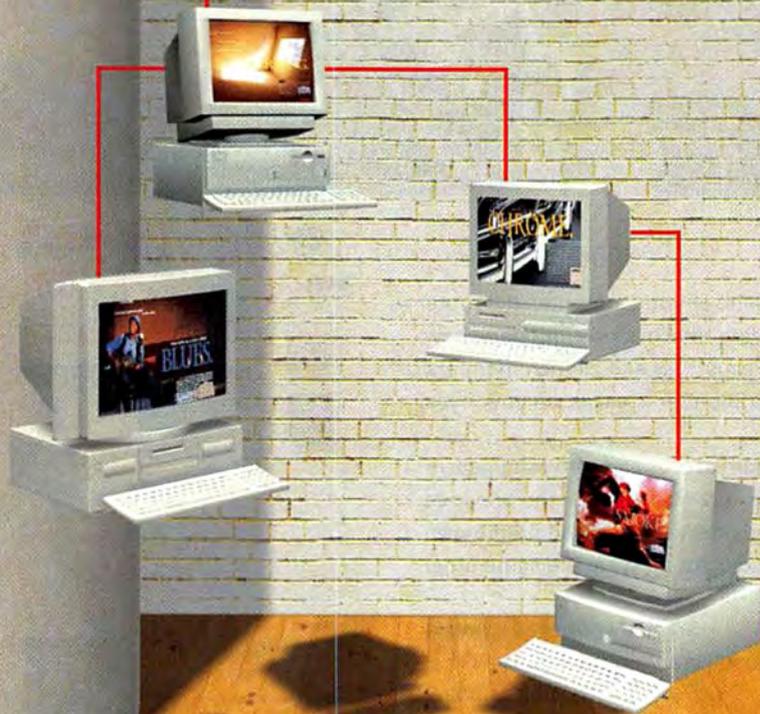


CLC 320

2



CLC 900



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# 3



CLC 950

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The CLC 900 Series offers added productivity and the industry's benchmark in quality. When connected to a ColorPASS Controller, the 900 Series offers professional-quality prints at 7ppm.

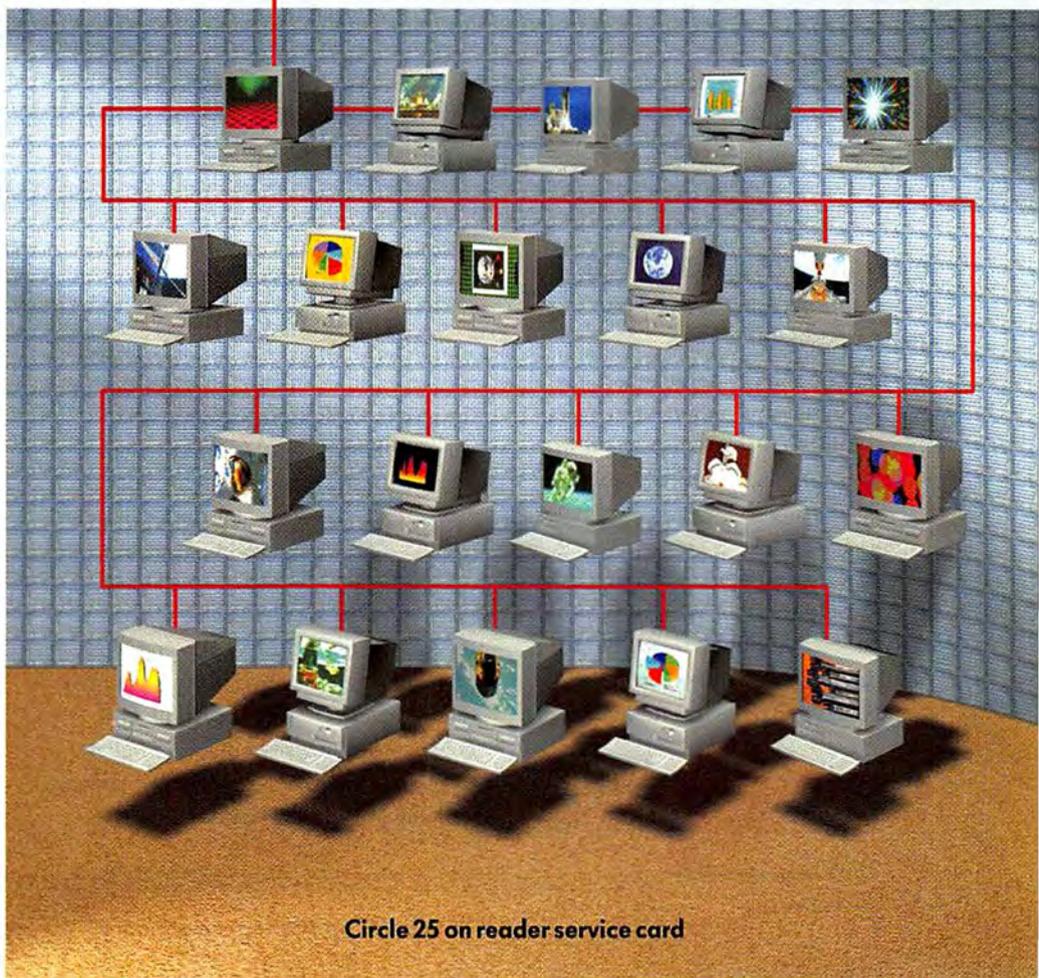
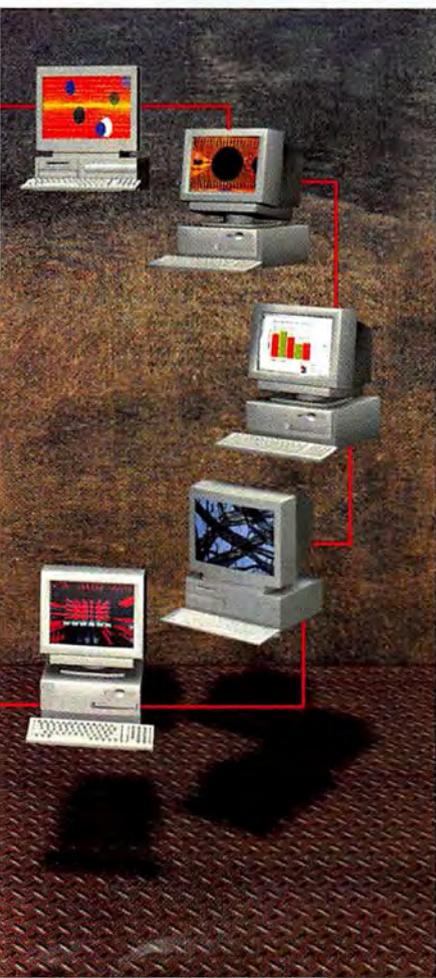
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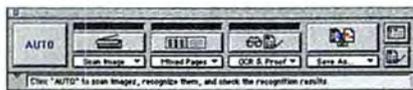
Circle 25 on reader service card



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*MacWeek January 27, 1997*

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Circle 69 on reader service card

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# THE BUILD-TO-ORDER DILEMMA

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



LIFE IS FULL OF CHOICES. YOU MAY HOLD UP the drive-thru line at the local fast-food joint because you ordered your burger without ketchup. But the sign does say, "We do it your way." And remember when you bought your family's new station wagon? That AM/FM stereo and wood paneling were features *you* selected.

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

Thankfully, that's not the case anymore. The day of building your own Mac is finally here. With Apple's online ordering service, the Apple Store ([www.apple.com/store/](http://www.apple.com/store/)), *you* pick the components you need and substitute or subtract the ones you don't. And with the new

300MHz Power Macintosh G3 added to the selection (see the sidebar "New Mac Is Fast but Limited"), a variety of speeds and a slew of features are only a mouse-click away.

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



GIAMPIERO BENVENUTI

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

BY ALLYSON BATES

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

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

The Apple Better Power Mac G3/266 costs \$4,123 and includes a 266MHz PowerPC 750 CPU, a 512K cache, 2MB of video RAM, 64MB of RAM, a 4GB IDE hard drive, a 24x CD-ROM drive, a Zip drive, 10BaseT Ethernet, an audio/video

card, 6MB of VRAM, and a 17-inch display. Apple lets its resellers offer a similarly configured Power Mac G3/266 for \$2,999 that features only 32MB of RAM, an audio-only card, and no monitor, but that comes with a 6GB hard drive. (Apple charges \$2,824 for this configuration.) Note that Apple does not permit resellers to substitute or remove components, only add them. Therefore, changes to the configuration for Macs not bought from Apple directly could limit slot availability and may duplicate features. But Apple expects to let resellers custom-configure their systems later this year, which should reduce the price difference.

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

### How Direct Outlets Compare

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

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

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

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

### Where to Begin

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

- The Good model features a 233MHz CPU, a 512K cache, 32MB of RAM, a 4GB IDE hard drive, a 24x CD-ROM drive, an audio card, and 6MB of video RAM.

- The Better and Best models include faster, 266MHz CPUs and have more RAM, a Zip drive, a 56-Kbps modem, and a monitor. The Best model has more RAM than the Better model, a SCSI hard drive and card, an 8MB video card, a larger monitor, and 100BaseT Ethernet, but no modem.

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

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

However, if you take those same component requests to a reseller, you'll find

that the procedure is not so simple. Apple limits the configurations sold through resellers, so chances are that you'll be starting with a different base model. You won't be able to substitute or remove features; you'll merely be able to add to the existing system.

### Price Wars:

#### Do the Numbers Add Up?

Apple's online build-to-order program may seem flawless to devout Mac users, but take a closer look at the numbers. Apple continues to sell custom-made systems at list price. You don't get a price break, like PC users do when they buy direct. The reason is that Apple must legally charge the same price that it tells resellers to use as a list price. (In the multivendor PC market, some vendors sell only direct and others only in stores.) Therefore, Apple makes a lot more money per unit when selling directly than when selling through a reseller. Here's why: For a \$5,000 system, Apple might pay \$3,750 to make it. A reseller might buy it for \$4,500 and sell it to you for \$5,000. The reseller makes \$500 on the sale, and Apple makes \$750. But if Apple sells the system directly to you for \$5,000, Apple makes \$1,250.

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

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

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

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

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

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

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

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

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

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

### No Room to Grow

Even in this early stage, the build-to-order program has outgrown the Power Mac

G3's chassis. Just imagine, all these options . . . and nowhere to put them.

Picture this: You're a publishing professional, and the speed of the 300MHz is ideal for your workflow. Apple's suggested configuration is its "300MHz Dream Machine," which includes an Ultra Wide SCSI card and a 100BaseT Ethernet card. Great. But now you're left with only one free PCI slot. Do you opt for a 128-bit

iXMicro UltimateRes graphics card or do you install a FireWire card that lets you connect to a digital camera or other media-input device? Whichever you decide, your slots are now full.

And say you got a DVD-ROM drive in that new Mac. So what do you do with it? Sure, it's backward-compatible, so you can use it to play your CD-ROMs, but if you ever consider using it for movie play-

back you'll need to buy an MPEG-2 decoder card, such as the \$279 E4 Cool-DVD card. The only way you can add such a card is by removing one of your previously installed cards and freeing up a PCI slot. As you can see, to have the features in this example, you'd need five PCI slots—and it's easy to come up with other similar configuration examples where you'd need more than three PCI slots.

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

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

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

### Macworld's Buying Advice

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

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

## New Mac Is Fast but Limited

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

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

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

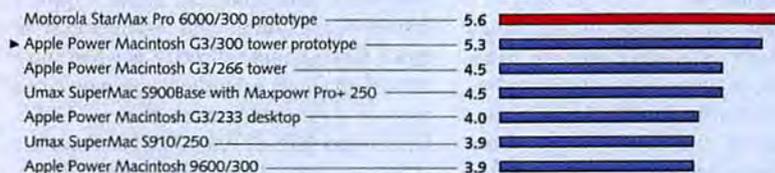
Based on our tests of a prototype, the new 300MHz G3 models should be the fastest shipping Macs yet, but the architecture clearly could stand improvement to increase speed, as shown in the results from the prototype 300MHz system (also using a 66MHz bus) that Motorola had planned to ship last fall, before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



### 300MHz G3 Mac Hikes Speed 18 Percent

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

#### SpeedMark 1.0 Overall Performance



### Behind Our Tests

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

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Mac OS

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# *The* Web Publisher's *Essential* Tool Kit

A PROFESSIONAL DESIGNER WHO'S creating an attractive home page for a large corporate client. A Webmaster who's been given the duty of updating his small company's online documentation. Sure, you can call them both Web authors—but that is about as informative as saying that a 400-pound sumo wrestler and a 90-pound gymnast are both athletes.

The fact is, different Web authors can have radically different needs, and there's really no such

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

**BY TONYA ENGST**

thing as a one-size-fits-all Web authoring tool. The best Web authoring tool for you depends a lot on what kind of Web pages you're creating.

That's why *Macworld* has graded 11 Web authoring programs in areas vital

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

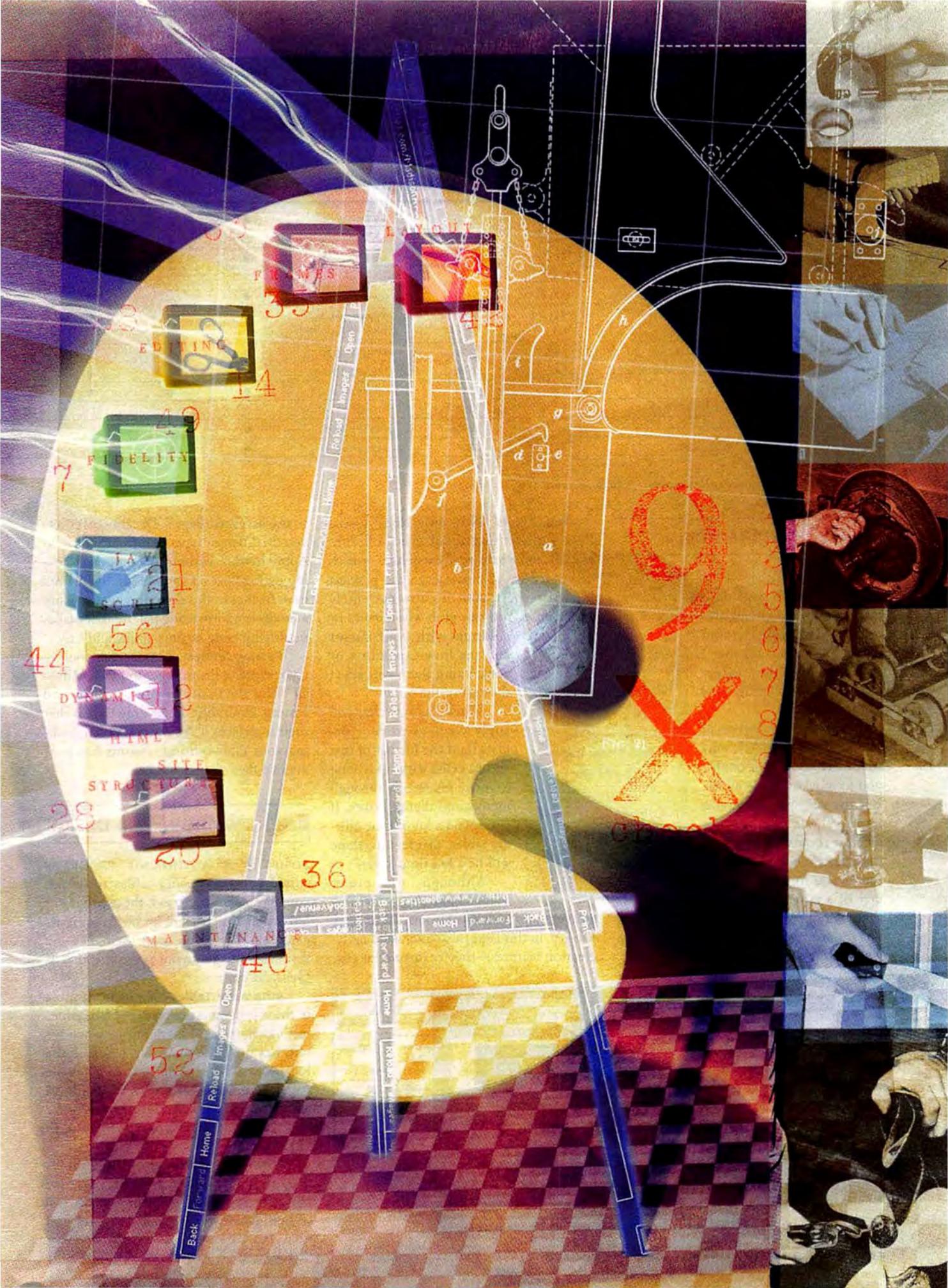
Among the products we reviewed are six HTML editors that let you build pages visually,

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

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

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

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



EDITING

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FIDELITY

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JAW

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DYNAMIC

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HIML

SITE SYNTAX

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20

MAINTENANCE

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40

Back Forward Home Reload Images Open

Fig. 21

about

## Web Weavers: 11 HTML-Editing Tools

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

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

## Visual Table Creation

WEBMASTERS DEPEND ON TABLES TO create attractive page designs that have elements spread out all over a page. Creating a Web page without using tables would be a lot like designing a magazine in SimpleText instead of QuarkXPress.

