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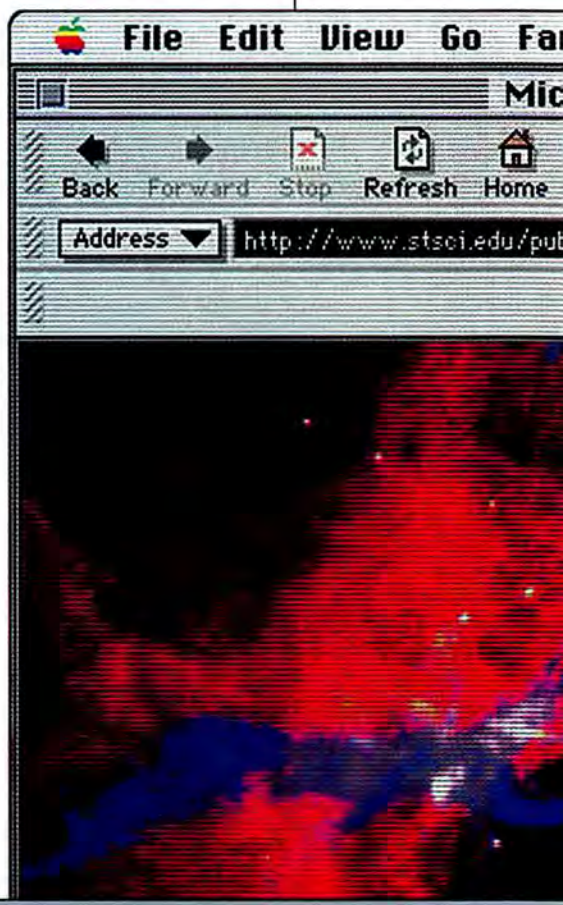

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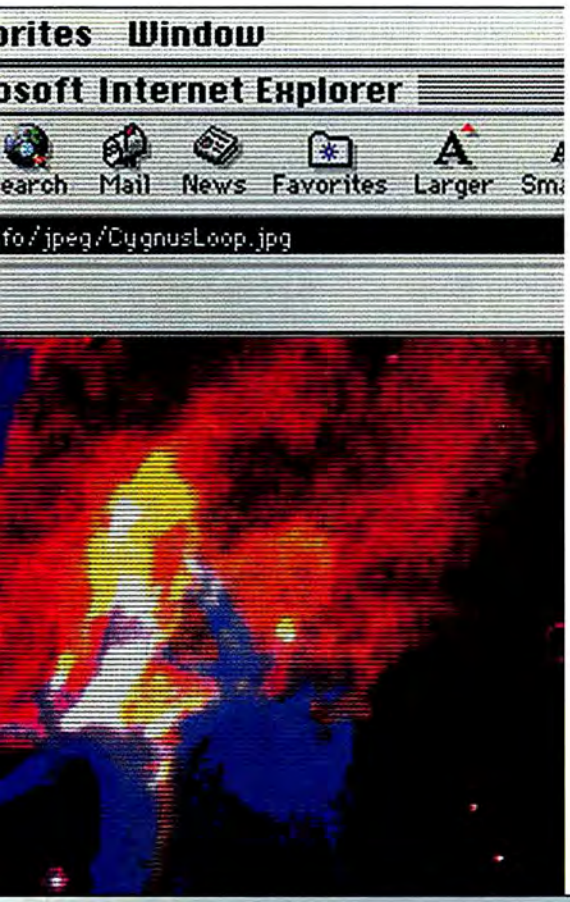

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CONTENTS

NEWS

PowerBook Clones Will Apple ever say yes? / **Apple's new Power Macintoshes** Rich industrial design, paltry speed boost. / **VirtualMac** Sneak peek at a Mac OS emulator for the BeOS. / **Between the Lines** Adobe's senior VP of marketing, Robert Roblin, strengthens commitment to Apple and Macintosh. / **First Looks** The BeOS, Pippin, and AOL 3.0 for Macintosh. / **Plus** The Geek Beat, The Off Beat, and the Macintosh Price Index. / **22**

REVIEWS

APS M•Power 604e200, M•Power 603e200, and **M•Power 603e160** APS enters the Mac-clone fray with three low-priced systems. / **30**

Fractal Design Expression 1.0.1 Fractal's vector-based drawing tool breaks new ground. / **32**

Epson PhotoPC 500, Olympus D-200L, and **Olympus D-300L** Next-generation digital cameras capture the moment with crisp images and realistic color. / **37**

MicroNet DataDock 7000 and **StreamLogic SledgeHammer•Pro FT** Fault-tolerant RAID with removable hard drives. / **38**

Radius ThunderPower 30/1920 Graphics accelerator supports the highest Mac resolution yet — 1,920 x 1,200 pixels. / **39**

ATI Xclaim VR Affordable accelerator boosts 2-D and 3-D graphics, QuickTime playback, and more. / **39**

OmniPage Pro 7.0 One-click OCR program still misses the mark. / **40**

VirusScan 2.0, Symantec AntiVirus for Macintosh (SAM) 4.5, and **Virex 5.68** Safe sex for the Mac means keeping your antivirus software up to date. / **41**

Canon BJC-4550, Epson Stylus Color 500, and **Hewlett-Packard DeskWriter 680C** Color printing anyone can afford. / **42**

4-Sight Fax 4.0 for Macintosh This fax-server hardware/software combo lets multiple users share one or more fax modems. / **45**

Aurorix, Berserk Effects, and **Studio Effects** Three After Effects plug-ins put your video or animation through everything from snowstorms to earthquakes. / **46**

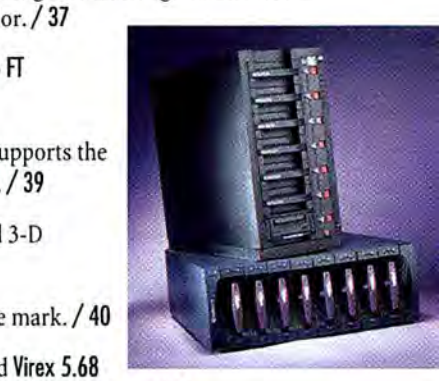
Franklin Quest Ascend 4.0 Poorly designed, buggy PIM does little to increase productivity. / **47**

GlobalTransfer When sending files modem-to-modem, GT can save lots of grief. / **47**

Momentum Power Port Juggler Plug four serial devices into one port. / **48**

FileGuard Remote 3.0 Network security based on a simple file-protection model. / **49**

Claris OfficeMail and **FirstClass 3.5** LAN-based e-mail systems cover different ends of the e-mail spectrum. / **50**



COLUMNS

Letters System 7 lives, user groups thrive, and the Internet prevails. / **13**

Pamela Pfiffner Apple marketing, another oxymoron. / **17**

Henry Bortman Intel Rhapsody. / **19**

Andy Ihnatko This may hurt a little. / **158**

How to Reach Us / 8

Product Index / 116

Advertiser Index / 120

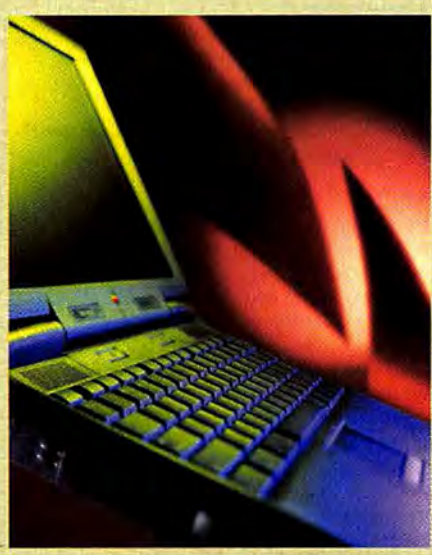
Marketplace / 129

On the cover / Apple's spring surprise: The PowerBook 3400 is the fastest portable, Mac or PC. **Cover photo** / Jim Karageorge

COVER STORY

ROCKETBOOK

APPLE'S NEW MAC PORTABLE BLASTS PAST THE COMPETITION — BE IT MAC OR WINTEL. BUT AT WHAT PRICE POWER?