With varying degrees of success, most HTML editors offer tools that enable you to quickly create tables. But the very best programs improve your productivity when it comes time to fine-tune those tables. A tool that forces you to set any property of a table one cell at a time is going to drive you crazy as soon as you discover you've got to make one tiny change to two dozen individual cells.

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

**REPORT CARD**

**Visual Table Creation**

**Excellent**

Dreamweaver,  
Clariss Home Page,  
Visual Page

**Good**

CyberStudio, Front-  
Page, PageMill

**Fair**

Fusion, BBEEdit

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

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

Although we prefer Visual Page, both Dreamweaver and Claris Home Page (see *Reviews*, in this issue) also offer solid table-creation features—they're just not as easy

to use as Visual Page's. Dreamweaver lets you try different types of formatting via an Apply button, without opening and closing dialog boxes. Claris Home Page goes even further in this direction by providing a mode-less formatting palette that makes modifying table settings quick and easy.

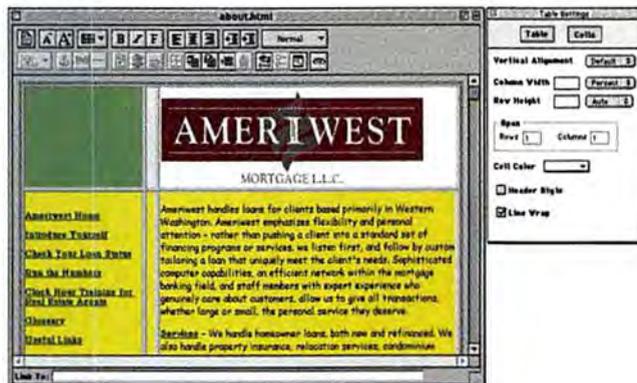
**Passing Grades** Three other tools—CyberStudio, FrontPage, and PageMill—all cover the basics of table creation and editing admirably. Their drawback is that their interfaces will slow you down, making your table-editing sessions less productive than they could be.

## Drag-and-Drop Page Design

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

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

**Absolute Positioning** While tables used to be the only way to precisely lay out elements on a Web page, version 4.0 of both Microsoft Internet Explorer and



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

Netscape Navigator/Communicator support *absolute positioning*, which lets you place objects on a page in floating layers instead of within table cells.

Because only the 4.0 browsers can view such pages, it'll be a while before this method of Web design becomes commonplace.

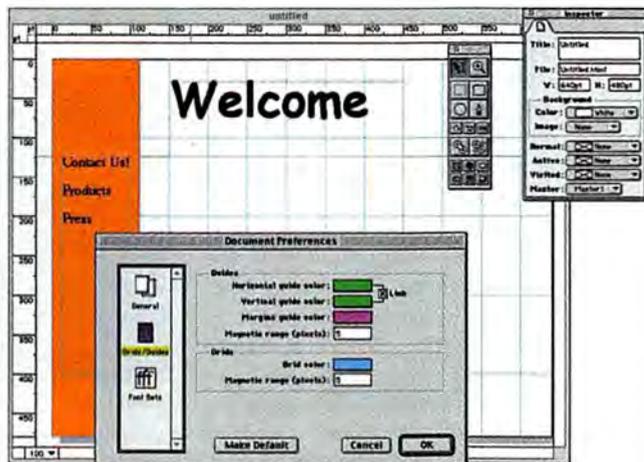
Right now the only product that supports absolute positioning is Dreamweaver, which supports *only* absolute positioning—it does not automatically generate tables. Dreamweaver's approach to page layout is also awkward, forcing you to click on a layer's icon in order to grab and move it. Since the icons aren't labeled, it can be difficult to find the appropriate one if your page contains many different layers.

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



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

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



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

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

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

## Designing with Frames

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

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

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

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

# A Web Graphics Primer

by Lynda Weinman

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

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

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

The GIF file format shrinks an image by looking for patterns within it. An image that contains large contiguous areas of single

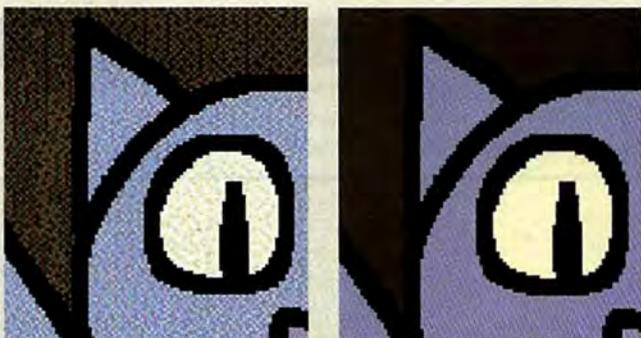
colors can be highly compressed, offering file-size savings better than any other Web image format (see "GIF Items"). But when an image has a mix of many different colors—as do photographs, for instance—a GIF file won't be able to compress the data very well.

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

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

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

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



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

requires one of those features, choose GIF over JPEG.

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

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

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

There's a simple way to do this: use what's often called the *Web palette*, a group of 216 colors that are con-

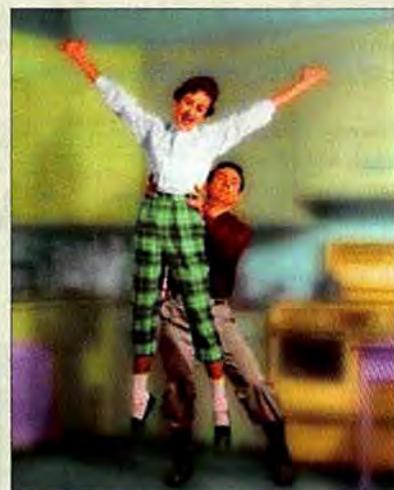
stant across all platforms. If the graphics you create use these 216 colors, you can be sure they'll never be dithered and the colors won't shift.

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

LYNDA WEINMAN is the author of *Designing Web Graphics* (New Riders, 1996) and several other Web-graphics-oriented books.



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



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



```
<HEAD>  
<META HTTP-EQUIV="content-type" CONTENT="text/html" >  
<META NAME="generator" CONTENT="GoLive" >  
<TITLE>GoLive Systems, Inc.</TITLE>  
<META NAME="KEYWORDS" CONTENT="GoLive Systems, Inc., David Wainwright Software" >  
</HEAD>  
<BODY BGCOLOR="#000000" >  
<P><A href="http://www.golive.com">www.golive.com</A>  
</P>  
</BODY>
```

www.golive.com



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

you can place master elements in a page's margins and set those elements to also appear on other pages on your site. You can turn Master Borders into frames simply by checking the Generate HTML Frame Borders check box. Fusion also automatically generates graphical navigation bars if you so desire. These features make it easy to set up navigational elements for large sites.

Because Claris Home Page 3.0 was released recently, it supports more frame

features than most programs, including letting you change the color and thickness of frame borders. PageMill's frame support doesn't do that, but it does let you edit different pages within their frame, so you can see immediately

how your frame set will look in a browser.

Visual Page's strength in the area of frames is in its easy-to-learn interface, which makes it a particularly good tool if you don't work with frame sets very often and aren't familiar with all the nuances of frame-based design.

## Editing Raw HTML

DESPITE ALL THE VISUAL WEB-PAGE tools out there, there's no replacement for the control you get when you take HTML code into your own hands. Even if you love your visual page-creation program, a

text editor can be valuable for adding to your pages features that your visual program doesn't support.

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

spend your brainpower designing pages.

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

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

Alpha's level of detail even goes down to the place-



The HTML Toolbox BBEdit's helpful HTML tool bar gives you quick access to the program's handy HTML coding shortcuts.

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

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

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

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

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

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

## REPORT CARD

### Designing with Frames

#### Excellent

CyberStudio,  
Dreamweaver

#### Good

Claris Home Page,  
Fusion, PageMill,  
Visual Page

## REPORT CARD

### Editing Raw HTML

#### Excellent

Alpha, BBEdit,  
PageSpinner

#### Good

CyberStudio,  
Dreamweaver

#### Fair

Claris Home Page,  
PageMill, Visual Page

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Circle 84 on reader service card

# 9 Great Web Authoring Utilities

by Jason Snell

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

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

**PhotoGIF 2.1 and ProJPEG 2.0** Slimming down Web graphics to downloadable sizes without making them look awful in the process can be tricky, and Adobe Photoshop's built-in GIF and JPEG features aren't exactly powerful. BoxTop Software's (601/324-1800, [www.boxtop.com](http://www.boxtop.com)) PhotoGIF (\$35; **★★★★**) and ProJPEG (\$35; **★★★★**) are two Photoshop filters that help make your Web graphics small and attractive (see the sidebar "A Web Graphics Primer"). PhotoGIF lets you create GIF images with good 256-color palettes, and ProJPEG lets you preview

different levels of image quality and see how big your final JPEG file will be.

**GammaToggleFKey** You perfect your Web graphics, post them on your home page with pride, and then walk over to your coworker's Windows PC. There they are—dark, muddy, and butt-ugly. Roland Gustafsson's (<http://www.acts.org/roland/thanks/>) GammaToggleFKey (freeware; **★★★½**) can help. Using a simple key combination, GammaToggleFKey lets you quickly toggle between your Mac's standard *gamma* (the default brightness and color tone of your monitor) and that of a typical PC, so you can make sure your graphics look good on both.

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

**HTML Grinder 3.34** Ready to cry because

you've got to manually alter scores of pages in your Web site? Matterform Media's (505/747-1220, [www.matterform.com](http://www.matterform.com)) HTML Grinder (\$89; **★★★½**) utility can eliminate repetitive HTML tasks. If you need to quickly generate Next and Previous buttons on your site, create linked tables of contents, or quickly search and replace boilerplate text, HTML Grinder can do it. The program is extremely modular: it comes with one free plug-in and 18 others that add different features.

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

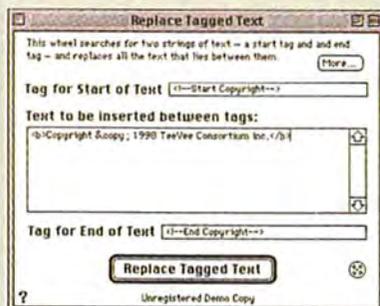
**IconToGIF 1.0.3** If you ever need to transfer the icons on your Mac to a Web page, Dan Crevier's (<http://www.boingo.com/dan/software/IconToGIF.html>) simple utility IconToGIF (freeware; **★★★½**) can solve your problem. Once you drag a file onto it, IconToGIF places that icon in a GIF file.

**NetClone 1.0** Most people

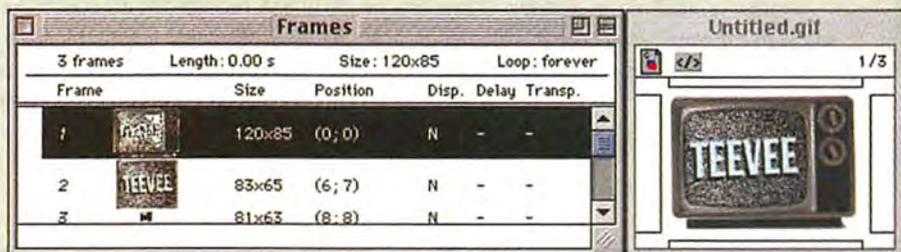
create Web sites on their Macs and then upload them to a remote Web server. But keeping track of what files you've changed and need to update on your server can be time-consuming. Progmatics' ([www.progmatics.com.au/netclone/](http://www.progmatics.com.au/netclone/)) NetClone (\$20, free for nonprofit educational use; **★★★½**), formerly called Mirror, automates the process. It scans folders on your hard drive and automatically uploads via FTP any files that have been created or changed since the last time it synchronized your files with the server. You can even use NetClone to sync one remote Web server with another. One drawback: NetClone doesn't do two-way syncing, so you can't download changed files from your Web site and replace older files in your local folder.

**HTML Rename 1.2.1** If you've got to transfer the contents of a Web site from one server platform to another, you may be forced to rename all your files and update all the hyperlinks—a task that could take ages. Parker & Associates' ([www.visiontec.com/rename/](http://www.visiontec.com/rename/)) HTML Rename (\$20; **★★½**) can do it in a few quick steps, renaming your files to conform to a new platform's name specifications (Mac, DOS, and Unix are all supported) and updating all the hyperlinks. Unfortunately, HTML Rename's interface isn't very friendly, and it doesn't seem to locate and change hyperlinks in frame sets reliably.

Macworld senior associate editor JASON SNELL has been creating Web sites since 1992.



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



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

coded HTML immediately.

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

## Site Management

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

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

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

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

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

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

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

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

Both Freeway and Fusion offer strong site-creation features. Freeway's master-documents feature lets you specify where repeating elements appear on subpages. In Fusion, you can quickly map out site hierarchies in a view that looks like a flow-chart. Fusion also supports uploading pages via FTP, including the ability to upload only the pages in your site that have changed since your last upload.

Finally, we should mention two products that aren't really HTML-editing tools as much as they're programs with strong site-management features. UserLand's free Frontier 5 ([www.scripting.com/frontier5/](http://www.scripting.com/frontier5/)) and ProVue Development's ([www.provue.com](http://www.provue.com), 714/841-7779) \$499 SiteWarrior 1.1.1 (see *Reviews*, in this issue) are scriptable, database-related programs that build HTML files according to templates you create using HTML and special codes that trigger automation. However, the power of both programs is somewhat muted by their steep learning curves.

## Advanced HTML Features

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

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

Dreamweaver's style-sheet interface is clean and easy to use. However, its Director-style timeline interface for creating Dynamic HTML animation is confusing. In Dreamweaver you can create behaviors for objects on your page (for example,

### REPORT CARD

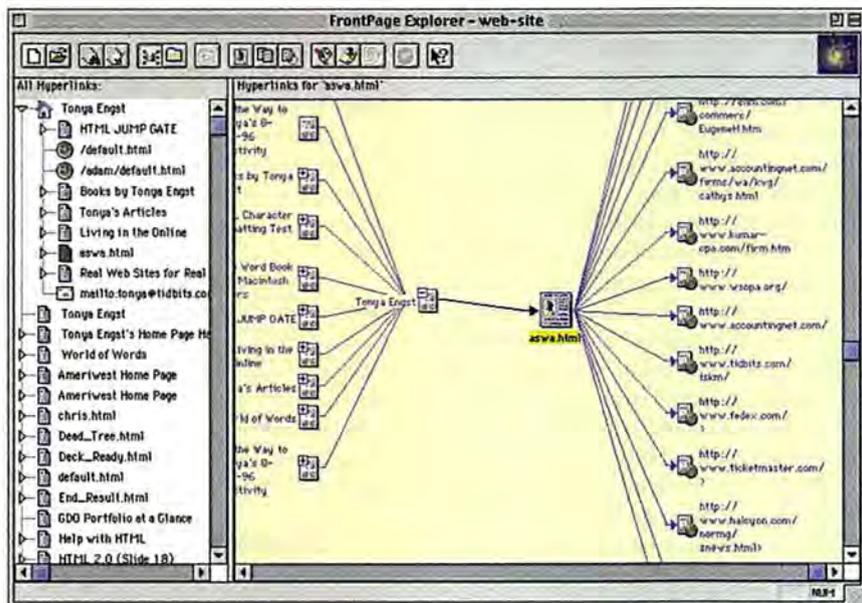
#### Site Management

**Good**

BBEdit, CyberStudio,  
Front Page

**Fair**

Alpha, Dreamweaver,  
PageMill



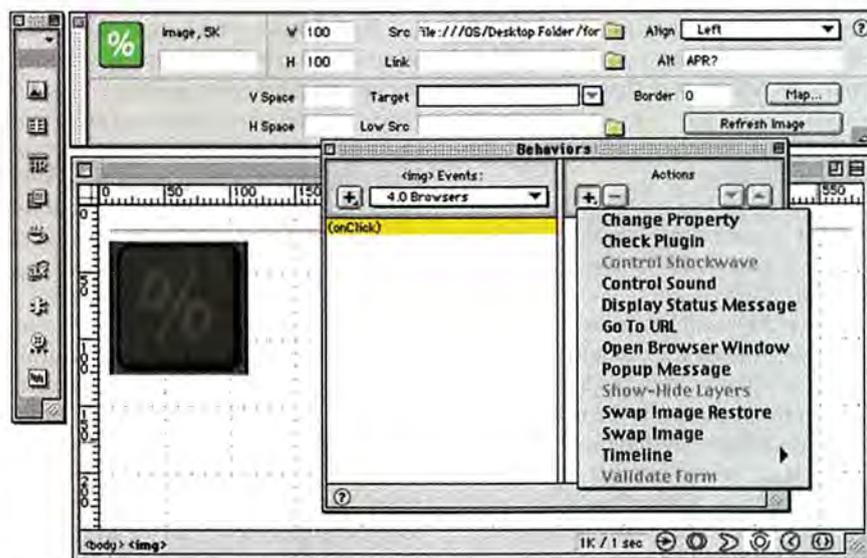
**Setting Your Sites** Microsoft FrontPage's Hyperlink View is one of its best features. Clicking on the plus minus sign at the upper left of an icon (a Windows convention Microsoft chose not to alter for Mac users) shows or hides links from a particular page.

### REPORT CARD

#### Advanced HTML

**Good**

Dreamweaver



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

making a GIF image that changes when the cursor passes over it), and the program automatically adds the appropriate JavaScript code to make them work in a browser. However, adding behaviors to Dreamweaver is still a bit more time-consuming than it should be.

## Macworld's Buying Advice

SO MANY OF THE TOOLS WE LOOKED AT for this article are remarkably similar in terms of features and overall quality that the best program for you will be whichever one excels at the aspect of Web authoring that's most important to the work you do.

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

If you're a professional Web-site designer who wants a program that does everything well, GoLive CyberStudio

should be at the top of your shopping list. It excels at creating frame sets, lets you switch between table-based and pixel-perfect layout modes, and offers strong site-management features.

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

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

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

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

Among text editors, we recommend Alpha and its free HTML mode 2.0.3

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

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

Another reason why CyberStudio is a good buy is the track record of its publisher, GoLive Systems. GoLive has always excelled at updating its products when new Web features arrive on the scene, something that's vitally important when it comes to the ever-changing world of the Web. **m**

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

## EDITORS' CHOICE

### Visual Tool

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

### Text Tool

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

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Circle 8 on reader service card

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

## Sometimes Newer Is Smarter Than New.

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

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

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

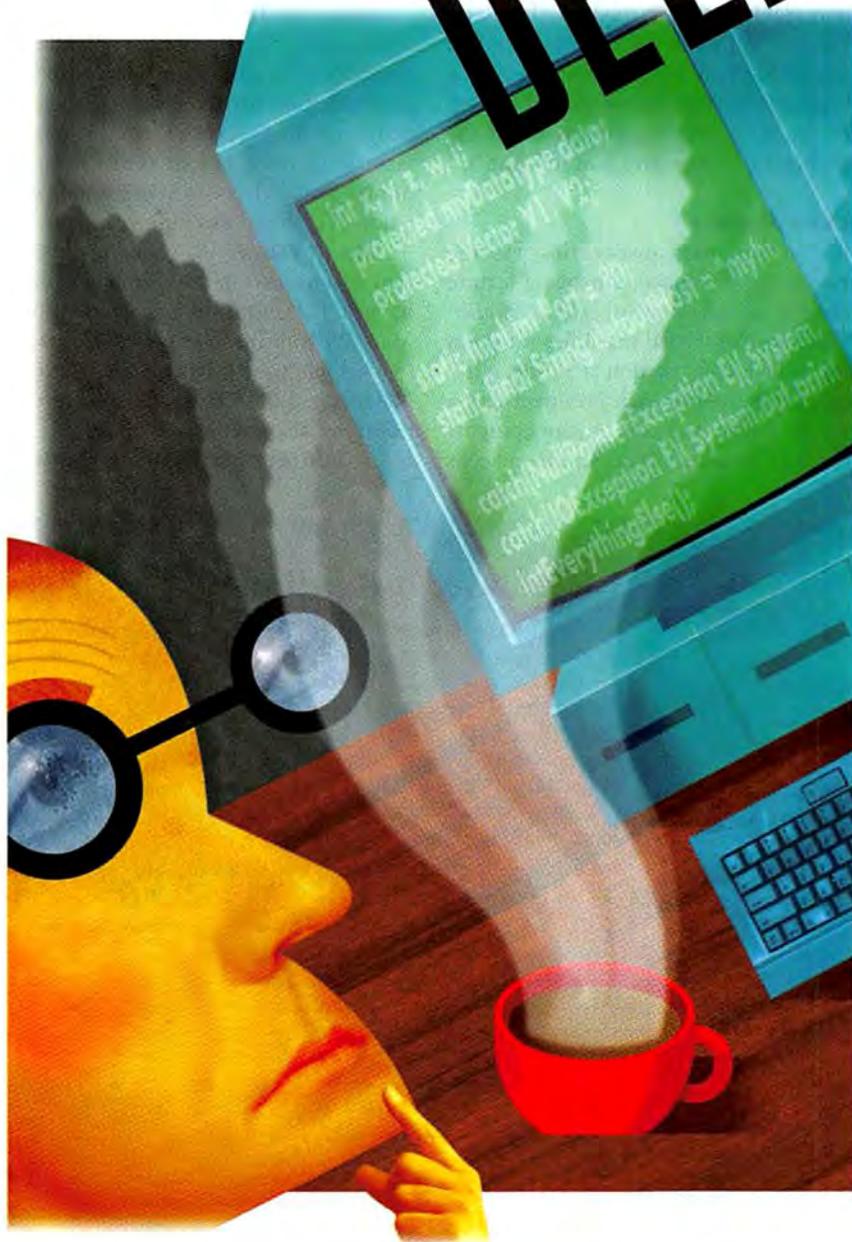


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Circle 55 on reader service card

# Java Finally DELIVERS



THE NEWEST MAC

JAVA RELEASES

DELIVER TOP 

PERFORMANCE—

EVEN OUTPACING

WINDOWS JAVA

BY STEPHAN SOMOGYI

AND JASON SNELL

users *today*? Developers who have tried to write complex applications in Java have discovered that the write-once, run-everywhere promise of Java hasn't yet been fulfilled. So far, no one has run out and reprogrammed a Java version of the Windows accounting program you've longed to have on your Mac. In fact, the one developer who announced plans to reprogram its suite of office programs in Java—Corel—has since scuttled those efforts.

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

No subject in the computer world has been hyped more in recent years than Java. The creator of the Java programming language, Sun Microsystems (<http://java.sun.com>), promotes Java as computing's universal language, with the potential to change the way high-tech devices work. In the

great and glorious Java Future, it won't matter if the program you've gotta have was written by someone using Windows 95, because if it was written in Java, it'll also work on your Mac—and your phone, and your TV, and your toaster.

That's all well and good as a vision, but what can Java do for Macintosh



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

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

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

### The Soul of the Virtual Machine

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

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

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

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

### Speed Matters

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

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

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

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

**The JIT Factor** We tested several virtual machines for the Mac that didn't have a JIT compiler, namely Apple's Mac OS Runtime for Java (MRJ) 1.0.2 ([www.apple.com/macos/java/](http://www.apple.com/macos/java/)), Netscape Navigator 3.0's virtual machine (<http://home.netscape.com/download/>), and Microsoft Internet Explorer 4.0 ([www](http://www)

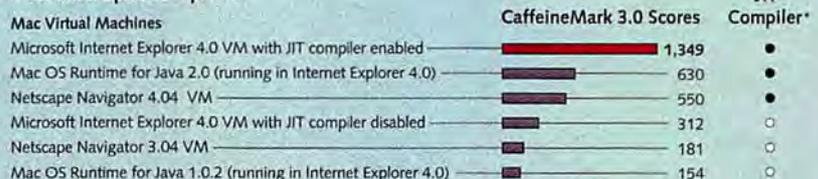


## Faster Java, Just in Time

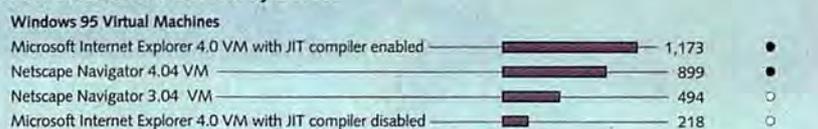
Java virtual machines for the Mac are fast and getting faster. So much so that Microsoft Internet Explorer 4.0's virtual machine for the Mac now runs Java slightly faster than its Windows PC counterpart. There's no doubt that just-in-time (JIT) compilers have been a big part of this acceleration. All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

■ Best overall performance. Longer bars are better.

### Mac Java Speeds Up . . .



### . . . And Passes Windows by a Nose



\* ● = yes; ○ = no.

### Behind Our Tests

Macworld Lab used Pendragon Software's CaffeineMark 3.0 to test Java virtual machines. Tests were run on a Power Macintosh 7300/200 running Mac OS 8 and on a 166MHz Pentium PC with Windows 95 installed. Both systems were equipped with 32MB of RAM. (Tests were performed without independent verification by Pendragon Software, and Pendragon Software makes no representations or warranties as to the results of the tests.)—Macworld Lab testing supervised by Gil Loyola

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

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

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

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

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

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

If you'd like to run Apple's MRJ from within a browser other than Cyberdog, you're in luck. Unlike Netscape Navigator, Internet Explorer lets you choose whether to use Apple's MRJ or Microsoft's own Java virtual machine. (Click



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

on the Java pane in Internet Explorer's Preferences window, and choose either Microsoft Virtual Machine or Apple MRJ. Then quit and restart Explorer.)

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

By a huge margin, Internet Explorer 4.0 with the JIT compiler enabled was the fastest Mac virtual machine we tested. It scored more than twice as fast on the CaffeineMark tests as did either Navigator 4.0 or Apple's MRJ 2.0. The lesson is that if you're going to be using Java a lot, you're best off using Internet Explorer 4.0 and its JIT-based virtual

machine. But be aware that Internet Explorer 4.0 isn't without its problems in other areas (see *Reviews*, in this issue).

## Mac Java Catches Up to Windows

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

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

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

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

## The Last Word

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

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

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

## Bookmarks

**Java at Apple** News, updates, and upgrades for Apple's MRJ  
[www.apple.com/macOS/java/](http://www.apple.com/macOS/java/)

**The Java Boutique** All you need to know to add basic Java applets to your Web site  
<http://javaboutique.internet.com>

**Java FAQ Archives** A comprehensive source for technical Java info  
[www.www-net.com/java/faq/](http://www.www-net.com/java/faq/)

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



**NOT CONCERNED** about your brand of memory? It's time to "think different." The fact is, the new high-performance Macs require high-performance memory such as SDRAM (synchronous DRAM). Consequently, [www.kingston.com/ad](http://www.kingston.com/ad) timing errors as small as a nanosecond can lead to data corruption. That's why Kingston® imposes stringent design controls to regulate timing, such as matching trace lengths to ensure proper synchronization of data. And since we're an authorized Apple® RAM developer, our memory will always be 100 percent compatible with your Mac®. To find out more, call your preferred reseller or Kingston at (800) 259-8965. Or visit our Web site. We promise not to tell people that you're playing it safe.

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Circle 201 on reader service card



BY SCHOLLE SAWYER

# MONITORS

## THAT SHOW IT ALL

MACWORLD

LAB PICKS

THE BEST

TWO-PAGE

DISPLAYS

BIGGER ISN'T ALWAYS BETTER—EXCEPT PERHAPS when it comes to monitors. The more time you spend at your computer, the more you suffer the problems of a smaller screen: spreadsheets you can't spread out, text documents you squint at, shrink-to-fit page layouts.

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

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

Macworld Lab assembled an expert panel of graphic designers, lab analysts, and editors to judge ten of these new 19-inch monitors. Our

jury examined each monitor's image quality when displaying a series of images in Microsoft Word and Excel, QuarkXPress, and Adobe Photoshop files, noting color saturation, text legibility, sharpness, detail, and contrast; you'll find their averaged scores in the benchmark, "A Tube with a View." We then compared prices, warranties, specifications, and the monitor controls' ease of use to determine which monitors offer the best quality for the best deal.

### Looks Do Count

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

**Tube Type** Image quality depends on a number of factors. Monitors use a cathode-ray tube (CRT) to produce the image you see on the screen, in conjunction with *shadow mask*, or *tridot*, technology. The electron beams shoot through a wafer of metal riddled with a honeycomb of holes. Depending on the angle at which the beams pass through the holes, they hit a red,

## 19-INCH MONITORS COMPARED

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

green, or blue phosphor painted on the inside of the screen. Pricier Sony Trinitron and Mitsubishi DiamondTron CRTs use *aperture-grille* technology. With this type of CRT, the electron beams pass through an array of thin vertical wires to strike red, green, and blue phosphors.

Aperture-grille CRTs are known for creating a brighter, sharper image with

less glare. In our testing, however, we discovered that tube type is not as important as it once was. Of our top two monitors, the \$1,200 Sony GDM-400PS ([www.sony.com/newdisplays/](http://www.sony.com/newdisplays/)) has a Trinitron CRT, but the \$899 Princeton Graphic Systems EO 90 ([www.pgr.com](http://www.pgr.com)), our Editors' Choice, has a shadow-mask CRT.

One thing to note, however, is that

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



## A Tube with a View

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

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



\*Results in footlamberts.

## Behind Our Tests

Macworld Lab conducted a series of subjective tests, using a jury of 11 people. Each juror was asked to rate each monitor on a scale of 1 to 7 (4 being "acceptable") according to how well the monitor displayed our test images. The test images were a selection of Microsoft Word and

Excel, QuarkXPress, Netscape Navigator, and Adobe Photoshop files. Results for each juror were normalized and then averaged. Brightness was measured with a Minolta CA-100 color meter.—Macworld Lab testing supervised by Jeffy Milstead

Warranty for Parts/CRT/Labor (in years)	48-Hour "Swap" Program	Comments
3/2/3	no	Very good image and text quality. Very good controls, below-average warranty.
3/3/3	no	Good, bright image quality at a reasonable price. Warranty and controls acceptable.
3/3/3	no	Quite good text and image quality at a low price. Warranty and controls acceptable.
3/3/3	first year	Below-average image quality and a lower maximum resolution than other monitors of this class. Innovative controls, great warranty.
3/3/3	no	Fair image quality and text sharpness. Acceptable warranty, higher price.
3/3/3	first year	Fair image and below-average text quality. Good controls, a great warranty; pricey extras such as built-in stereo speakers.
3/3/3	first year	Superb image and text quality. A great warranty and reasonable price.
3/3/3	first year	Excellent image and text quality. A great warranty, but a high price.
3/3/1	no	Fair image quality, below-average warranty, good price.
3/3/3	first year	Fair image and good text quality, great warranty. Unintuitive controls, high price.

**Sharp Details** A sharp image is crucial if you do lots of word processing, number crunching, or any work that requires focusing on small details or characters. Our jury examined the test screens for illegible text, out-of-focus areas, and muddying of fine details in complex images.

The Princeton EO 90 excelled at displaying distinct details and crisp, legible characters, thanks in part to a dark-tinted screen that significantly increases image contrast; it scored the highest in our sharpness tests. Sony's GDM-400PS also drew top marks, reflecting the advantages of its Trinitron tube technology. Deemed acceptably sharp were CTX's \$899 VL950 ([www.ctxintl.com](http://www.ctxintl.com)) and La Cie's \$849 Electron19i ([www.lacie.com](http://www.lacie.com)). The only monitors with an unacceptable sharpness level were the \$1,049 Philips Brilliance 109 ([www.philipsmonitors.com](http://www.philipsmonitors.com)) and Mag Innovision's \$899 DJ800 ([www.maginnovision.com](http://www.maginnovision.com)).