MacUser LABS We kid you not. Apple's new state-of-the-art PCI Power Mac portable is simply the fastest portable on the planet — bar none. Sporting a 240-MHz processor and packed with every feature a frequent traveler could possibly want, this 7.4-pound baby is a mobile user's dream. 'Course, performance comes at a price . . . .
By Andrew Gore / 54

FEATURES

Apple's OS Double Feature

MacUser LABS The wraps are off Apple's new next-generation operating-system strategy. How — and when — will Apple integrate NeXT technology into your Mac's OS? How will it affect your favorite apps? We've got the inside scoop. **By Henry Bortman and Jeff Pittelkau / 63**

Host-It-Yourself Web Servers

MacUser LABS Running your own Web server isn't as hard as you may think. You can do it all with last year's Mac and a good server-software package. MacUser Labs tests eight such applications for server response, data throughput, and ease of administration.
By Jon Wiederspan / 68

High-Performance Graphics Accelerators

MacUser LABS We scrutinize eight high-performance 8- to 24-bit-color graphics accelerators and spill the beans regarding their speed and flexibility. **By Erik Gunther / 52**

DEPARTMENTS

DESKTOP MEDIA

Pressing Issues It's fast. It's filmless. It's customizable. So why wouldn't you go direct-to-press? / 77

Graphics How-To Use stylizing techniques and tools from Fractal Design Painter to create unique but recognizable portraits. / 80

Expert Tips A seven-step program for debugging PostScript files *before* you try to print them. / 82

NETWORKING

Going Mobile Take the office with you on the road with ARA and the Internet. / 85

Net.cetera Is AOL in danger of becoming extinct, or is it just evolving into a new Net-savvy life-form? / 91

HANDS ON

Bug Extermination Tips for squashing a new breed of bugs. / 93

Help Folder Bob and Chris answer all your questions. / 95

PERSONAL MAC

The Laid-Back Mac Let your Mac be your guide to a calmer, more centered self. / 155

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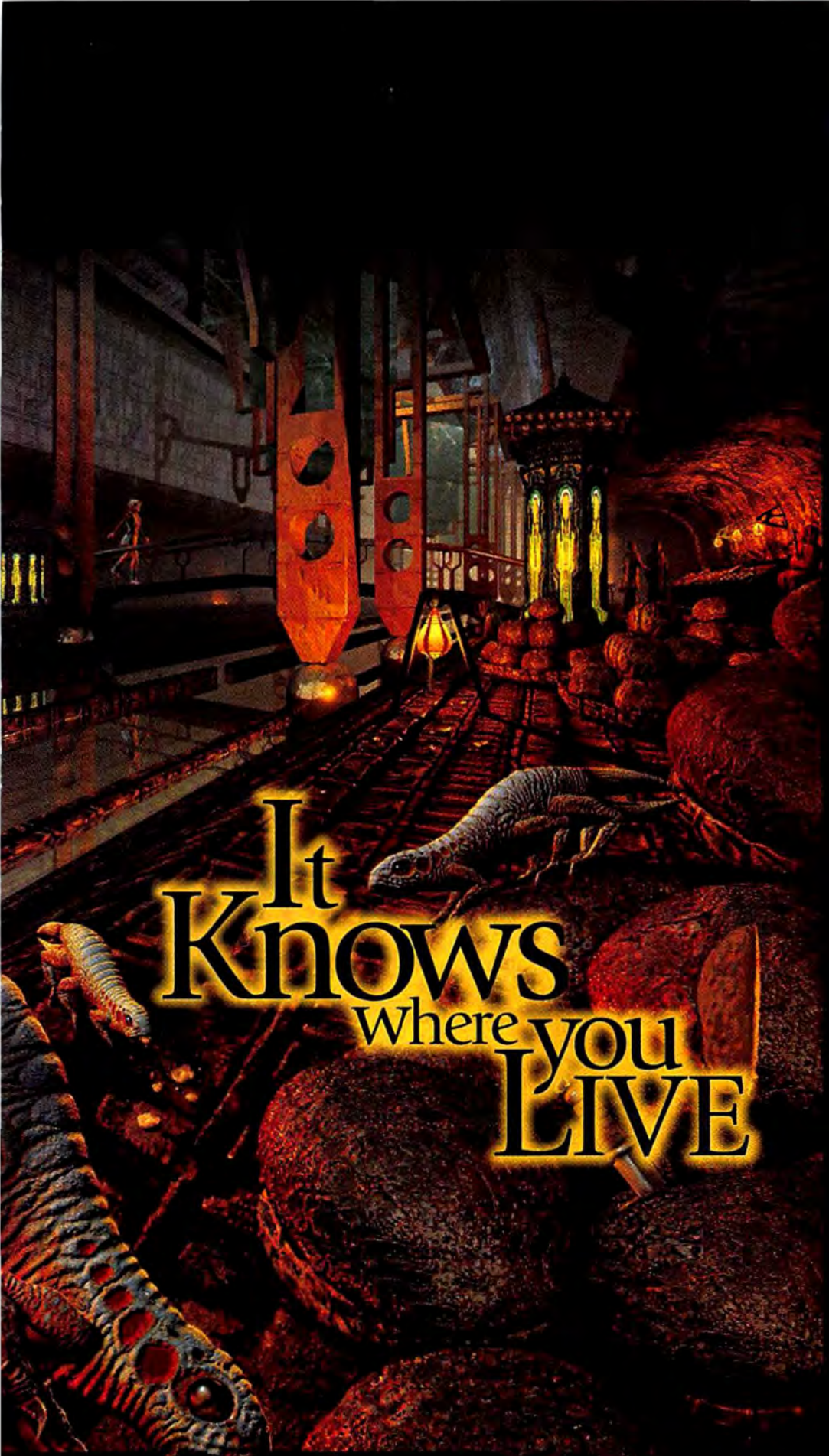

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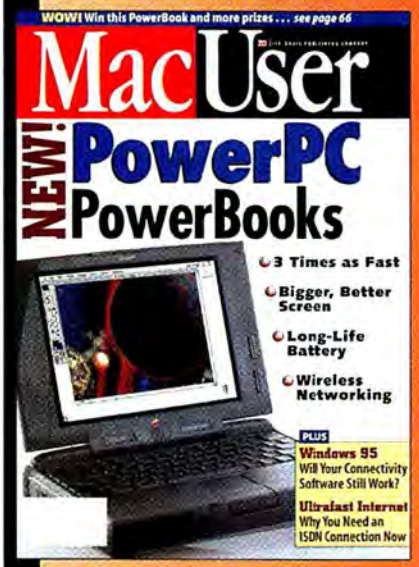

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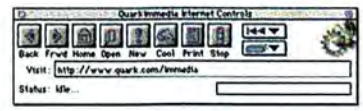

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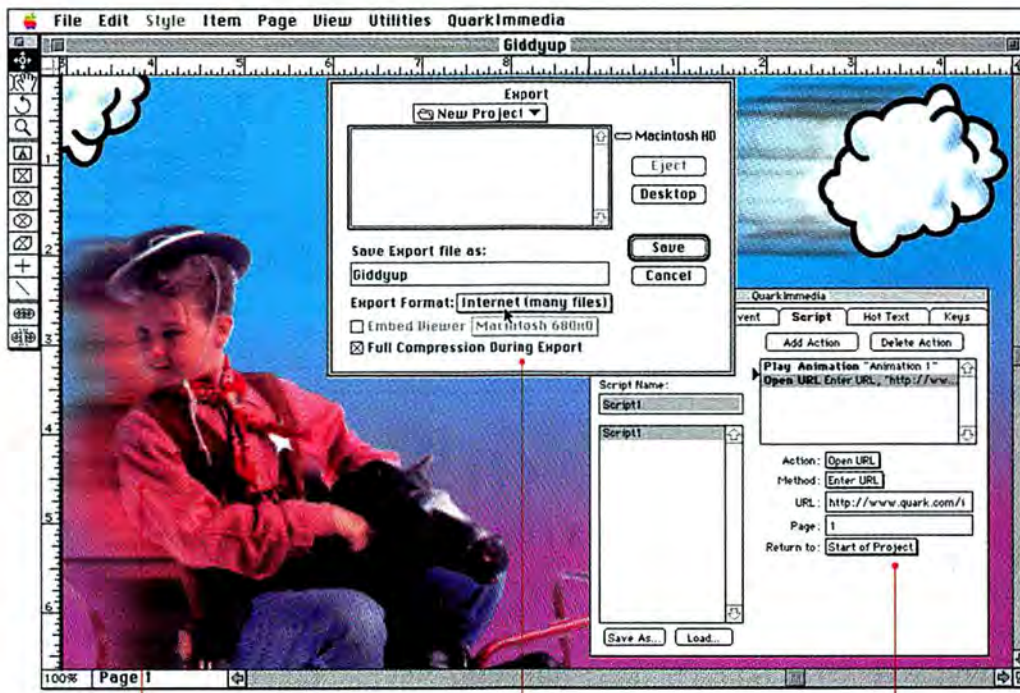