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

The Princeton EO 90 and Sony GDM-400PS proved to be the brightest of the bunch, and Iiyama's ([www.iiyama.com](http://www.iiyama.com)) \$899 VisionMaster 450 fol-

lowed closely. Most of the other monitors had acceptable levels of brightness, except for the Mag Innovision DJ800.

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

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

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

#### Taking Control

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

the table, "19-Inch Monitors Compared").

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

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

#### Macworld's Buying Advice

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

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

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

Associate editor SCHOLLE SAWYER covers monitors and graphics for *Macworld*.

#### EDITORS' CHOICE

##### ◆◆◆ Princeton Graphic Systems EO 90

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

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

#### REAL PRODUCTS REAL RATINGS

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

www.macworldexpo.com or call 800-645-EXPO

# Spotlight on

**Macworld**  
**EXPO**

*the*  
**Creative**  
**World**

**MACWORLD Expo — the Creative World**

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

**Kickoff Reception and Sneak Peek Fair**

(open to conference attendees only)

July 6, 1998

**Pre-conference Workshops and Keynote Event**

July 7, 1998

**Macworld/Pro Conference:**

July 8-10, 1998

**MACWORLD Users Conference:**

July 8-10, 1998

**MACWORLD Expo Exhibits:**

July 8-10, 1998

Sponsored by:

**Macworld**

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Company

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

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

**You're Invited to the premier event for:**

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



# Creativity

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

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

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

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

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

## Discover new tools that let you make your unique creative signature

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

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

... *and much more!*

For a full exhibitor list, up to

the minute information, or to

register, call 800.645.EXPO or

visit: [www.macworldexpo.com](http://www.macworldexpo.com)!



## Register by June 8 and save up to \$100!

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

### Save \$100

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

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

**Package 3:** Macworld/Pro Conference

### Save \$50

**Package 4:** MACWORLD Users Conference and Pre-Conference Workshop

### Save \$24

**Package 5:** MACWORLD Users Conference

### Save \$50

**Package 6:** Pre-conference Workshops

### Save \$18

**Package 7:** MACWORLD Expo Exhibits only

(all packages include admission to the exhibit floor)

Please refer to the Registration page for package details.

To take advantage of these savings, complete and return the registration form—**NOW.**

Introducing...

## MACWORLD Kickoff Reception and Sneak Peek Fair

Monday, July 6, 1998  
5 p.m. - 9p.m.

(open only to conference and pre-conference workshop attendees)

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

Macworld  
**EXPO**  
the Creative World

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

### News-making keynote presentations shape the industry—make sure you're there!

Tuesday, July 7, 9:00am - 11:30 am

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

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

### Digital Media Studio featuring QuickTime™

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

### Content@Home: The Delivery of Gaming, Entertainment and Mass-Market Media to the Home

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

## Special Attractions

### Education District

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

### Extensions Workshop for Creative Content

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

### Apple Developer Central

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

### FREE gifts with your registration!

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

### AND

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

Added Bonus!

www.macworldexpo.com

# Pre-Conference Workshops/Conference Program

Macworld  
**EXPO**

*the Creative World*

## Pre-Conference Workshops July 7, 1998

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

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

## Macworld/Pro—The Technical Conference for Macintosh Professionals July 8-10, 1998

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

- Webmasters, Content Creators, Web Entrepreneurs, Web Developers
- Network Managers, Network Administrators

- Support Professionals
- Developers
- Mac Platform Managers from Business, Government and Education
- IS/IT/MIS Managers
- Small Business Owners
- Educators

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

### Track 1: Creating Digital Content

Use the latest Mac OS technology to produce stunning digital content. Leading experts reveal new ways to bring creative concepts to life.

#### Topics include:

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

### Track 2: Content Asset Management

How to manage your media assets effectively—and shorten turnaround time, reuse vital assets and leverage content for multiple media and distribution channels.

#### Topics include:

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

### Track 3: Macintosh Networking and Communications

Go inside the protocols and services for tactics to manage Mac LANS, WANs, Internet/intranets and remote access.

#### Topics include:

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

### Track 4: CyberWorld

Learn more about how to connect and configure Macs for the Internet, deploy Internet applications... and get perspective on the evolution of cybersociety.

#### Topics include:

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

### Track 5: Managing the Mac Platform

The Macintosh continues to be a platform in transition, making it even more critical to approach Mac systems management methodically. These sessions will help you do that.

#### Topics include:

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

For more information or to register, visit [www.macworldexpo.com](http://www.macworldexpo.com) or call 800.645.EXPO

# MACWORLD Users Conference/Travel Made Easy

## MACWORLD Users Conference July 8-10, 1998

Here's your chance to learn everything you ever wanted to know about using your Macintosh at work, at school, at home and on the road.

### Take your Mac to the Max

Put your Macintosh into full throttle and squeeze every bit of performance out of it—whether it's an old model or the newest "screamer." **Topics include:**

- The "Soup Up Your Mac" SuperSession
- Mysteries of the System Folder—Revealed!
- Ten Fabulous PowerBook Speedups

### Create! Tips and Techniques for Using the World's Most Dynamic Tool (o... Create!)

Acquire new skills for media/multimedia authoring, digital content creation, digital manipulation, presentation, preparation and delivery. **Topics include:**

- Get Started with Digital Photography
- Become a Macintosh Musician
- Preflighting: Perfection Before Output

### Crash Courses

Get the scoop on the latest technology and get up to speed with the hottest tools. Crash courses bring you up to speed fast.

**Topics include:**

- DVD Insights
  - How the Internet Works
  - How to Buy Your Next Mac
- ...and more

## Travel to MACWORLD Expo—the Creative World Made Easy and Convenient!

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

**United Airlines**  
800.521.4041  
Discount number  
519ZW

**US Airways**  
800.334.8644  
Discount number  
18180598

### Hotel Accommodation:

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

### Tech Tips

Extend your mastery of a variety of Mac tools. These sessions unlock the secrets and turn you into a power user. Topics include:

- Put Office '98 to Work
  - How to Put Filemaker Databases on the Internet
  - Digital Wizardry with Photoshop
  - Hot Quark Xpress Tips and Tricks
- ...and more

### Inside Apple Technologies

Gain in-depth understanding of advanced and innovative system technologies, learn why they're special, and how you can use them to create really cool computing solutions.

**Topics include:**

- Introduction to QuickTime™ 3.0
- How to Use QuickTime™ to Author Rich Media
- How to Get What You See With ColorSync
- Secrets of an AppleScript Wizard

### The Consumer Mac

Get the most out of the Mac in your house.

**Topics include:**

- Digital Family Memories: Home Photo Album Design
- Personal Banking on the Internet
- Parental Controls: Secure Your Home Internet Connection for Your Kids

For more detailed info, visit the web at [www.macworldexpo.com](http://www.macworldexpo.com) or call 800.645.EXPO.

### Small Office/Home Office

How your Mac can help you launch and operate a small company, home-based business or to telecommute. Topics include:

- How to be a Mac Office—Even if your Clients are on Windows
  - Telecommuting Essentials
- ...and more

### For Educators Only

Innovative ways the Mac can enhance both teaching and learning. Topics include:

- Network Computing: Is Zero Administration for Real?
  - How to Make your Network Macs Work All the Time
  - Video Conferencing, Virtual Reality, the Web, and More: How Two School Districts Use the Mac
- ...and more

### Macworld Magazine Presents...

Columnists and featured guest speakers talk about the hottest topics hitting the pages of the industry's premier publication.

**Topics include:**

- Macworld Magazine's Best of Show
  - Best of Macworld's MacSecrets
- ...and more

### Goodies

These light-hearted sessions will amuse you and show you things that are cool just for cool's sake! **Topics include:**

- Scripting Your Stereo
  - Better Living Through Home Electronics—Great Gadgets for Everyone
  - Saving Your Mac from Obsolescence—or 101 Things to Do with a Dead Mac
- ...and more

### Responsibility and Liability:

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

For further travel information, please contact:

**Convention Housing Management**

1700 The Alameda, 2nd Floor

San Jose, CA 95126

phone: 800.799.9914 or

outside the USA 408.918.4200

fax: 408.918.4250

email: [macworld@chmrooms.com](mailto:macworld@chmrooms.com)

Convention  
HOUSING  
Management

# MACWORLD Expo - the Creative World Advance Registration Form

## Jacob K. Javits Center ■ New York City

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

### 1. REGISTRATION SELECTION AND FEES (SELECT ONE)

DEADLINE FOR SAVINGS IS JUNE 8!

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

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

- |   |         |         |
|---|---------|---------|
| <input type="checkbox"/> Package 1 - Super Pass (July 6-10)<br>Includes: • Pre-Conference Workshop • Lunch (Tuesday only) • ALL Keynotes<br>Macworld/Pro Conference Sessions • MACWORLD Users Conference Sessions • Exhibits<br>W (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)       | \$1095* | \$1195* |
| <input type="checkbox"/> Package 2 - Macworld/Pro and Pre-Conference Workshop (July 6-10)<br>Includes: • Pre-Conference Workshop • Lunch (Tuesday only) • ALL Keynotes • Macworld/Pro Conference Sessions • Exhibits<br>W (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)               | \$995*  | \$1095* |
| <input type="checkbox"/> Package 3 - Macworld/Pro Conference ONLY (July 6-10)<br>Includes: • Macworld/Pro Conference Sessions • Lunch (Tuesday only) • ALL Keynotes • Exhibits  | \$795*  | \$895*  |
| <input type="checkbox"/> Package 4 - MACWORLD User Conference and Pre-Conference Workshop (July 6-10)<br>Includes: • Pre-Conference Workshop • MACWORLD Users Conference Sessions • Lunch (Tuesday only) • ALL Keynotes • Exhibits<br>W (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.) | \$495*  | \$545*  |
| <input type="checkbox"/> Package 5 - MACWORLD User Conference (July 6-10)<br>Includes: • MACWORLD Users Conference Sessions • ALL Keynotes • Exhibits   | \$175*  | \$199*  |
| <input type="checkbox"/> Package 6 - Pre-Conference Workshop (July 6-10)<br>Includes: • Pre-Conference Workshop • Lunch (Tuesday only) • ALL Keynotes • Exhibits<br>W (Write in your Workshop selection code - see list on opposite page. Forms without workshop selection indicated will be returned.)   | \$395*  | \$445*  |
| <input type="checkbox"/> Package 7 - Exhibits ONLY (July 8-10)<br>Includes: • Admission to the Exhibits ONLY  | \$29*   | \$45*   |



#### Conditions and Policies:

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

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



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

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

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

### PRIORITY CODE

MWAB

### 2. CUSTOMER INFORMATION

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

### 3. ATTENDEE PROFILE

MUST BE FILLED OUT TO PROCESS YOUR BADGE

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

### 4. PAYMENT METHOD (YOU'LL BE CHARGED FOR ALL REGISTRATIONS RECEIVED INCLUDING DUPLICATES)

Payment must accompany form for registration to be complete. **DON'T PAY TWICE FOR THIS EVENT!**

You will be charged for all registrations received, and not refunded for duplicate registrations. Please use one method of registration only.

- Check enclosed (make payable to MACWORLD Expo). Enclose check and form in an envelope.  
 Mastercard     Visa     American Express    Amount \$ \_\_\_\_\_

Account Number \_\_\_\_\_ Expiration Date \_\_\_\_\_  
 First Name \_\_\_\_\_ MI \_\_\_\_\_  
 Last Name \_\_\_\_\_ Cardholder Signature \_\_\_\_\_

### REGISTER NOW!

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

Call: 800.645.EXPO or 781.551.9800 outside of the U.S. (\$5 Service fee does apply) THROUGH JULY 1, ONLY.

www.macworldexpo.com THROUGH JULY 1, ONLY.

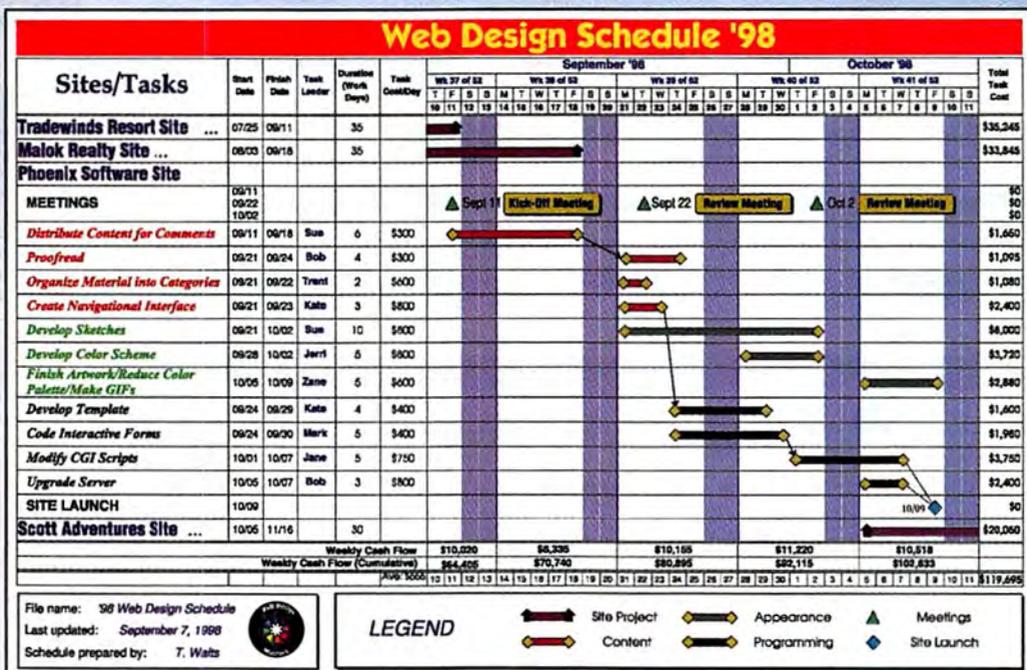
Mail to: MACWORLD Expo - the Creative World P.O. Box 9103, Norwood, MA 02062-9103. THROUGH JUNE 8, ONLY.

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

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

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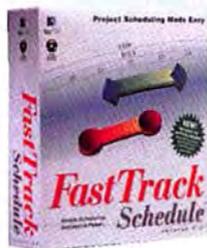
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# Secrets

## New Answers to an Old Question

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

by Ted Landau

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

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

### Danger: Updating the Mac OS

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



although restarting (a warm start) is fine.

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

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

The software in question is Drive Setup 1.3, the version of Apple's hard-

drive-formatting utility that shipped with Mac OS 8.0. You're at risk if you update your disk driver or reformat your drive with this version of Drive Setup *and* you have a desktop Mac with an IDE drive. (See "Dastardly Duo" to find out if you have an IDE drive.)

To prevent this problem, simply get Drive Setup 1.3.1 (or later). If Apple has not already mailed you a CD-ROM that contains Drive Setup 1.3.1, you can get the file from Apple's FTP site <ftp://ftp.apple.com> *continues*

.info.apple.com/Apple.Support.Area/Apple.Software.Updates/US/Macintosh/Utilities/Drive\_Setup\_1.3.1.img.hqx. To fix your drive, select Update Driver from Drive Setup's Functions menu.

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

**Related Ills** The problems with

Drive Setup 1.3 are just the latest in a series of similar problems that have plagued recent versions of Drive Setup. For example, using Drive Setup 1.2.2 (the version that shipped with Mac OS 7.6) could also lead to a flashing question mark at start-up. Again, updating Drive Setup should solve the problem.

Drive Setup is not the sole utility known to cause flashing question mark start-up problems. Hard Disk Toolkit, a disk utility from FWB, can also precipitate this symptom. However, it only happens if you use it to partition your drive and only if you have certain IDE drives (manufactured by Seagate and Western Digital) found primarily in Power Mac 4400's and StarMax clones. At first, the problem was reported to be specific to Hard Disk Toolkit versions 2.0.X, and updating to version 2.5 was supposed to remedy the situation. More recently, a statement from FWB implies that even version 2.5 may not completely stamp out this bug.