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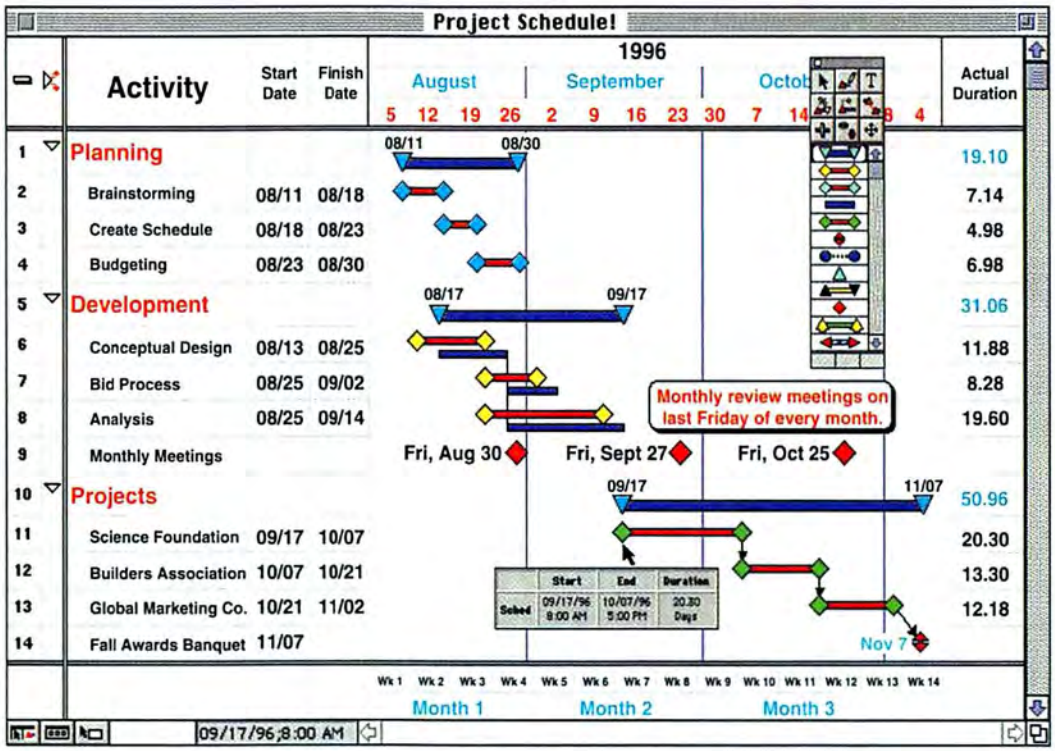

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LETTERS

7.6 Trombones in the Big Parade

YOU MISSED A FEW key facts ("The Spirit of 7.6," February '97, page 63). System 7.6 is *much* faster than any System 7.x configuration to date. I saw a massive speed improvement not only in Finder operations but also in my applications. It is also extraordinarily stable. Although it may not be a jazzy Copland-style OS, at least it delivers something Apple should have given us long ago: a stable OS that does its job without complaining too much.

John Peterson
via the Internet

TERRIFIC COVERAGE on 7.6. *MacUser* is the first place I've seen, including *MacWEEK*'s Web site, with coverage and analysis so good.

Thomas Seibold
thomas.seibold@qm.sprintcorp.com

Developing Relations

NOW THAT THE DUST has settled on the OS decision, I see doom ahead. Apple has chosen the NeXT OS; Power Computing is going ahead with the BeOS; and there's no telling what Motorola, UMAX, DayStar Digital, and the other clone manufacturers will do.

The trouble with this OS mania is the development of software for it all. Can we expect software developers to port their products not only for the current Mac OS but for the BeOS and the NeXT OS as well? I doubt it.

Jim Holowchak
Edmonton, AB, Canada

OUR BUSINESS used to be a NeXTstep developer. Hopefully it will be again. NeXTstep is a fully functional, stable, and deployed OS, and it runs *now*. It is based on a microkernel, which brings a level of hardware independence not seen in any other OS.

As a Mac developer, I'm excited about NeXTstep and the BeOS. Consequently, my next machine will be a Mac compatible instead of a Wintel box.

Samuel Kass
samkass@vtiscan.com

Gladiator Tidings

I WAS SHOCKED, amazed, astounded; in short, I felt the same thrill as when I first laid eyes on the original Mac ("Sound + Vision: The 20th-Anniversary Macintosh," February '97, page 56). The Spartacus exemplifies what personal computers are supposed to be: It is compact, has easy-to-access internal components, and offers support for every media format and networking protocol in the world.

Paul M. Jones
pjones@ciassist.com

THE $10K 20th-anniversary Spartacus sounds like a great machine, but if Apple wants to live to see its 25th anniversary, it had better start doing something for the millions of people who buy $2K computers.

Peter Jeffery
bobalu@iconn.net

Easily Impressed?

IN "BREAKING THE Speed Barrier" (February '97, page 26), you appear to be impressed by a 5-percent increase in speed. But I doubt that in double-blind usage tests, you could even *detect* such a minuscule difference. In general, it takes a 50-percent increase for the difference to be noticed by users.

Why not save your enthusiasm for genuinely useful improvements and call minor incremental improvements what they are?

Kirk Kerekes
redgate@tulsa.oklahoma.net

WRITE TO LETTERS

c/o MacUser
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Open Folder

The Mac community, like any rich and varied culture, constitutes a mosaic: a colorful blend of barons and bums, hackers and slackers, movers and shakers, dreamers and bellyachers. A homogeneous bunch we decidedly are not. But one thing unites us all, whether we're a "have" or a "have not," an insider or an outsider: We've all acquired a taste for the best the computing world has to offer. The following is a representative sampling of those who live for and long for all things Mac:

Rich Man. They say a man who has friends is a rich man, and David Adams has a good friend indeed: his Macintosh. Says David, "My Mac and I are family. We treat our Mac as one of us." Well, the topic of familial love between man and machine might be a bit outré for the pages of this magazine. It appears that — like many rich people past and present — David is a bit of an eccentric, but we appreciate the boosterism nonetheless.

Poor Man. Tom Larmon's father took his Mac away after Tom's progressive online tomfoolery (yes, intended) got to be too much. The younger Larmon has been lamenting his loss ever since: "I did lots of things I shouldn't have. And even though I've been a complete angel since, I still don't get to have my Mac back." Then, as his composure escaped him, Tom blurted out this message for the ages: "DON'T DEPRIVE A REAL MACINTOSH HACKER OF THE GREATEST TOOL OF ALL . . . HIS COMPUTER!"

Beggar Man. Leon "the Almsman" Brady's candor rivals that of most televangelists. Get this: "Have I got a deal for you! How does this sound? You people send me money and get absolutely nothing in return. No, I'm serious. If each *MacUser* reader could find it in their heart to send me a mere dollar — hey, even 50¢ — I could buy one dang-good Mac." Leon, who wrote to us from a DOS machine, said, "I don't want your pity; just your money."

Thief. Bill Gates. You stinker, Bill. At least Leon had the courtesy to ask.

ILLUSTRATION / MARGARET MCMULLIN

/ Our enthusiasm isn't based only on a 5-percent increase in speed relative to the 225-MHz PowerPC 604e chip. It's that this speed can be achieved by the lower-cost PowerPC 603e processor. Given the benefit of price and performance, that's a win-win situation. We stand by our enthusiasm. / HB

Downplayed Upgrade

REGARDING YOUR four-mouse review of the UMAX SuperMac C600/240 (February '97, page 31), I was struck by the fact that a significant feature of the C600 was misinterpreted as potentially "troublesome." The article points out that the C600 has an upgradable main processor but mistakenly cautions readers that UMAX has not followed the convention of other Macintosh-clone makers in adopting the "standard" processor-daughtercard slot.

There is no current standard for processor upgrades within the various 603e (Performa-class) product lines! Apple chose to attach its processors directly to the motherboard, thereby eliminating the possibility of processor upgrades. Another vendor, Motorola, followed suit.

We at UMAX were not satisfied with that inflexible solution, so we created our own — the PGA socket card. This solution is quickly gaining support from makers of other Mac OS machines, including Apple and Motorola. UMAX is proud to be the first to ship products using this "new standard."

Peter Mehring, General Manager
UMAX Computer

No Fan Mail for LAN Mail

WHAT A LOAD of baloney ("Is E-Mail Dead?" February '97, page 83)! I have never used a proprietary e-mail system that could compete with worldwide Internet e-mail with attachments. Universality is far and away more important than nitpicky little features that only a few insiders are able to share. Would you install a phone system that could reach only the people in your own city? Once upon a time, folks had to have multiple phones in order to stay in touch with all their contacts, but that approach went the way of proprietary LAN-mail systems.

Thomas E. Moore
via the Internet

Scanner Scatter

YOUR REVIEW OF flatbed scanners ("Low-Cost Color Scanners: Quality for Less," February '97, page 88) was a bit frustrating. You say a smart shopper should check whether the scanner of interest uses one pass or three passes, whether it has a removable lid, and what type of driver it uses. It would have been helpful if this information had been provided on the table summarizing the various tested units. Also, some vendors tout their use of cold cathode tubes; a sentence or two in the review discussing whether this is a significant factor might have been worthwhile.

Mark Rosenzweig
markr@aiche.org

Mac Stabber

TO MY UTMOST disappointment, I recently received a letter from Intuit stating that a new version of QuickBooks will be introduced for Windows but specifically not for the Mac. Am I going to be forced to switch over to a PC eventually because companies will cease developing programs for the Mac?

Marian Petrovic
Ramona, CA

/ Although Intuit has the right to run its business as it sees fit, its customers have the right to take their business elsewhere. At press time, Big Software and BestWare — makers of Big Business 2.0 and M.Y.O.B. 6.0, respectively — expected to have filters available soon that will import your QuickBooks' data (both products were Eddy Award nominees for 1996). / JB

Boris Ain't Badenov

REGARDING YOUR REVIEW of Boris Effects 2.0 for Adobe Premiere (January '97, page 52), it's not clear that you understand who our target audience is: desktop-video editors/producers/postproducers. These guys need easy, fast, high-end digital-video-editing moves such as titles, cubes, picture in picture, cropping, masking, and borders/shadows. Most video-editing software cannot produce the high-quality 3-D moves necessary for television, video, and film. Although video hardware is powerful and getting more so, Boris Effects fills a major gap by providing these effects in an easy-to-control way — by working *within* editing software. There is not one word about our documentation in the review, nor about our technical support — both are top-shelf.

Boris Effects is loved by 3,000 users of Data Translation's Media 100 and Adobe Premiere worldwide, and companies from CNN to MTV to NBC to Disney to NFL Films use Boris Effects with great results.

David Kagan
Artel Software

/ The documentation and support for Boris Effects are very good. The version we reviewed was for Premiere only (the Media 100 version is an excellent, almost necessary add-on for users of that system). But we maintain that, although Boris Effects is versatile and useful, the retail version of Adobe After Effects is a better value for the average Premiere user, despite the price difference. / DB and NM

Penny Wise and Pound Foolish

SPENCE CUTTING SAYS his school board chose PCs over Macs due to cost considerations (Letters, February '97, page 14). Too bad. We have two labs: one PC-based, one Mac-based. We made up the difference in price in the first year alone with the cost of a network administrator needed for the Wintel network.

Michael Kauzer
Walnut Creek, CA

BMUG's Shot

IT'S TOO BAD that the Boston Computer Society claims that user groups are obsolete because people can get everything they need on the Net ("Sad Mac," February '97, page 218).

Members and visitors still flock to BMUG (formerly the Berkeley Macintosh Users Group), which offers meetings; classes; the BMUG Helpline clinics; and, yes, a Web site (http://www.bmug.org/). BMUG serves an international population of over 12,000, helps members figure out which products and companies to support and which to avoid, and is helping place recycled computers in low-income households. Can the Internet do that?

As evangelists and guides, user groups can still provide invaluable services to users and, perhaps even more significantly, to Apple and the rest of the industry.

Bruce Linde
bruce_linde@bmug.org

Iron Sufficiency

THE INTERVIEW with Ellen Hancock ("Apple's Iron Lady of R&D," March '97, page 26) was excellent. It was the clearest exposition I've seen of Apple's technology position going forward. Keep up the good work.

George Galla
via the Internet

Corrections

StarNine has not announced any plans to port its WebStar Web server to the BeOS ("Plan Be," January '97, page 64).

The correct toll-free number for Assistive Technology ("PowerBook for the Disabled," February '97, page 24) is 800-793-9227.

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PAMELA PFIFFNER

In Your Dreams

I FIRST NOTICED IT on the side of a bus barreling through the streets of San Francisco: an ad showing a smiling child amid cutout leaf shapes that looked like the construction-paper projects I used to work on in kindergarten. It said, "Give your dreams a chance."

"What do you think of Apple's new brand slogan?" I asked my husband a few days later, as we drove to Costco.

"What? Where?" he responded, glancing up at the sky as if looking for Jeff Goldblum to come screaming down in an Area 51 flying saucer.

I gestured to a billboard standing guard over a tire shop.

He grunted. "How do you know it's Apple's?"

Pointing for emphasis, I replied, "See the small black logo in the lower right corner?"

He squinted. "I couldn't tell."

I know.

"Give your dreams a chance" was to be part of Apple's new marketing push, designed to replace the old saw "The power to be your best." This new ad campaign was a prime example of what's been plaguing Apple: an inability to articulate a compelling sales-oriented message.

What's wrong with this one?

First, I don't like the slogan. It seems desperate, pleading, as if the company has to beg its customers to believe in it. Visions of John and Yoko singing, "All we are saying/Is give Apple a chance," prance through my mind every time I think of that slogan.

Second, I find it contradictory. Apple, in recent public statements, has said that the NeXT acquisition will help Apple gain a foothold in the corporate enterprise market. Somehow I doubt that IS managers will make purchasing decisions based on whether or not Apple products allow employees to live out their dreams.

Third, I don't like the softness of the campaign's imagery — it seems wimpy, passive. Even the color scheme is subdued. And why, if you've got one of the ten best-recognized corporate logos on the planet, would you downplay it, leaching out the colors and hiding it in a corner? Considering Apple's continuing troubles, flaunting that little rainbow Apple seems to be in order, even if only to shout, "We're still here!"

The Power to Be Apple's Best

Marketing is a funny business. I snickered at Microsoft's "Where do you want to go today?" slogan when I first heard it. But through almost constant repetition, I've come to like it, even if I feel a bit brainwashed into it.

So, just for a reality check, I've been asking some of my colleagues what they think of Apple's new slogan. The reactions have ranged from a simple shake of the head to the more exclamatory "Blech" to the thoughtful "Well, I guess the company is trying to tell customers that Apple will let them unleash their creativity."