#### **Danger: 1.2GB Drives**

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

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

#### **Danger: Waking from Sleep**

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



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

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

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

#### **Danger: Password Protection**

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

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

#### **Stay on the Alert**

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

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

## Cures for the Common Question Mark

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

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

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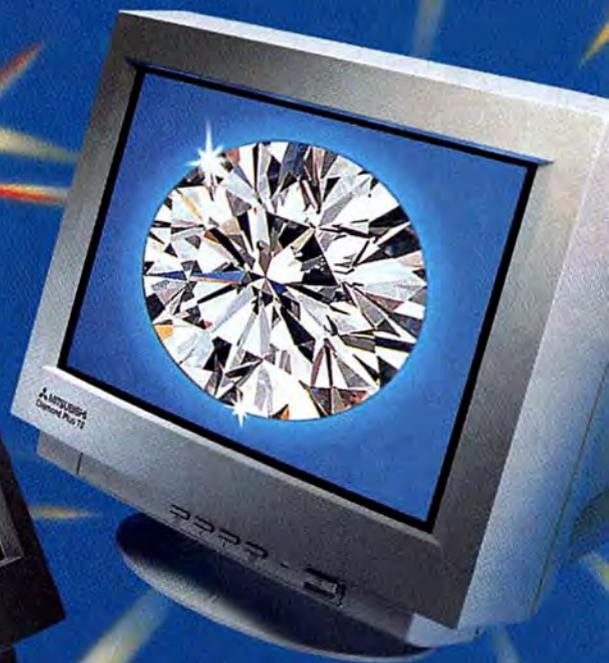
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Circle 261 on reader service card

## Tips, Tricks, and Shortcuts

by Lon Poole

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

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

The browser preference you set with Internet Config also affects other Internet software, such as the Connect To applet in the Mac OS 8.0 and 8.1 Apple menu. Use Internet Config whenever

you upgrade your Web browser or want to use a different default browser.

### Customize Font Previews

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

RICHARD ROOT  
Kirkland, Washington

you'll see icons representing the Finder's resources. Double-click the STR# resource icon, and then open the STR# resource ID 5816 (in Mac OS 8 and later), 14516 (in System 7.1 through 7.6.1), or 14512 (in System 7.0 and 7.0.1). This brings up a window in which you can edit the sample text. Make your changes to the text, save them, and quit ResEdit. Drag the original Finder file out of your System Folder and drag the modified Finder file from the desktop to the System Folder. Restart your computer, and test the results of your changes.

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

### Scrolling through LaserWriter Options

**TIP** In the Print and Page Setup dialog

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

FRANCIS GEORGE  
Chapel Hill, North Carolina



**A.** You don't have to read about "cozy lummoxes" in their "job pens" (or, for those who use System 7.6.1 or earlier, "razorback-jumping frogs" and "piqued gymnasts") when you open a TrueType or bitmapped font file in the Finder. You can change the sample text with Apple's free resource-editing program ResEdit. First, open your System Folder and hold down the option key as you drag a copy of the Finder to the desktop. Use ResEdit to open the duplicate Finder file, and

continues

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

### ClarisWorks Keyboard Shortcuts

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

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

HALIM NGAH  
Kuantan, Malaysia

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

### Smallest Common Monitor

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

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

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

Yet another approach: Mark Zieg of Kissimmee, Florida, created a Web page ([www.zieg.com/util/resolution.html](http://www.zieg.com/util/resolution.html)) with buttons that open a new Netscape Navigator browser window small enough to accommodate a 640-by-480-pixel screen. (This Web page contains a small JavaScript that doesn't work with Microsoft Internet Explorer 3.01 or 4.0 or Cyberdog 2.0.) To

## Creating Custom Cross-Platform Icons

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

1. To create the custom icon, open a copy of the Mac projector application with ResEdit, double-click the icl8 resource in the application's resources window, and

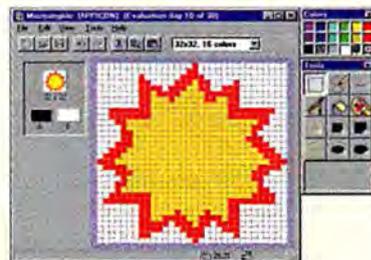


then double-click the application icon in the icl8 resources window. This opens an editing window for the application icon. After editing the icon, save your changes, select all, and copy the selection.

2. Now switch to the SoftWindows 95 PC environment, launch Microangelo Librarian (part of the Microangelo suite; each Microangelo app is listed in a submenu of the Windows Start menu), and use this application to open the PC projector file. (At the bottom of the Open

File dialog box, set the Files Of Type option to Program, or you won't be able to open the projector file.)

3. In the Microangelo Librarian window, double-click the projector file's icon to bring up an icon-editing window, and



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

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

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

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

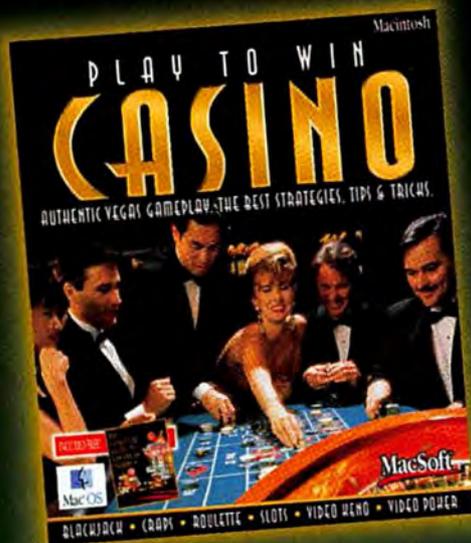
Shareware mentioned in *Quick Tips* is available from Macworld Online ([www.macworld.com](http://www.macworld.com)) or America

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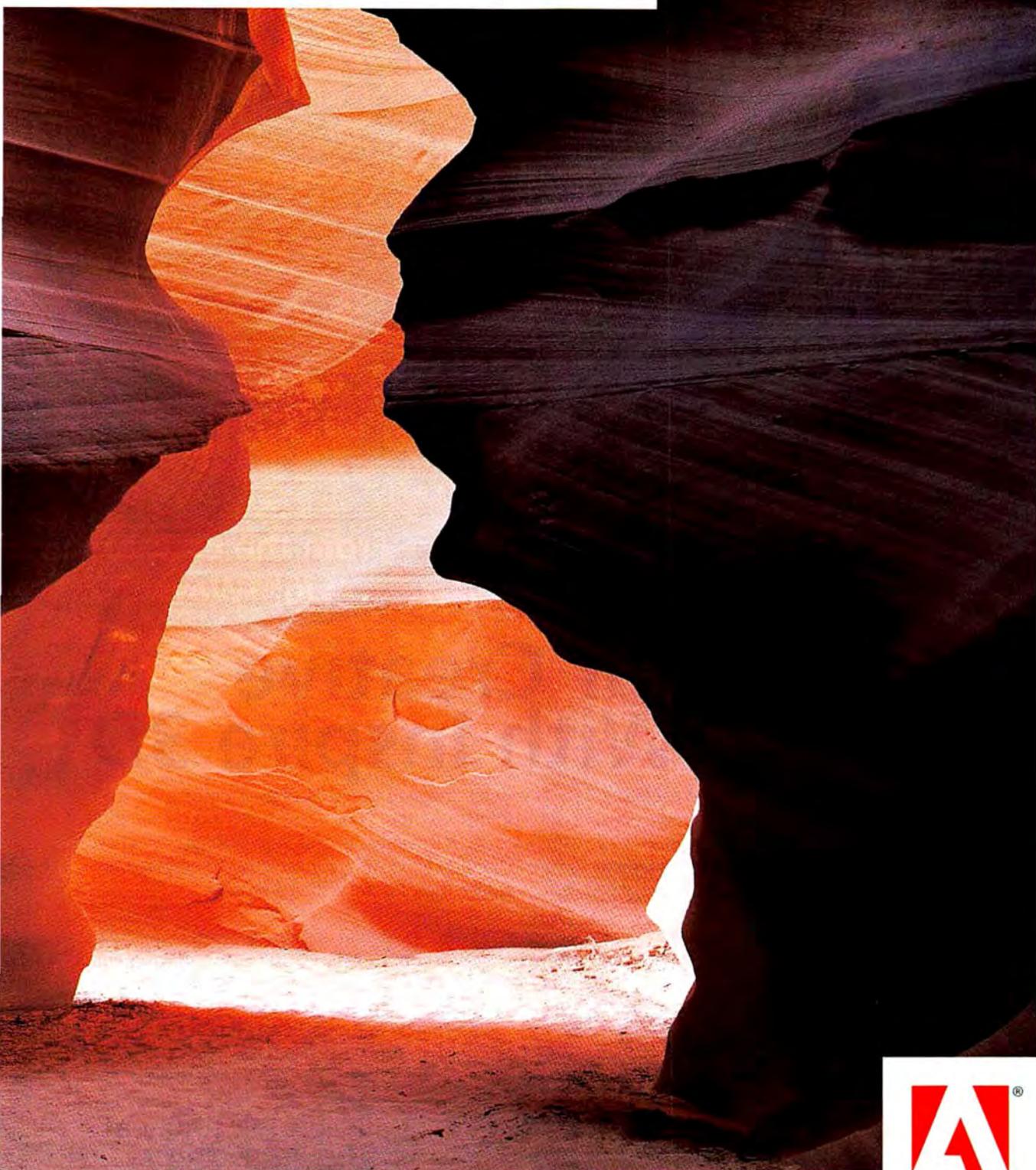
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## 10 Menacing Font Foibles

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

by Kathleen Tinkel

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

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

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

### Cross-Platform Problems

#### Unwanted Courier Text

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

**SOLUTION** Instead of using named fonts (from font menus), apply bold and italic attributes from a styles menu (or

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

#### Unexpected Characters

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

*continues*



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

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

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

Fractions are more difficult, but you have a couple of choices. You can use one of the two sets of fraction fonts from Adobe that work identically across platforms: Helvetica and New Century Schoolbook. Otherwise, build fractions by hand using the superscript and subscript functions in your desktop publishing

With Ligatures

kerfluffle  
stiff  
sufficient

Without Ligatures

kerfluffle  
stiff  
sufficient

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

$3\frac{1}{4}$   $2\frac{3}{4}$   $1\frac{1}{2}$   
 $3\frac{1}{4}$   $2\frac{3}{4}$   $1\frac{1}{2}$

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

## The Promise of OpenType

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

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

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

software. Hand-built fractions are likely to be lighter looking than surrounding text (see “Fraction Help”) and are tedious to make, but they travel with the file.

## Warning Messages

### Crashes, Rough Characters, and Other Anomalies

**PROBLEM** If you experience rough bit-maps on screen, a warning or other indication from a program that a font is unavailable, or font substitution in a printout—especially in conjunction with otherwise unexplained freezes and crashes while launching an application or opening a file—you may have a damaged font.

Font corruption can be maddeningly hard to diagnose because these same symptoms could indicate an extension conflict, a damaged copy of Adobe Type Manager (ATM), an inadequate ATM font or character cache, a shortage of RAM, or a damaged document or software program.

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

If you're still unsure whether your problem stems from a bad font, you might want to get Insider Software's Font Box (\$69.95; 760/804-9900, [.theinside.com\), a font-maintenance utility that checks screen and printer fonts, identifies orphaned and duplicated fonts, and organizes your font library.](http://www</a></p>
</div>
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### Deceiving Damage Reports

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

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

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

### Unavailable Font

**PROBLEM** Another user working at a different Mac sends you a file and you get an alert from the font-mapping utility in QuarkXPress or Adobe PageMaker that

the font isn't available. This may happen even though you're sure you both used the same font.

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

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

## Problems in Print

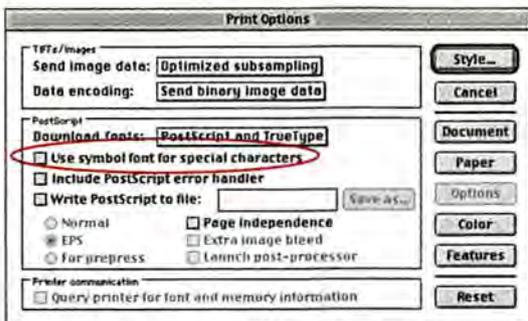
### Missing Bold or Italic

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

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

### Altered Spacing

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



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

### While large type retains its details,

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

### While large type retains its details,

small type degrades significantly when converted to paths or outlines in an illustration application. This problem is seen in 3-point Janson Text Bold. When it is converted to outlines, or filled, it appears to be a heavier weight, and the counters (such as the interior white space inside the "a" and "o") and serifs may fill in. While these effects may not be as noticeable on screen, when the converted type is printed on a press, ink spread exaggerates the effect.

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

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

**SOLUTION** Avoid using TrueType versions in files if you suspect your printer is substituting Type 1 fonts.

### Missing Word Spaces

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

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

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

### EPS Turns to Courier

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

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

### PageMaker Symbol Mixup

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

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

KATHLEEN TINKEL writes about design, typography, and computers. Her column "Print Clearly" appears monthly in *MacWeek* and *MacWeek Online*.

## Tile Your Site

Use Tiles to Create the Layered Look on Your Web Pages

by Lynda Weinman

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

but if you want your site to be accessible to end users who have older browsers or who don't have plug-ins, you're stuck with the two-layer limit.

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

Web tiles can be seamless or include

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

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

LYNDA WEINMAN is the author of a series of books on Web graphics, Web design, Web color, and HTML. Check out [www.lynda.com](http://www.lynda.com) for more information.

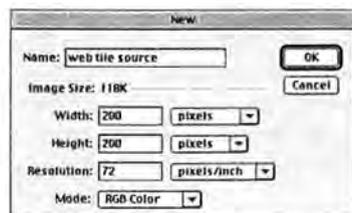
### 1 Create Tiles with Seams

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

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



Source tile



Settings



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

### 2 Make Seamless Tiles

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

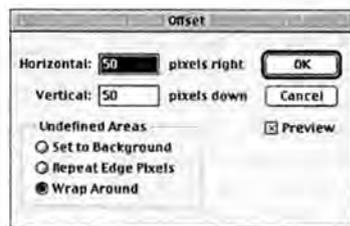
Begin with a centered image, such as the one in my source tile. Then, choose Filter: Other: Offset. Inside the Offset filter's settings window that appears, choose Wrap Around and enter the number of pixels by which you wish to offset the image. I chose a setting of 50 pixels in the horizontal and vertical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



Source tile



Offset Image



Offset filter settings

### 3 Hide Seams

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

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



Filling in



Finished tile



Seamless background

### 4 Color the Tile

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

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

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



Light tile



Dark tile



Magic-wand setting

### 5 Create Special Effects

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

#### The Border Effect

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

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



#### The "Wipe" Effect

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

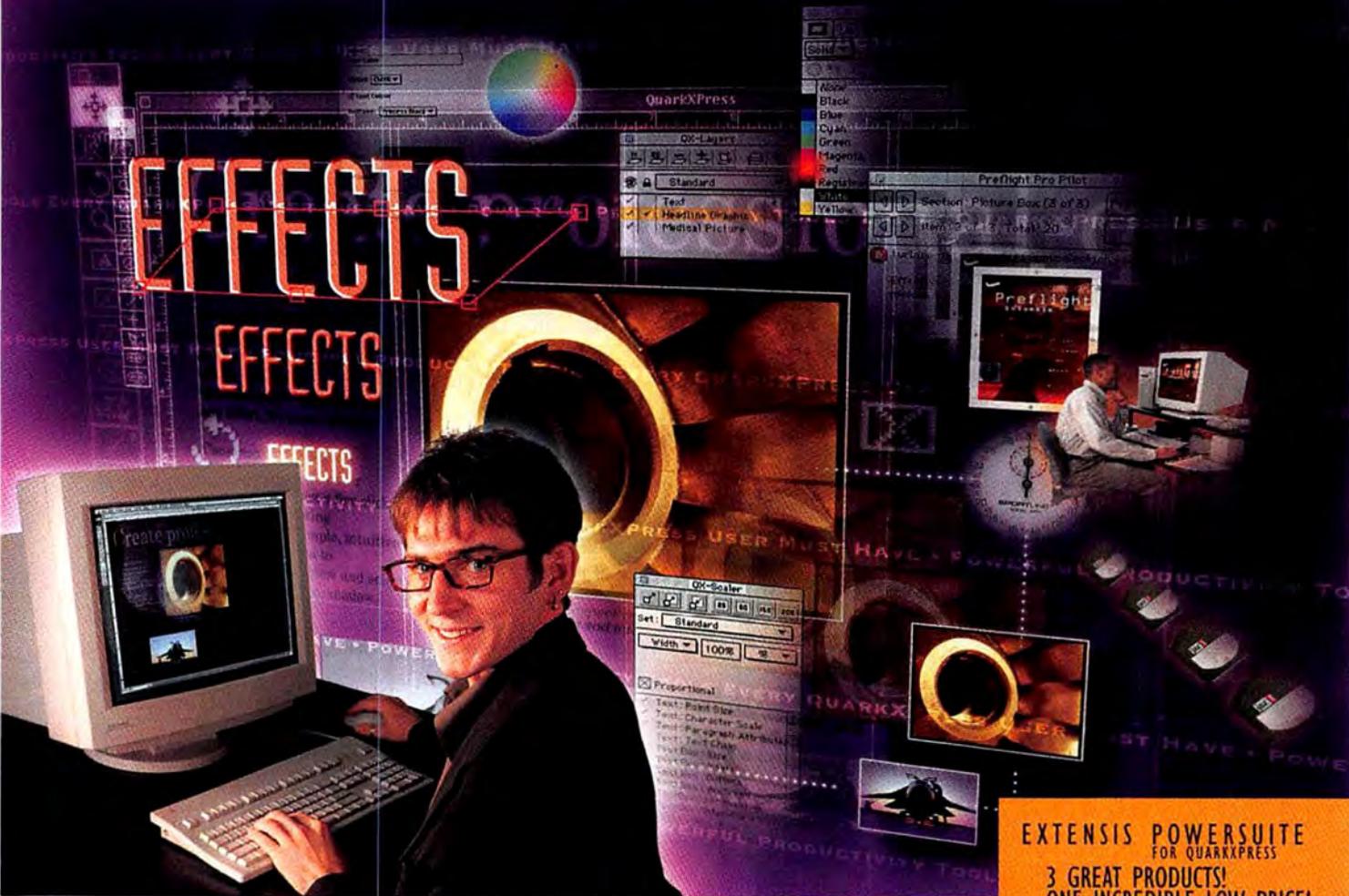


#### Finished Web Page

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



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## The Black Art of Bluescreening

How to Combine Video Footage without Getting the Blues

by Jim Heid

**T**he recent Dustin Hoffman–Robert DeNiro political satire *Wag the Dog* shows not only the effect but also the process of *keying*, or *bluescreening*. You film a woman scurrying in front of a solid-blue background and then process that footage to create a mask that replaces all areas of blue with footage of Albania's war-torn streets.

Those scenes make bluescreening look easy, and for the kind of big-budget Hollywood producer that Hoffman plays, it is. For the rest of us, bluescreening can be a one-way ticket to the blues. There are potential pitfalls in nearly every step of the process, any one of which can lead to an illusion-shattering halo of dancing pixels around your subject.

It is possible to do professional-level bluescreening with desktop digital-video gear. A successful bluescreening endeavor starts with proper production techniques and ends with the right software tools, according to Beth Corwin and Tom Wol-sky, formerly with ABC News and the proprietors of South Coast Productions (socoast1@aol.com), a Mac-based video-production house located on California's rugged Mendocino coast. They shared their bluescreening expertise with me so that I can share it with you.

### Set Up Your Set

The first phases in a bluescreening job are the most critical. One of the biggest favors you can do for your bluescreening software is to build and illuminate your set in the proper way and shoot your video with bluescreening's critical requirements in mind.

**Get the Right Blue** You can't use any old shade of blue as your backdrop; you need a deep, rich blue designed for keying.

If you're building a set, you can cover the background with keying paint; one source, Markertek Video Supply (914/246-3036, www.markertek

.com), sells it for \$38 a gallon. Another solution is keying fabric. It works well outdoors, and it's great for head-to-toe shoots (hang it from a wall and drape it onto the floor). Markertek sells 102-inch widths for \$29.99 per yard. Professional video-supply houses also sell bluescreen paper (a 9-foot-wide, 12-foot-long roll usually goes for around \$38). A third option is Elite Video's (501/321-0440, www.elitevideo.com) \$210.95 Portable Chroma-Key Background, a 5½-by-7½-foot blue background that folds into a pouch.

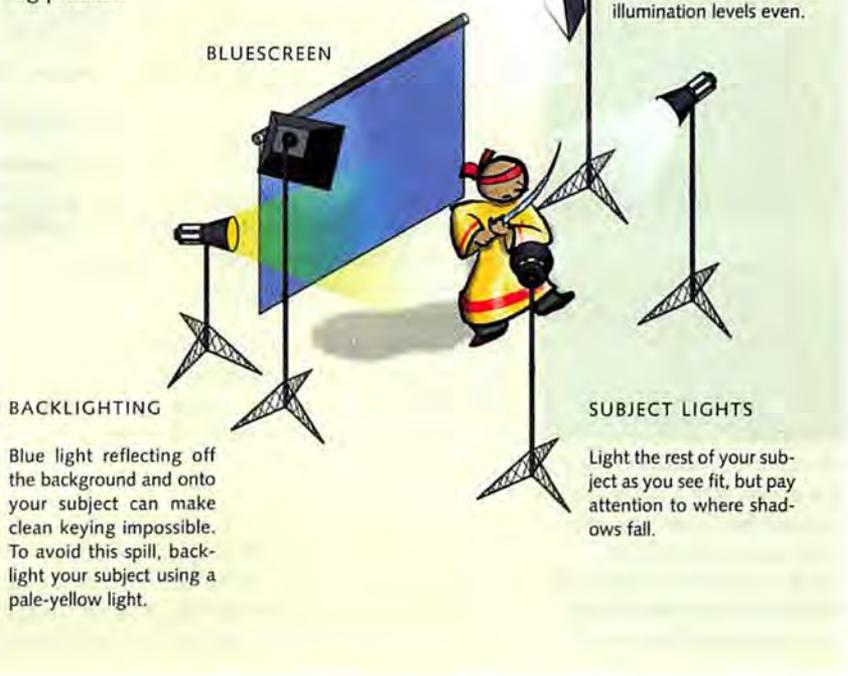
### Light It Right—the Background

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

If part of the background is brighter than the rest, the range of colors your keying software must address grows dramatically—and with it your chances for poor results. Many video professionals swear by Chimera's (303/444-8000, www.chimeralighting.com) Lightbanks. These

## Bluescreen Basics

Bluescreening software examines a video clip to locate all the pixels whose color matches the background against which you shot the subject, and then replaces those pixels with pixels from another piece of footage. Lighting the screen and subject properly helps ensure good results in the compositing process.



# The Keys to Bluescreen Keying

All of the video editors available today provide at least some degree of support for compositing with bluescreen footage. The key point that differentiates products is their ability to deal with the most-difficult compositing jobs: unevenly lit backgrounds and tricky subject matter, such as smoke, glass, and wisps of hair.

High-end keying applications such as Adobe After Effects' \$1,995 Production Bundle (408/536-6000, [www.adobe.com](http://www.adobe.com)) and Ultimatte's Ultimatte plug-in are much better able to handle these challenges than are the more basic keying features that are built into Adobe Premiere and the base version of After Effects.

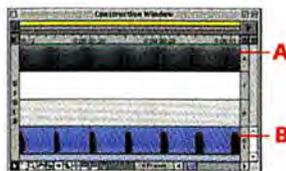
## Keying in Adobe Premiere

Premiere's built-in keying features are rudimentary but work well with properly shot footage.

### 1 Configure the Clips

After digitizing your clips, import them and then drag them to the Construction window as noted here.

(A) Put the footage containing the replacement background in Track A or Track B.



(B) Put the bluescreen footage in one of Premiere's superimpose tracks.

### 2 Adjust Keying Settings

With the clips in place, you're ready to create the composite. With the bluescreen footage selected, choose Transparency from the Clip menu.

(A) For video shot in front of a blue background, choose Blue Screen. Use Green Screen for green backgrounds. For problematic backgrounds, you can also use the Chroma key type, which provides more control over color range than these two.

(B) The Sample area displays a preview of the effect.

(C) Adjust the Threshold and Cutoff sliders until the blue background becomes transparent, thus revealing the new background.

(D) Drag this slider to view different sections of the bluescreen clip. Whenever you make an adjustment to the keying settings, it's a good idea to drag through the movie to see how the

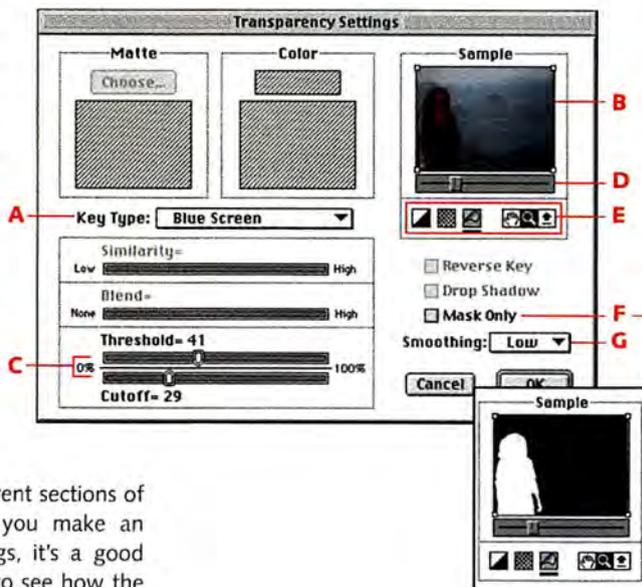
adjustment affects the entire clip.

(E) You can change the way the background appears in the Sample box (or Preview window), which is useful for fine-tuning keying settings. Click on to change the background to black or white, click on to display a checkered background, and click on to display the actual composite.

To display the preview in Premiere's Preview window instead of the Sample box, click on . To zoom in on the preview in the Sample box, use , and to reposition the preview, use .

(F) To display only the mask through which the background will show, check this box. This is a good way to double-check your keying settings.

(G) Smoothing can help clean up edge artifacts. The Low setting smooths edges slightly, while the High setting blurs them more.



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

**Performance Tip** When creating the preview in the Transparency Settings dialog box, Premiere first applies any filters that you've assigned to the clips. This can slow preview performance. If the filters you plan to use don't involve changing the brightness or color balance of the clips, you can avoid this slowdown. Just apply your transparency settings before you assign any filters.

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# Keying in After Effects

The keying features in Adobe After Effects' base version didn't do as good a job with my sample footage as Premiere did. The pricier Production Bundle, however, offers industrial-strength keying.

## BASE VERSION

### 1 Configure the Clips

With the bluescreen footage and background imported and in a Composition, select the bluescreen footage and choose Color Key from the Effect menu's Keying submenu.

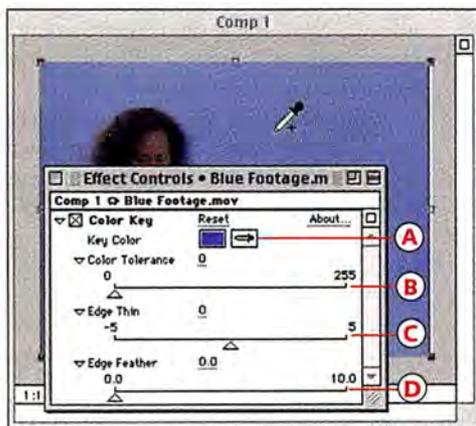
### 2 Adjust Keying Settings

(A) Click on the eyedropper, and then click on the blue background in the Comp window (not shown).

(B) Adjust until the background turns transparent while the subject remains opaque.

(C) Edge thinning increases the transparent area and helps to get rid of blue artifacts.

(D) Edge feathering softens the edges of the mask through which the background shows.



The Color Key effect has trouble with the model's wispy hair—note the blue artifacts at the edges. For better After Effects keying, you'll want the Production Bundle.

## PRODUCTION BUNDLE

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

### 1 Configure the Clips

With the bluescreen footage and background in a Composition, select the bluescreen footage and choose Linear Color Key from the Effect menu's Keying submenu.

### 2 Adjust Keying Settings

(A) To specify the color to be made transparent, click on the Key Color eyedropper tool and then click on the color in the left-hand preview.

(B) The right-hand preview shows the results of your adjustments. Use the View pop-up menu to choose what you want to see: the final output, the source footage only, or the matte only.

(C) Drag the Matching Tolerance slider to establish the color range to be made transparent. (The middle eyedropper between the preview windows broadens the range; the bottom one narrows it.)

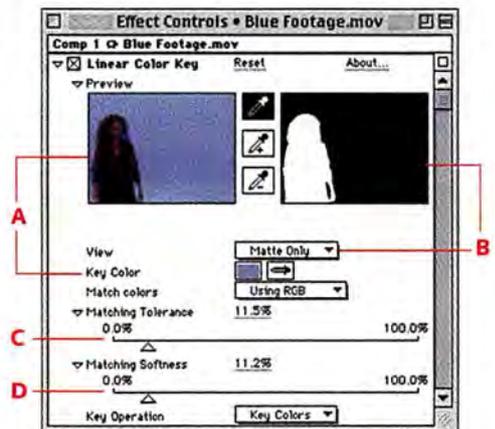
(D) Fine-tune the key's edge sharpness and transparency. (You'll fix any blue edges in step 3.)

### 3 Apply Spill Suppression

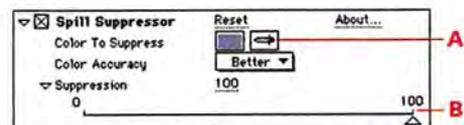
Spill Suppressor cleans up the edges of the key, which may have some blue-colored light, called spill, on them. Make sure the bluescreen-footage clip is selected, and then choose Spill Suppressor from the Effect menu's Keying submenu.

(A) Click on the eyedropper and then on the spill color. (Generally, click on a color close to the subject's edges.)

(B) Start with a value of 100; reduce it if necessary until the spill is gone.



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



**Tip** Regardless of which After Effects version you use, always make keying adjustments with After Effects' resolution and effects-quality settings at their highest values. Lower-resolution settings yield faster previews but aren't accurate enough for fine-tuning keying settings.

## Crop for Cleaner Keying

If you're shooting a full-figure shot, don't worry about filling the entire frame with blue. Just make sure the area immediately surrounding your subject is blue and evenly lit, and then shoot away. Afterwards, create a mask or a "garbage matte" that crops out the rest of the frame.

**Adobe Premiere** To create a rectangular mask, drag the handles in the Transparency dialog box's preview window.

**Adobe After Effects** First, double-click on the bluescreen footage in the Time Layout window. A Layer window opens, containing the footage. To create a rectangular mask, drag the mask handles in the Layer window. To create an irregularly shaped mask, use the pen tool in After Effects' Tools palette.



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

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

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

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

### Light It Right—the Foreground

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

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

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

**Dress for Success** Be sure your subject isn't wearing—or doesn't contain—colors similar to your background's. Blue is by far the most common color for keying backgrounds, so try to avoid blue clothing for your subject. But green screens are also popular. If you must

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

### Camera Concerns

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

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

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

**Balance the White** Before shooting,

use your camera's white-balance feature, which adjusts the camera's circuitry for proper color balance given the lighting you're using. Most midrange and high-end camcorders have a manual white-balance feature. Use it instead of automatic white balance. First configure your camera, lights, and set as they will be when you shoot the subject. Next, focus on a sheet of white paper; zoom in so that it fills the frame. Now press the white-balance button.

**Stop Down a Bit** If your camera offers manual f-stop control, stop down the aperture a bit. Shooting with the lens wide open can cause the edges of the frame to darken, complicating your keying software's job. But don't increase your depth of field too much. To reduce minor variations in lighting on the blue screen, you want the subject to be in tack-sharp focus but the background to be a bit blurry.