Fair enough, and it's appropriate that Apple's brand slogan appeal to the Mac's core creative audience. But the designers I asked about the ad didn't like it either.

Even a teacher I asked wasn't impressed: "The kids will like it, but as an educator, I'm more concerned about the stability of the software and the longevity of the platform. Choices are being made by accountants, not dreamers," she said.

That's the hard reality. Apple's customers have already bought into the dream. Now they want straight facts about why they should continue to do so. At a time when forceful, consistent messaging is paramount, Apple unveils another warm-and-fuzzy — and unfocused — campaign.

Better yet, Apple needs to shock people. The company needs a real in-your-face slogan, one that will get the attention of the larger community of computer users, most of whom have written Apple off.

I'm no marketing expert, so I won't go so far as to suggest a specific slogan. However, I do have a suggestion as to where Apple could go to brush up on its marketing acumen: Power Computing.

Here's a company that has totally usurped Apple's position as the counterculture of computing. Power's "Fighting back for Mac" ad campaign, which has been evolving over the last year, hit a new high at the expo with a banana-republic theme that stole the show. Not only was the booth done up to look like a guerrilla jungle outpost but Power employees also dressed in traditional junta-wear and drove around in rented Humvees. This is a textbook example of using every aspect of your company that comes into contact with the public to reinforce your message. And, hey — it's also a great message.

Apple desperately needs to restore some of its trademarked nonconformist image. Touchy-feely slogans are just not going to do it. Power's revolution campaign, although potentially offensive to some, has just the kind of attitude Apple should be projecting and offers just the kind of excitement the company should be building around its name.

Thankfully, Apple has gotten the message. By the time you read this, you'll be seeing a new, hard-hitting campaign that's focused on product, not image. That's very good news indeed. What's your take? Send me a message at pam@macuser.com.

ILLUSTRATION / JAMES YANG

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HENRY BORTMAN

Intel Inside

THE ACQUISITION OF NEXT SOFTWARE gives Apple an opportunity it would be foolish not to take: The opportunity to run its new OS on Intel processors.

You see, the new OS, Rhapsody, is going to be based on OpenStep. And OpenStep already runs on Intel chips. So with Rhapsody, Apple has a choice: It can maintain this support for Intel chips, or it can abandon it.

Abandon is a strong word. But I use it intentionally. You know all that talk about how NeXT offers Apple an entrée into the enterprise? Well guess what kind of computers those enterprise customers are using: Computers that have Pentium processors.

To be fair, Apple has stated unequivocally that it will continue to support these NeXT customers. But the definition of *support* is a bit fuzzy. Does it mean that Apple will keep a couple of phone lines open for OpenStep customers who have technical questions? Or does it mean that it will implement its new operating system, with its Mac-like interface and integrated Apple technologies, not only on PowerPC hardware but also on Intel PCs?

So far, Apple has been unwilling to commit to the latter proposition. It has hinted that such a thing would be technically feasible. However, no one has been willing to say that Apple will do it. In fact, during her postkeynote press conference at Macworld Expo, Apple Chief Technology Officer Ellen Hancock did everything she could to distance herself from Intel.

That's dumb.

Go for it, Ellen! Make the decision to implement the new operating system on Intel chips. Shout it from the rooftops. Give Microsoft something to worry about. Not just because Apple has a commitment to supporting NeXT's customers but also because letting Rhapsody run on Intel chips gives Apple a shot at selling the Mac experience to the massive installed base of Wintel-system users.

Apple spends too much time listening to its own dogma. For example, RISC chips — the PowerPC 603e and 604e — are faster than CISC chips — the Pentium and Pentium Pro. Ergo, PowerPC-based Macs can run software faster than Pentium-based Windows machines. Ergo, customers will switch from Wintel machines to the Mac because the Mac delivers greater speed.

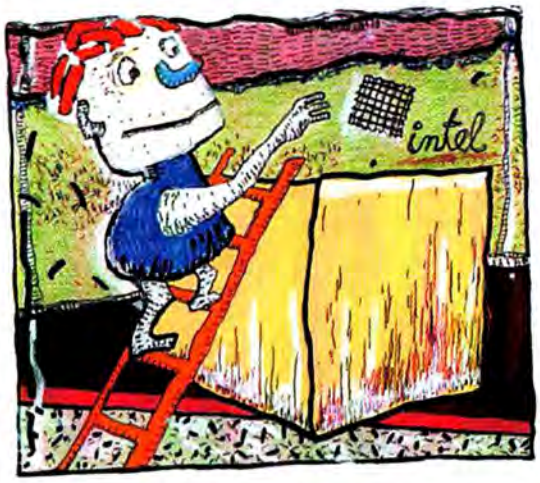


ILLUSTRATION / SACHA ECKES

Makes perfect sense. Except for one thing. It hasn't happened. One reason is that Pentium chips have pretty much kept pace with PowerPCs. But more important, Apple bet on the wrong race. It thought that greater processor power would make Macs an attractive alternative. Apparently it doesn't.

People buy Wintel systems because they can get software for them. Lots and lots of software. It used to be that many software developers brought out their applications first — or exclusively — for the Mac. Not anymore. Today most software comes out first for Windows machines. And some of it never makes it to the Mac.

Why? Because there are about nine times as many Wintel-machine customers to sell software to as there are Mac customers. Bean counters notice these things. If Apple wants Rhapsody to be more successful than the Mac OS, it needs to expand the customer base for Rhapsody applications. That customer base uses machines that have Intel chips.

A Box of a Different Color

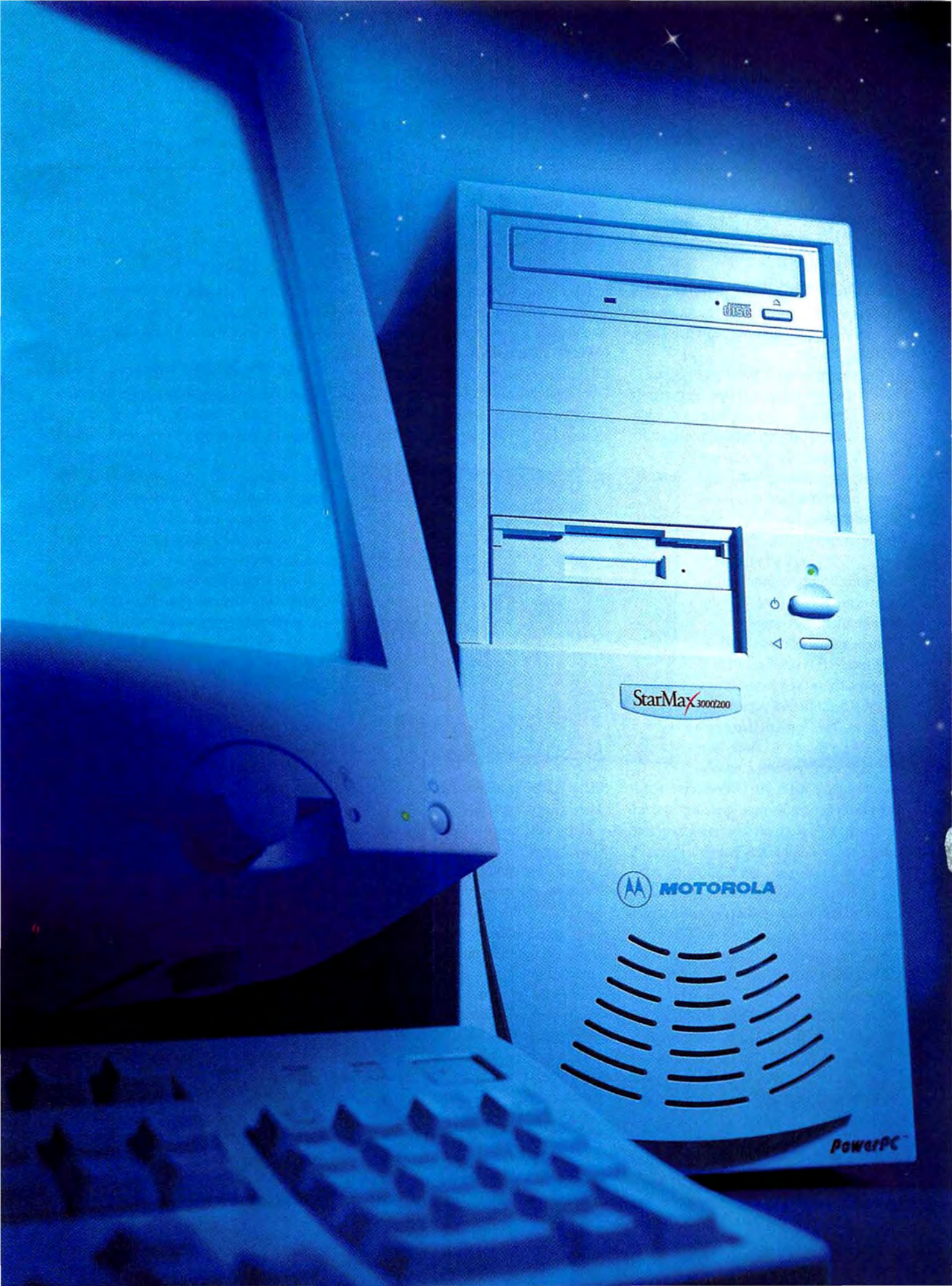
Rhapsody will support two types of applications: System 7-based applications and new OpenStep-based applications. System 7-based applications will run in Rhapsody's Mac OS-compatibility environment, known as Blue Box. New apps will run in the OpenStep-based environment, known as Yellow Box.

I can almost buy the argument that it would be too much work to retrofit Blue Box, with all that legacy Mac OS code, to run on CISC Intel chips. After all, Apple doesn't even plan to enable Rhapsody on 68040 processors.

However, it's not the Blue Box issue that concerns me most. It's Yellow Box, the new OpenStep environment. With very little engineering effort, Apple could support Yellow Box applications on Intel chips. OpenStep already runs on Intel chips. So do many of Apple's technologies. In other words, it's a no-brainer. But has Apple committed to doing it? Nope. "Our focus is on the PowerPC," it says.

Well, excuse me for being a bit dense, but why? This is a golden opportunity for Apple — do a little extra work, increase the potential market for Rhapsody software by millions of customers. Now that's a move that could encourage software developers to recommit to the Mac. It's true that if the Mac OS and Windows ran on the same hardware, developers might choose not to develop for the modern Mac OS at all. But, hey, I've got news for you — they'll choose to do that anyway if Rhapsody doesn't give them some substantial opportunity to innovate.

So how about it, Apple? Remember how long it took you to get around to licensing the Mac OS? Too long. Years too long. Don't make the same mistake with support for Intel chips. Go ahead: Take the plunge. Make a bold move. Bring out Rhapsody on Intel as well as PowerPC processors.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NEWS

FIRST LOOKS

Apple Debuts New Quartet

Four new Apple Power Macs introduce new features and enclosures, but speed increases disappoint.

APPLE EXECUTIVES may wax eloquent about revolutionary change on the operating-system front, but Power Mac planners are employing a different political metaphor: Stay the course. We took a look at beta versions of four about-to-be-released Power Macs — the 4400, 7300, 8600, and 9600 — and compared them with the Macs they replace.

To be sure, the new Power Macs making their way down the runway this winter have a new look. Three of the four systems (which supersede all currently shipping Power Macs) sport brand-new enclosures, and one employs a new logic-board design, but inside there isn't much we haven't seen before.

Of the four new Power Macs, the 9600 (and its identical twin, the 8600) feature a new, easy-to-access case design.

EASY-OPEN BOX

The Power Mac 8600 and 9600 models, which replace the 8500 and 9500 series, are the most visibly different of the new systems. Their configurations, however, are almost identical to those of their predecessors — although the 8600 is the first Mac with an internal Zip drive and the 9600 has a 4-GB hard drive and both include a 12x CD-ROM drive.

Both are housed in large tower enclosures, with a rectangular "hump" on top extending the full length of the box. The punch of a translucent green button removes the entire side panel of either machine, making its PCI slots immediately accessible. To add memory or drives, just turn the 8600 or 9600 on its side and lift the hinged housing that contains the drives and power supply.

Like the 9500 before it, the 9600 is intended to be a publishing machine: It comes in a one- or two-processor configuration and has a high-performance graphics card. Apple has abandoned the 9500's ATI graphics card in favor of an IMS TwinTurbo card with 4 MB of VRAM. The difference was immediately apparent when we ran the MacBench Publishing Disk test. The 9600's score, 350, beat that of the 9500 by a full 100 points.

Despite design and configuration improvements, the 8600 and 9600 also remind us that Apple still moves very slowly when it comes to implementing new processor technology. Both the 8600 and the 9600 employ a 200-MHz PowerPC 604e processor, just as the most recent 9500 does. The 200-MHz 8600 does improve on the 8500's 180-MHz PowerPC, but the beta system we tested achieved little speed benefit from the boost.

BUSINESS CONSOLIDATION

The Power Mac 7300 family (180- and 200-MHz PowerPC 604e versions) offers the most satisfying improvement. Although these systems lack any new design, inside or out, they offer the clearest performance distinction over their predecessors.

BETA! PREDICTABLY FAST / four new Macs match up with their predecessors

IMPROVED DESIGN — not improved performance — is the hallmark of three of the four new Apple Power Mac systems. Only the Power Mac 7300/200 system can boast of any great speed improvements over its predecessor, the Power Mac 7600/132.

MacBench 4.0 scores are relative to those of an Apple Power Macintosh 6100/60 with a 30-MHz memory bus, a 250-MB hard drive, 2 MB of built-in graphics RAM, and no L2 cache. This baseline system is assigned a score of 100 for all MacBench tests. All systems are tested as configured by vendors but with AppleTalk turned off and virtual memory turned on. We set the screen resolution to 640 x 480 pixels with a bit depth of 8 bits (256 colors).

	POWERPC/ CLOCK SPEED	MEMORY-BUS SPEED (MHZ)	MACBENCH 4.0 SCORES: PROCESSOR	FLOATING POINT	DISK	PUBLISHING DISK	GRAPHICS	LO-RES PUBLISHING GRAPHICS	CD-ROM
Apple Power Mac 9600/200	PowerPC 604e/200	50	394	393	362	350	506	470	366
Apple Power Mac 9500/200	PowerPC 604e/200	50	409	402	317	249	442	440	365
Apple Power Mac 8600/200	PowerPC 604e/200	50	354	402	245	224	435	399	358
Apple Power Mac 8500/180	PowerPC 604e/180	45	329	362	236	210	401	378	357
Apple Power Mac 7300/200	PowerPC 604e/200	50	352	403	184	184	422	405	347
Apple Power Mac 7600/132	PowerPC 604/132	44	251	243	212	207	261	261	327
Apple Power Mac 4400/200	PowerPC 603e/200	40	283	263	189	179	238	255	314
Motorola StarMax 3000/200 DT	PowerPC 603e/200	40	277	272	154	166	234	241	310
			SCORE BETTER	SCORE BETTER	SCORE BETTER	SCORE BETTER	SCORE BETTER	SCORE BETTER	SCORE BETTER

PHOTOGRAPHY / LON CLARK

The 200-MHz 7300 outran the now mothballed 7600/132 by a significant percentage on most of our MacBench tests. Its introduction also sounds the death knell for the PowerPC 601: The new 7300 replaces the last remaining 601-based Power Mac, the 7200/120. Each 7300 ships with a 12x CD-ROM drive and a 2-GB hard drive, improving on the 7600's 8x and 1.2-GB offerings.