### Ultimate Keying with Ultimatte

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

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

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

### Keying Tools

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

Today's popular video editors and effects programs all offer keying features, and one third-party plug-in—Ultimatte Corporation's (818/993-8007, [www.ultimatte.com](http://www.ultimatte.com)) \$1,495 Ultimatte—provides the kind of industrial-strength keying that used to be found only on high-end dedicated video workstations. "The Keys to Bluescreen Keying" shows how the two most popular programs approach keying. Remember, the most important bluescreening techniques are applied when you're behind the camera—not behind the mouse. **m**

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

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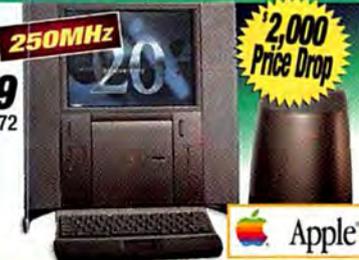
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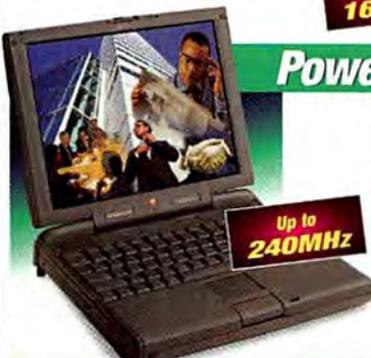


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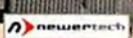
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64MB	64764SD	\$219	64MB	64764	\$152	32MB	32764EDO3.3V	\$80	32MB	32764EDO5V	\$80	16MB	16732	\$43	8MB	8888	\$42
32MB	32764SD	\$77	32MB	32764	\$82	16MB	16764EDO3.3V	\$40	16MB	16764EDO5V	\$40	8MB	8032	\$23	4MB	4000	\$18
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32MB	PB3400-32G3	\$119	64MB	PB3400-64	\$236	24MB	PB2400-16	\$153	32MB	PB2300-20	\$205	20MB	PBDUO-20	\$139	12MB	PB190-12	\$70
16MB	PB3400-16G3	\$78	32MB	PB3400-32	\$119	16MB	PB2400-8	\$93	20MB	PB2300-16	\$162	14MB	PBDUO-14	\$115	8MB	PB190-8	\$65
			24MB	PB3400-24	\$145				16MB	PB2300-16	\$118	12MB	PBDUO-12	\$109			

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

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# Apple Power Mac G3



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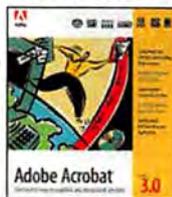
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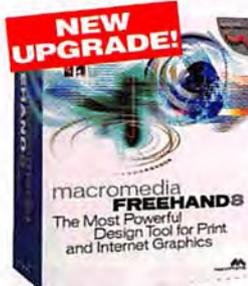


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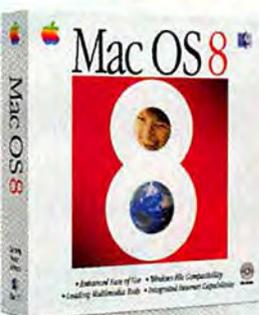
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4.3GB Stratus SE	QM34320SES	10ms	5400	\$289	\$339
4.5GB Viking	QM34550VKS	8ms	7200	\$379	\$429
4.5GB Atlas II	QM34550ALS	8ms	7200	\$499	\$549
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8.4GB Stratus SE	QM38420SES	10ms	5400	\$489	\$539
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4.5GB Viking	QM34550VKS	8ms	7200	\$399	\$479
4.5GB Atlas II	QM34550ALS	8ms	7200	\$519	\$599
9.1GB Atlas II	QM39100ALS	8ms	7200	\$779	\$859

IDE Drives		Description		Quantum Atlas & Viking drives carry a 5 Year Warranty	
Model	Access	RPM	Internal	External	
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3.2GB Stratus SE	QM33240SEA	10ms	5400	\$189	----
4.3GB Stratus SE	QM34320SEA	10ms	5400	\$219	----
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Model	Access	RPM	Internal	External	
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4.5GB Cheetah	ST34501N	8ms	10000	\$649	\$699
9.1GB Barracuda 9	ST19171N	8ms	7200	\$779	\$829
9.1GB Cheetah	ST19101N	8ms	10000	\$1029	\$1079

UltraWide SCSI-3		Description		Seagate drives carry a 5 Year Warranty	
Model	Access	RPM	Internal	External	
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4.5GB Cheetah	ST34501W	8ms	10000	\$699	\$779
9.1GB Barracuda 9	ST19171W	8ms	7200	\$829	\$909
9.1GB Cheetah	ST19101W	8ms	10000	\$1029	\$1109

Fast SCSI-2		Description		Seagate drives carry a 5 Year Warranty	
Model	Access	RPM	Internal	External	
23GB Elite 23	ST423451N	8ms	5400	\$1779	\$1879
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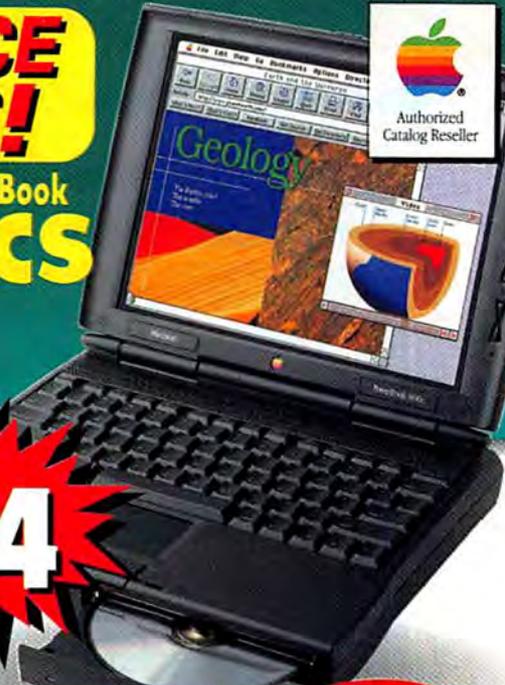


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Apple PowerBook DUO 2300c/100 Notebook	8/20	56										70		119	129	40=164			
Apple PowerBook 1400	12/16	60/64										69		70	119	149	179		
Apple PowerBook 2400	16	80										49		70	109		189		
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Apple PowerBook 5300 Series	8/16/32	56/64				49			54		69	79		149	150	219			
Apple Macintosh IIfx (64 pin)	4	128										50	129						356
Apple Macintosh IIfx	2/3/5	17										28	88						
Apple Macintosh IIfx & IIfx	4	68	512k	44					28			88							356
Apple Macintosh Classic II, LC, LCII	2/4	10	512k	29		16													
Apple Macintosh LCIII, LC475, LC550, LC575, LC580	4	36	256k	44			15		34			49							
Apple Macintosh LC520	5	36					15		34			49							
Apple Macintosh LC580	4	48					15		34			49							
Apple Macintosh LC499	4	36					15		34			49							
Apple Macintosh LC5200	8	64					15		34			49							
Apple Macintosh LC630	5	36					15		34			49							
Apple Macintosh IIfx	1/5	128										40		119		208			356
Apple Macintosh II, IIfx, IIfx (w/Pa)	1	32							48	109				149		298			
Apple Macintosh SE30	1/2	32							40	96				119		238			
Apple Performa 400	4	10	512k	68		22	30		56										
Apple Performa 405, 410, 430	4	10	512k	44		22	30		56										
Apple Performa 450, 460, 466, 467, 475, 476	4	36	256k/512k	34/68	29/44				15	34				99		99			
Apple Performa 550, 560, 575, 577, 578, 580	5	36	256k	34					15	34				99		99			
Apple Performa 600, 600CD	5	68	512k	44					32					88					356
Apple Performa 6110CD, 6112CD, 6115CD (pairs)	8/16	72					15		34			49		99					
Apple Performa 6117CD, 6118CD (pairs)	8/16	72					15		34			49		99					
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Apple Performa 631CD, 636CD, 640CD	8	52	512k	44			15		34			49		99					
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Apple Performa 637CD, 638CD	8	36					15		34			49		99					
Apple Performa 5200 Series 5200CD, 5215CD, 5300	8/16	64					15		34			49		99					
Apple Performa 6100 Series 6116CD (pairs)	8/16	72					15		34			49		99					
Apple Performa 6200 Series 6200CD, 6216CD, 6218CD	8	64					15		34			49		99					
Apple Performa 6200 Series 6220CD, 6230CD, 6290	8	64					15		34			49		99					
Apple Performa 6205CD, 6214CD	8	64					16		34			49		99					
Apple Performa 6300CD, 6320	16	64					15		34			49		99					
Apple Performa 6400CD, 6360 (2K Refresh)	16	136			94		15		34			49		99					149
Apple Centris 610, 650, 660 AV	4	132	512k	29			15		34			49		99					
Apple Quadra 605	4	36	512k	44			15		34			49		99					
Apple Quadra 610	4	68	512k	29			15		34			49		99					
Apple Quadra 630	4	36					15		34			49		99					
Apple Quadra 650	4/8	132/136	512k	29			15		34			49		99					
Apple Quadra 660AV	4	68					15		34			49		99					
Apple Quadra 700	4	68	512k	29			48		104										356
Apple Quadra 800 (pairs)	8	136	512k	29			15		34			49		99					
Apple Quadra 840AV	8	128	512k	29			15		34			49		99					
Apple Quadra 900	4	256	512k	29			48		104										356
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Power Macintosh 6200/75	8/16	72			29/-		15		34			49		99					
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Power Macintosh 8100/80AV, /100AV, /110AV (pairs)	8/16	264	512k	59	29/109		15		34			49		99					
Power Macintosh 8500/120, /132, /150, /180	8/16	1gig/512	1mg	29	49/74/169				53			99		149					
Power Macintosh 8600/200, /233	8/16	1gig/512	1mg	49	49/74/169				53			99		149					
Power Macintosh 9500/120, /132, /150, /180MP, 200	16/32	768/1.5 gig	2mg	99					53			99		149					
Power Macintosh 9600/200, /233, /200MP	8/16	768	2mg	87					53			99		149					
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4310MB	5400rpm	512K	FB34300S	3yr	\$279	\$329
4550MB	7200rpm	512K	VK34550S	5yr	\$349	\$399
4550MB	7200rpm	512K	XP34550S	5yr	\$469	\$519
6448MB	5400rpm	512K	FB36400S	3yr	\$359	\$409
8455MB	5400rpm	512K	FB38400S	3yr	\$459	\$509
9100MB	7200rpm	512K	XP39100S	5yr	\$749	\$799
9100MB	7200rpm	1024K	XP39100S	5yr	\$799	\$849
18200MB	7200rpm	1024K	XP318200S	5yr	\$1299	\$1349
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23200MB	5400rpm	512K	ST423451N	5yr	\$1669	\$1759
<b>ULTRA 2 SCSI</b>						
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4550MB	10,000rpm	1024K	ST34502LW	5yr	\$775	\$925
9100MB	10,000rpm	1024K	ST39102LW	5yr	\$1099	\$1249
9190MB	10,000rpm	1024K	ST39173LW	5yr	\$859	\$1009
18200MB	7200rpm	1024K	ST11823LW	5yr	\$1599	\$1749
18200MB	10,000rpm	1024K	ST11820LW	5yr	\$1899	\$2049
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Features up to 80MB/s transfer when used with an Ultra 2 SCSI controller (remains 40MB/s when Ultra 2 controller or when non Ultra 2 devices are in chain). Exceeds cabling distance greatly over other SCSI devices. Note - Our External Ultra 2 SCSI drives do not include terminator.

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NEC	CDR1810XM24X	85ms	128K		\$99	\$159
Pioneer	DRM6324XM24X	90ms	5 Disk Changer	n/a	\$419	
Teac	CD5324XM32X	85ms	512K		\$115	\$175
Toshiba	XM62018XM32X	85ms	128K		\$115	\$175
Plextor	PK32TSM32X	85ms	512K		\$215	\$275

## SCSI TAPE BACKUP

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Seagate TR4	4-8GB	60MB/min	SDT28000XM	\$539
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Sony 4mm	4-8GB	90MB/min	SDT7000XM	\$709
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Exabyte 8mm	7-14GB	120MB/min	ELIANTXM	\$1449
Sony 4mm	12-24GB	144MB/min	SDT9000XM	\$999
Seagate 4mm	12-24GB	120MB/min	STD24000XM	\$1089
HP 4mm	12-24GB	120MB/min	C1554XM	\$1139
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Quantum DLT	20-40GB	180MB/min	DLT4000XM	\$2729
Seagate AIT	25-50GB	360MB/min	STA15000XM	\$2999
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Seagate 4mm	48-96GB	120MB/min	STL496000XM	\$2419
Exabyte 8mm	70-140GB	60MB/min	EXB10HM	\$3949
HP 4mm	72-144GB	120MB/min	C5648XM	\$2699
Quantum DLT	75-150GB	150MB/min	DLT2500XTM	\$4429
Quantum DLT	100-200GB	180MB/min	DLT4500XM	\$5549
Seagate AIT	100-200GB	360MB/min	STL20000XM	\$Call
Quantum DLT	105-210GB	150MB/min	DLT2700XTM	\$6099
Quantum DLT	140-180GB	150MB/min	DLT4700XM	\$7419

Have trouble finding the right drive bracket for your Mac? Check out our technical information section on our website. You'll find a lot of info on finding just the right installation kit for your drive & Mac.

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Budget 5 Pack	\$19/\$17	\$80/\$76	\$24/\$21
Budget 20 Pack	\$36/\$33	\$299/\$289	\$55/\$52
Budget 50 Pack	\$74/\$70	\$699/\$689	\$119/\$109
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CDR74 is recordable, CDR74W is rewritable, CDR74P is printable. Price is alone/with CDR purchase.

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PowerBook G3 250/32MB/4GB/20xCD	\$3999	\$129
PowerMac 6500 250/32MB/4GB/24xCD/56k Modem	\$1299	\$42
PowerMac 6500 300/64MB/4GB/24xCD/Zip	\$1759	\$57
PowerMac G3 233/32MB/4GB/24xCD Desktop	\$1499	\$49
PowerMac G3 233/32MB/4GB/24xCD/56k Mini Tower	\$1599	\$51
PowerMac G3 266/32MB/4GB/24xCD/Zip Desktop	\$1599	\$51
PowerMac G3 266/32MB/4GB/24xCD/Zip AV Tower	\$2199	\$71
PowerMac G3 266/128MB/1W/4GB/24xCD/8MB/100BT	\$3299	\$105
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ViewSonic 17GA, 1152x870, .27mm	\$557
Sony 200SE 17", 1024x768, .25mm	\$599
Sony 200SF 17", 1280x1024, .25mm	\$649
Sony 20" SF2, 1600x1200, .30mm	\$959
ViewSonic V95 19", 1600x1280, .26mm	\$819
ViewSonic G790 19", 1600x1200, .25mm	\$919
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Quantum 4.3GB 5400 rpm Stratus 9ms	\$279	\$339
Quantum 4.5GB 7200 rpm Viking 7.9ms	\$359	\$419
Quantum 6.4GB 5400 rpm Stratus 9ms	\$389	\$449
Quantum 8.4GB 5400 rpm Stratus 9ms	\$489	\$549
Quantum 9.1GB 7200 rpm Atlas II 7.9ms	\$699	\$759
Seagate 4.5GB 7200 rpm Barracuda 4 7.9ms	\$539	\$599
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Microtek Scanmaker III/Trans/Photoshop	\$1319*
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Microtek Scanmaker 6400XL	\$919*

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Epson Stylus Color 3000, 17x22, Serial, Ink, 1440dpi	\$1739
Epson Stylus Color 800, 8.5x11, Serial, Ink, 1440dpi	\$339
GCC EL 1212, 1200dpi, 8.5x11, Enet, 12ppm	\$1379
GCC XL 608, 600dpi, 11x17, Ethernet, 8ppm	\$1799
GCC XL 616, 600dpi, 11x17, Ethernet, 16ppm	\$1999
GCC XL 808, 800dpi, 11x17, Ethernet, 8ppm	\$2499
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GCC XL 1208SS, 1200dpi, 11x17, Ethernet, 8ppm	\$3999

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

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

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

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

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

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

APS MO DRIVES				
Model	Description	SR 1000	SR 2000	Pro
APS 640 MO	Fujitsu MZ513A2FN	N/A	399 <sup>95</sup>	429 <sup>95</sup>
APS 2.6GB MO	Sony SMO-F544, 2.4GB	N/A	1,669 <sup>95</sup>	N/A

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

APS TAPE BACKUP SYSTEMS			
Model	Description	Internal	External
APS HyperQIC®	Travan 4 Conner QIC 3095, 8GB	\$299 <sup>95</sup>	\$349 <sup>95</sup>
APS HyperDAT®	DDS-2DC, 8GB	549 <sup>95</sup>	599 <sup>95</sup>
APS HyperDAT® Pro	DDS-2DC, 8GB	799 <sup>95</sup>	849 <sup>95</sup>
APS HyperDAT® III	DDS-3DC, 24GB	1,049 <sup>95</sup>	1,099 <sup>95</sup>
APS Mini Library	4mm DDS-2 AutoLoader, 64GB	N/A	2,399 <sup>95</sup>
APS DLT30	DLT 3000, 30GB	N/A	2,499 <sup>95</sup>
APS DLT40	DLT 4000, 40GB	N/A	2,899 <sup>95</sup>
APS DLT70	DLT 7000, 70GB	N/A	6,899 <sup>95</sup>
APS AIT*	8mm W/DC, 50GB	N/A	2,899 <sup>95</sup>
APS DLI	4MM DDS-2 AutoLoader, 136GB	N/A	4,999 <sup>95</sup>

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

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Perfect replacement drives!  
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**APS Q 3000 EL** 3118MB formatted, 5400 rpm Quantum mechanism \$229<sup>95</sup>  
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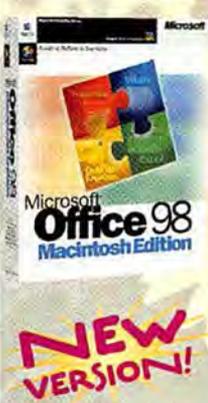
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- Our salespeople are some of the most knowledgeable in the business. They're not order takers and they don't push for a one time sale. After all, over half our business comes from repeat and referred customers!
- We have competitive prices on over 20,000 Macintosh items.
- We load over 160 megabytes of useful software on every computer.
- Every Mac system is thoroughly bench tested, and then personally verified and approved by your specific consultant.
- We have 800 line tech support for as long as you own your computer.
- We will customize your computer any way you need, and always with an exact description as to what we're including.
- We give you a free mouse pad with every system.
- We have no voice mail—there's always a human being on the other end of the line—for tech, sales and management.
- We answer the phone: "how can we help you?" not "may I take your order?"
- We live in Oregon, where there is no sales tax and the people are friendly and polite!
- Even customized systems usually ship within 24-48 hours.
- We usually approve government and corporate purchase orders the same day.
- We take trade-ins, and we sell every type of quality Macintosh possible.
- All we do is Macintosh—our company is run entirely on Macs.