THE LITTLEST POWER MAC

Apple has learned a little something from clone makers. In an attempt to provide a low-cost Power Mac, the company now offers the Power Mac 4400, a 200-MHz PowerPC 603e-based machine with a Tanzania logic board housed in a no-frills enclosure. Tanzania, which Apple designed but originally announced would not be used in Apple products, is a low-cost board that has been used by clone vendors Motorola, APS, and UMAX. Apple's 4400 includes a version with 2 PCI slots, 10BASE-T Ethernet, and a 256K Level 2 cache. The 4400 also includes an 8x CD-ROM drive and a 1.2-GB hard drive. In our beta tests, the new baby Power Mac beat out a similarly configured Motorola StarMax system, most notably on our Disk test. At $1,700, it's the most price-competitive of the four new Power Macs, beating out most Performas and many similar clones.

THE BOTTOM LINE

With the exception of the 4400, none of the new Power Macs breaks any price/performance barriers. Although the systems each sell for less than the machines they replace and offer more features (if not much speed improvement), the Apple systems maintain parity — at best — with most clone competitors. It is good to see that the folks in Cupertino still have some design tricks up their sleeves and that pricing, if not bargain-basement, is beginning to be more competitive. / *SHELLY BRISBIN*

PROS: Clever industrial design on some models. Zip drive (8600) and faster graphics card (9600) add value.
CONS: In most cases, faster processors provide insignificant speed increases. Pricing not particularly aggressive.
INFO: 9600, $4,000 and up; 8600, $3,300 and up; 7300, $2,300 to $2,800; 4400, $1,700. Apple: 800-776-2333 or 408-996-1010; http://www.apple.com/.

Mobile-Clone Limbo

Apple reluctance to license its portable designs stalls efforts.

IT'S BEEN JUST TWO YEARS since the first Mac OS licensees were announced. In that short time, Mac clones have proven to be one of the fastest-growing segments of the Mac market, with customers literally lining up to buy machines — desktop machines, that is. Thus far, no Mac OS licensee has shipped, or even announced, a Mac portable. However, this is not because of a lack of interest in building Mac notebooks.

"We very much would like to enter the portable space. We feel we have a lot to offer," said Mike Rosenfelt, product marketing manager for Power Computing. Rosenfelt cited two engineers on Power's staff with strong backgrounds in engineering portables: Paul Donovan, principal architect of the PowerBook Duo, and Bob Groppo, former manager of Intel's laptop-design team.

According to Dennis Schneider, vice president of Worldwide Marketing for Motorola Computer Group, his company is also eager to bring a Mac portable to market. "What we have are aspirations — strong and serious aspirations," he said.

However, both Power and Motorola are quick to point out that what's holding them back isn't a lack of initiative, it's Apple.

"Apple has been resistant to licensing portable technologies," Rosenfelt said.

Schneider said that Motorola has gone as high up as George Scalise, Apple's chief administrative officer and the executive in charge of licensing, but the answer has still been no. "I've screamed and yelled and ranted and raved at his position, but Scalise hasn't budged," said Schneider.

Why isn't Apple licensing Mac portables? Clone vendors opined that Apple isn't ready for the competition. With all the problems PowerBooks had in 1996 — problems that Apple is only now recovering from — the firm is simply protecting its bottom line by not licensing portables right now.

Apple, however, tells a different story. The company says the effort required to support portables is far greater than that required to support desktop designs and the company's licensing organization has already got its hands full with desktop-clone efforts. "It's a technical-support matter, not a sales-volume matter. When the PowerPC Platform ships, we will be as open to portable licensing as we are today for the desktop side," said Lamar Potts, vice president of operating systems and technology licensing at Apple. According to Potts, because there will be multiple sources for PPCP hardware designs, supporting licensees will be simple once PPCP arrives.

As to when that will be, Potts would say only that the Mac OS for PPCP will be available "before the second half of this year." However, getting the OS running on PPCP is only the first step. PPCP-based portable-hardware reference designs will also need to be created; to date, none has been announced.

"We don't know what the other Mac cloners may be doing today, but our technical expertise in PPCP and our expertise in manufacturing notebooks in Taiwan will allow us to play a significant role in PPCP-based Mac portables in '98," said Bruce Berkoff, director of product marketing for UMAX Computer. / *ANDREW GORE AND RIK MYSLEWSKI*

FUTURE TECH

Mac Running on Be Running on Mac

THERE'S A GOOD CHANCE the BeOS will let you run System 7 applications months before Apple's NeXTstep-based OS does. Be has demonstrated a Mac OS emulator, tentatively dubbed VirtualMac, running on the BeOS for Power Macintosh. Although the emulator, the brainchild of fredlabs, of San Francisco, is still under development and many OS features are not yet implemented, it already contains a working Finder and runs several popular Macintosh applications, including Microsoft Word, Microsoft Excel, and ClarisWorks.

VirtualMac runs as a BeOS application, creating a Macintosh environment — including a Mac desktop, menu bar, disk icons, and Trash — within a BeOS window. The final version of the product may instead use the BeOS' Workspace feature, which lets users set up multiple independent desktop environments, to make the Mac OS seem to take over the entire screen of the BeOS-based system. However, Mac applications that run within the VirtualMac environment cannot take advantage of the modern features of the BeOS, such as protected memory. As a result, if an application running in the VirtualMac environment crashes, the entire environment will most likely need to be restarted.

fredlabs expects to finish VirtualMac by mid-1997; its release will likely come no later than Be's planned release of version 1.0 of the BeOS. However, VirtualMac may never fully implement the Mac OS but rather include just enough OS compatibility to enable users to run basic productivity apps and print documents — the types of tasks that don't require features such as QuickTime and QuickDraw 3D. If, however, customers request specific Mac OS features, fredlabs said it will consider implementing them. / *HENRY BORTMAN*

NEW & NOTABLE

ObjectDancer 1.0. Create animation for the Web and CD-ROMs using images, sound, video, and type with this object-oriented authoring tool that exports GIF89, QuickTime, and Java files. $445. PaceWorks: 415-261-6180; http://www.paceworks.com/.

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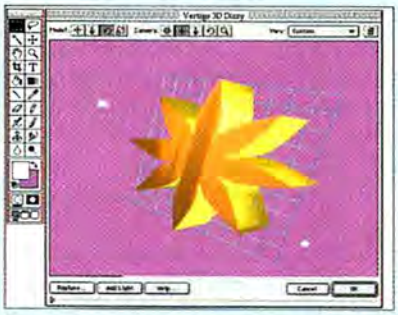


Deluxe. $88. Vertigo: 888-483-7844 or 604-684-2113; http://www.vertigo.bc.ca/.

VectorTools 2.0. This renamed upgrade for DrawTools 1.0 is a collection of productivity helpers for vector-based graphics creation in Adobe Illustrator and Macromedia FreeHand. $99.95; upgrade, $50. Extensis: 800-796-9798 or 503-274-2020; http://www.extensis.com/.

Scitex DveousFX. You can create professional 3-D digital-video effects such as page turns, warps, and more with no rendering time, using this PCI-based effects board for Scitex's MicroSphere video-editing system. $5,500. Scitex: 415-599-3183; http://www.scitexdv.com/.

Truevision Targa 2000 SDX. Based on the dual-MJPEG-codec Targa 2000 RTX, this digital-video-editing system supports serial digital interface (SDI) video and AES/EBU digital-audio protocols. $12,000. Truevision: 800-522-8783 or 408-562-4200; http://www.truevision.com/.

GoLive CyberStudio. This exceptionally powerful HTML-based, WYSIWYG Web-page-authoring software lets you preview Java applets and multimedia elements without switching to a browser. Create frames, tables, and more in a drag-and-drop environment. $349. GoLive Systems: 800-554-6638 or 415-463-1580; http://www.golive.com/.