## Them

- They sell you a box.
- If you have a problem, they tell you to call the manufacturer. And then you get to wait on hold for a long, long time.

## You

- Potentially one of the most important people in the world: our customer.



### Package 52W984

Factory Refurbished Performa 5200 w/16 Mb RAM, 500 Mb hard drive, built-in color display, video in, Mac CD bundle with Atlas, games, dictionaries & many more. Only \$899, or just \$38 per month!\*

Extra CDs!

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Quickbooks!

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Pictures may not match monitor in package

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- PowerMac G3 233 Tower 32/4000/24x CD .....\$1947
- PowerMac G3 266 32/4000/24x CD/Zip .....\$1947
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- PowerMac 5215 8/1 Gb/CD all in one w/disp .....\$899
- Motorola StarMax 4000/200 16/1.2/CD .....\$949
- Performa 6400/200 16/1.6/CD .....\$1049
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Apple 17" Color	\$495
HITACHI SuperScan 19"	\$895
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NEC P1150 21" Color	\$1349
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SONY 200ES 17" Color	\$589
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Apple LaserWriter 8500	\$2299
Apple StyleWriters	Lowest Price!
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EPSON Stylus 3000	\$1645
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Agfa ePhoto 1280	\$799
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Kodak DC 120	\$695
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9600/300MHz, 128MB/4G/CD  
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• keyboard & mouse  
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• 15" Apple Display  
• keyboard & mouse  
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Turn your Personal NT printer into a Personal NTR with a simple logic board upgrade. The NTR features PostScript Level 2 and a fast RISC processor.  
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• Features QuickDraw 3D RAVE acceleration  
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G3/266 DT	32/4/24xCD/Zip.....	1799/62
9600/350	64/4GB/24xCD/12/Zip.....	3499/121
9600/300	64/4GB/24xCD/12/Zip.....	2989/103
9600/200	0/DGB/CD/Key.....	1450/50
9800/300	32/4GB/24xCD/12/Zip.....	2299/76

**PowerPC**



- 8600/300 Mhz
- 32MB RAM /Zip
- 4GB HD, 24 X CD
- Rasterops SuperScan 21" Monitor
- Keyboard

**\$145.00**

Per Month, For 36 Months

Model	Configuration	Buy/Lease
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4400/200	18/2GB/CD.....	1250/43
6500/300	64/4GB/CD/Zip/33.8.....	2095/73
6500/275	48/6GB/CD/Zip/SmBusiness.....	1949/67
6500/275	32/6GB/CD/66/Zip.....	1857/57
6500/225	32/3GB/CD/33.8/Sony 15".....	1529/53
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**Power Mac G3 / 233**  
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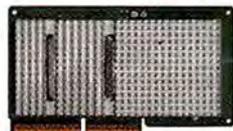
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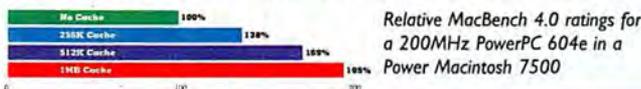
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# Macworld

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come—Merlin the magician! (Gotta love that OK button; it says “Begone!”)

Photoshop 3 shows three different credit screens. One appears when you choose About Photoshop from the Apple menu; add the option key to see the second; and hold down ⌘ to see the third.

But if you’ve been looking for a reason to upgrade to Photoshop 4, here it is: hold down the ⌘ key while choosing About Photoshop. Your reward: the Big Electric Cat. This isn’t just any old cat; ⌘-click on its nose to hear the most resonating, gurgly, disgusting audio belch ever.

### The Lonely-Geek Consolation Prize

At Microsoft, the decree from the Richest Man Alive is: Hide your name in a Microsoft program, and you’re fired. As a result, Easter eggs in Microsoft programs are slightly harder to find.

In a new Word 6 document, for example, type T3! (including the exclamation point). Highlight your T3!, and make it bold. From the Format menu, choose AutoFormat. Click on OK and then on Accept. And now, from the Apple menu, choose About Microsoft

Word. Click on the Microsoft Word icon in the About box.

The screen goes black . . . thunder rumbles . . . and before your very eyes, a list of programmers crawls up the screen in colored lettering. (Why so much effort to see who wrote Word 6? Well, *maybe* it was Bill’s Decree. On the other hand, maybe they were just embarrassed.)

Believe it or not, though, that’s not the Eggy award winner tonight. In a new Word 6 document, type zzzz. Now run the spelling checker on your document. Word flags zzzz as incorrectly spelled, all right. But check out what it suggests as the correctly spelled equivalent.

*Sex = zzzz?* Only from the minds of Microsoft.

### The Software-as-Metaphor Award

In the Finder, open Conflict Catcher. Click on the version number in the lower-right corner. Type play and press return.

Suddenly, Mr. Logo Man evaporates. In his place is a game of Breakout—except that the bricks aren’t aliens, they’re your own extension icons! Use the arrow keys to move the cannon; don’t let the ball strike bottom.

### The Jerry Seinfeld Memorial

If you open a desktop StuffIt Deluxe 4.0 (not 4.5) archive on a holiday, such as July 4 or December 25, you’ll see a tiny, holiday-specific graphic surprise in the window’s corner. (Balloon help added a cheery, holiday-specific message.) *Now* how much would you pay? But wait, there’s more! Open an archive in the Finder. While pressing the shift key, choose About This Macintosh from the Apple menu.

Up pops the secret StuffIt About box, filled with thank-you notes to the programmer’s friends. Now press the clear key on your number pad. The screen is instantly filled with a pages-long, hilarious comedy routine about the differences between men and women. Example: “Women have many faults. Men have only two: everything they say and everything they do.”

Look, you guys: we love seeing your names and your photos. But keep your personal problems to yourself, OK? **m**

DAVID POGUE ([www.pogueman.com](http://www.pogueman.com)) is the author of *The Great Macintosh Easter Egg Hunt* (Berkley Books, 1998). Can you find the Easter egg on his home page?

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## The 1998 Eggy Awards

THE YEAR'S FUNNIEST, CLEVEREST, AND MOST ENTERTAINING EASTER EGGS

**D**OESN'T IT STRIKE you as weird that novelists, composers, and screenwriters get their names plastered all over their work but most people can't name a single person who writes *software*?

The programmers whose creations run our businesses, banks, and government toil in obscurity. Why aren't any schools named after Raymond Lau, who invented StuffIt? Where's the beverage called the Jeff Robbin, after the guy who wrote Conflict Catcher? Why don't posters of a shirtless Jorg Brown, who invented RAM Doubler, hang on the bedroom walls of American teenagers?

In recognition of their lack of recognition, programmers have learned to take matters into their own hands. Into the wet cement of their newly created software, they carve their initials by planting a movie, a photograph, a sound effect, or some other credits screen. In the lingo of programmers, they create *Easter eggs*.

Now, because most software companies frown on such frivolous expenditures of talent, programmers must *hide* their Easter eggs (which is why they're called Easter eggs). To discover one, you must, for example, press a certain combination of keys, click the mouse 128 times in one spot, or hold down F7 while singing the theme song from *Friends*.

The Mac has always been at the vanguard of Easter-egg coolness. Unfortunately, Apple's efforts to make Mac OS 8 rock-solid meant the demise of many beloved, but potentially destabilizing, System 7-era eggs. With Mac OS 8, classics such as the astounding 3-D Iguana flag, the Sound control panel's drugged-out shriek, and the immortal Programmer Breakout game were flung into the silicon dustbin.

Tonight, then, let us salute those who salute themselves. The egg carton, please!

### The Dirty Crayola Award

Fortunately, a few classic Mac Easter eggs survive in OS 8. For example, the scenic painting of Silicon Valley lives on. (Press the option key, and choose About The Finder from the Apple menu.) So does the QuickTime extension's slide show of California hairstyles (hold down ⌘-option-Q-T during start-up).

But OS 8 offers a few new goodies, too. For example, choose Preferences from the Edit menu, click on one of the label colors, and shift-click on the Crayons icon in the resulting dialog box.

Now, if you click on the crayon tips,



you'll see the programmers' names, one per crayon. Some of the crayons just say "Color Picker 2.1"; some show programmers' names; and a few, in the case of very shy programmers, show anagrams of names.

### The Carmen Sandiego Prize

Open the Date & Time control panel. Click on Set Time Zone. Up pops a list of 180 major world cities. No, make that 178 major cities and 2 obscure, statistically insignificant towns. There they sit, down among the L's: Lower Burrell,

Pennsylvania, and Lake Nebagamon, U.S.A. Can you say, "programmers' hometowns"?

Lest you think including these odd-ball cities' names is an accident, open the Map control panel. Type **low** into the Find box, and press return—there it is again! That darned Lower Burrell! And sure enough, typing **lake** uncovers—but of course—Lake Nebagamon, U.S.A.

Their folks must be so proud!

### The "Independence Day" Trophy

To qualify for this Eggy award, an Easter egg must be more than a couple of programmers' names in an About box. These coveted trophies demand multimedia . . . motion . . . action!

Take QuarkXPress, for example. Create a text or picture box, and then press ⌘-option-K, ⌘-option-shift-K, or ⌘-option-shift-delete, depending on your version of the program. Out walks Quark the Alien, antennae focused, making clomping footsteps as he invades your document. Taking careful aim with his ray gun, he proceeds to blast your box into oblivion with his radioactive death beam.

Well, I should hope so. After paying \$995, you'd *better* get a decent Easter egg.

### Garfield the Cat Special Citation

Three things made Adobe Photoshop famous: (1) a powerful set of image-processing tools, (2) a unified suite of color-management protocols, and (3) enough Easter eggs to make an omelette.

For example, choose Show Layers from the Window menu. (In Photoshop 3, it's in the Palettes submenu.) Now the Layers palette appears. While pressing the option key, choose Palette Options from the corner pop-up menu. Now *wel-*

*continues on page 169*

# It may not be your father's monitor, but it could be your grandson's.

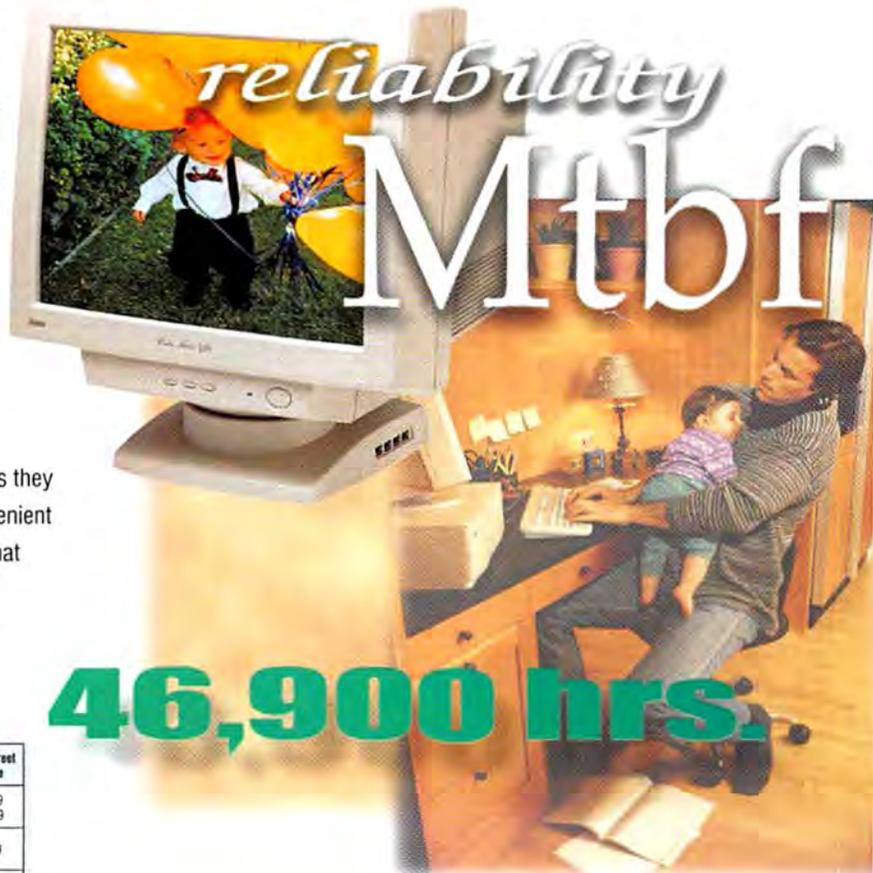
Our engineers take pride in their work. That is why they have designed our monitors with an increased bandwidth. This extra bandwidth means that even while running at their maximum resolution, our monitors are not being pushed to their limit. The result is components that run cooler and therefore last longer.

How much longer? Our VisionMaster 450, for example, has a Mean Time Before Failure (MTBF) of 46,900 hours. This equates to 23.4 years of life when used in normal business applications.\*\* So that monitor you just bought could very well be used to put your teenage son through college and his son through high school.

This philosophy of building high-quality, long-lasting products goes into everything we do. Take USB for example. Other manufacturers make their customers buy a new monitor if they want the latest technology (like USB) integrated into their monitors. (Perhaps this is because after three years they need a new monitor?) iiyama has designed a convenient and cost-effective upgrade solution — a USB hub that replaces the user's existing tilt/swivel stand.

It is due to innovations like these and a unique devotion to quality that makes iiyama monitors so reliable.

**VisionMaster 450 \$799\***



**46,900 hrs.**

Model/ Viewable Area	Dot Pitch/ CRT Type	Max. Horizontal Scan Rate	Max. Resolution	Est. Street Price
VisionMaster Pro 500 (19.5" VIS)	0.28mm/AG	110kHz	1800 x 1440 @ 74Hz	\$1379
VisionMaster 500 (19.5" VIS)	0.27mm/dp			\$1329
VisionMaster 450 (18.0" VIS)	0.26mm/ High Contrast	102kHz	1600 x 1200 @ 80Hz	\$799
VisionMaster Pro 17 (16.1" VIS)	0.25mm/AG	92kHz	1600 x 1200 @ 74Hz	\$649
VisionMaster 17 (16.1" VIS)	0.26mm/dp			86kHz

\*Monitor shown with optional USB hub, (\$130 ESP)

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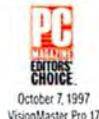
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\*\*8 hours a day/5 days a week/50 weeks a year. MTEF excludes CRT life, which may vary from model to model. Prices and specifications are valid as of 02/05/98. Estimated Street Price is shown, actual price may vary. Prices do not include shipping, handling and any applicable taxes. Specifications are subject to change without notice. As an Energy Star™ Partner, iiyama has determined that this product meets the Energy Star™ Guidelines for energy efficiency. For more information, please write us at 575 Anton Blvd., Suite 590, Costa Mesa, CA 92626. 800/594-7480, 714/437-5111; Fax: 714/437-5982. Home Page: www.iiyama.com



Circle 39 on reader service card



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