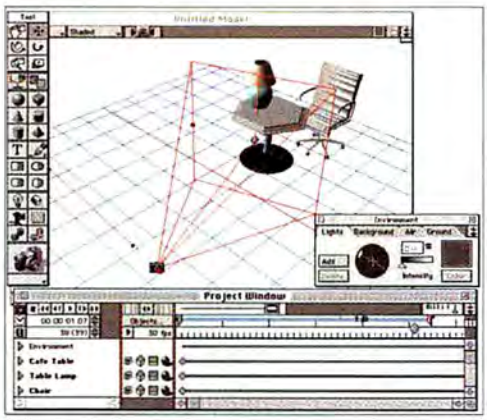
IMS TurboTV. Watch TV in a scalable window on your desktop while doing other computer tasks, with this PCI TV-tuner card. It receives up to 125 channels and captures video to your hard disk. $169. Integrated Micro Solutions: 888-467-8282 or 408-369-8282; http://www.integratedmicro.com/. / *BROOKE C. WHEELER*

FIRST LOOKS

Strata Studio Pro 2.0:

Worth the wait.

IT'S LAGGING BEHIND SCHEDULE, but it still looks promising: the long-awaited upgrade to Strata's 3-D-modeling, -rendering, and -animation software. Studio Pro's interface changes include new tabbed palettes that relieve you from endless modal dialog boxes. The Project window gets the biggest change, with models now displayed in a Finder-like environment and attributes shown hierarchically below each model name. Best of all, each property can now be animated independently. And because Studio Pro 2.0 is built around Apple's QuickDraw 3D 1.5, you manipulate shaded renderings in the document window instead of using wire frames or bounding boxes.



Strata Studio Pro 2.0's new interface with tabbed tool palettes relieves some, but not all, of the old dialog-box burnout.

The best modeling improvement is that separate environments are no longer needed for lathing and extruding; Studio Pro 2.0 lets you do both in the main document window. New modeling tools include Skin ("loft"), Boolean, and Extrude Along Path ("sweep"). All support polygonal and Bézier editing geometries and use Macintosh Drag and Drop to quickly define operations. For free-form modeling, vertex-level editing controls let you easily deform an object by dragging vertices. One drawback: The Skin and Extrude Along Path tools don't let you interactively edit profiles.

New animation controls include velocity graphs for precise control over an object's acceleration and deceleration. Another bonus is independent control of the camera and its reference point.

Lighting features get a boost with volumetric effects such as haze, fog, and mist and excellent controls for positioning and pointing lights. The new Scanline rendering option can create ray-traced quality in substantially less time. Broadcast professionals will appreciate version 2.0's field-rendering and motion-blur features, essential for creating broadcast-quality animations.

Unfortunately, our beta didn't include all the special effects and animation plug-ins promised with the 2.0 release; we're particularly eager to see the promised inverse-kinematics extension. / *BEN LONG*

PROS: More intuitive interface. Easier modeling. Great lighting controls.
CONS: Still a little too dialog-box-heavy. Can't edit profiles that have been "skinned" or "swept."
INFO: $950; upgrade, $295. Strata: 800-678-7282 or 801-628-5218; http://www.strata3d.com/.

BETWEEN THE LINES / *BY ANDREW GORE*

Adobe Top Brass Committed to the Mac

ADOBE IS THE SINGLE LARGEST vendor of software for the Mac OS. It is said that where Adobe Systems goes, so goes the Macintosh. However, in recent months, with its rush toward Windows, some have begun to question Adobe's commitment to the Mac platform. I recently sat down with Robert Roblin, Adobe's senior vice president of marketing, to get his take on the current state of the Mac market and Adobe's future in it.

Robert Roblin

AG. Is Adobe's commitment to the Mac wavering?

RR. Over the last 12 months, we've taken each of our flagship Mac products and created Windows 95 and NT versions. Anytime you make that kind of change, it takes attention and resources. However, what was equally important to us in doing Windows was making sure we didn't hurt the Mac versions of our products.

I think it's clear from our recent product releases that the Macintosh is a platform we're completely and firmly committed to, because — just as IDC (International Data Corp.) recently reported — Adobe has more Macintosh customers than any other

Apple QuickTake 200:
A small step, but in the right direction.

EXPLOSIVE GROWTH AND HIGH HOPES characterize the consumer digital-camera market. Unfortunately, no low-cost camera we've tested — with the exception of the Olympus D200-L — has produced image quality worthy of all the excitement. Apple's latest offering in its pioneering QuickTake line, the soon-to-be-released QuickTake 200, is no exception.

Although the preproduction QuickTake 200 that we looked at proved to be convenient and feature-rich and although its easy-to-use software provides solid entry-level image processing, the QuickTake 200 is a disappointment — even at its low price of $599. Rather than the breakthrough in image quality we had hoped for in a second-generation product, the QuickTake 200 offers only modest improvement over its predecessors. Its 640-x-480-pixel images are universally "soft" and detail-free. Only under near-ideal lighting conditions is it able to capture images substantially free from blurs, flares, and artifacts — although, to be fair, its glaring image highlights don't exhibit the annoying "rainbow" effect found in images from many other low-cost digital cameras.

The compact QuickTake 200's mediocre image quality is especially disappointing in light of the camera's strengths. Among its most attractive features are its bright LCD panel, its snap-on optical viewfinder, and its ability to store between 20 and 30 images on a removable postage-stamp-sized SmartMedia card (2 MB, $89; 4 MB, $130). Image downloading is a simple process, aided by the intuitive, icon-driven Camera Access utility, which provides quick image preview and image-by-image or all-at-once downloading. Any PICT image can also be uploaded to the QuickTake 200, making the camera — thanks to its NTSC-out port — an exceptionally portable presentation device.

PHOTOGRAPHY / MICHAEL FALCONER

PROS: Inexpensive SmartMedia removable storage. Good software.
CONS: Soft, imprecise image quality.
INFO: $599. Apple Computer: 800-776-2333 or 408-996-1010; http://www.apple.com/.

Even the far-from-finished version of the Camera Access utility we looked at impressed us with its consumer-level convenience, including its solid implementations of color-balance and brightness/contrast controls and its image sharpening, zooming, rotation, cropping, and resizing — all designed to improve the quality of the QuickTake 200's images. Too bad the camera provides such mediocre images to work with. / *RIK MYSLEWSKI*

IN BRIEF

QuickDraw GX Fix

THE RX FOR GX appears to be the amputation of its problematic printing and font mangling. Apple announced the separation of GX's graphics engine from its printing architecture last September. Now, new versions of Lari Software's free Web-graphics program, LightningDraw Lite; SoftPress Systems' page-layout application, UniQorn (now at half its previous price); and Pacework's animation application, ObjectDancer, allow you to create GX-based media for viewing on-screen after installing the scaled-down GX extension. / *SCHOLLE SAWYER*

Clones on the March

MAC SALES MAY have been disappointing of late, but Mac *plus* clone sales for the last three months of 1996 were 9 percent higher than those of the previous quarter. Power Computing has announced that in its first year, it sold more units than Compaq, Dell, and Gateway did in their first years — *combined*. Motorola claims to have shipped a full 40,000 units in the first six weeks of the StarMax line, and a UMAX spokesperson says that "tens of thousands" of its systems are happily humming away on users' desktops. / *RIK MYSLEWSKI*

PowerBook Boost

SINCE WE COMPLAINED about the PowerBook 1400's mediocre speed (see "Road Test: The Apple PowerBook 1400," December '96, page 70), it's only fair that we now promptly inform you of Apple's new, faster version, with a 133-MHz PowerPC 603e and a 128K L2 cache. Our MacBench 4.0 testing showed that it did 18 percent better on the processor test and 35 percent better on the floating-point test than its 117-MHz, no-cache predecessor. / *RIK MYSLEWSKI*

software developer on earth.

AG. Do you see Adobe continuing to drive innovation from the Macintosh platform?

RR. Most definitely. I think if you look at Adobe's history, whenever Apple has put something new into its platform, an Adobe product has exploited it.

AG. How do you feel about Apple's new OS strategy, now that the company has announced one?

RR. Apple's having made a decision was the first real positive sign. We want to know how to make our products better on the Macintosh. But where is Apple going to take the Mac? We need to know that if we're going to create new products.

AG. So, will Adobe be the first with the most on Apple's new OS, Rhapsody? Or is that too big a risk?

RR. [laughs] When people ask whether doing products for Rhapsody is too risky, I think the Adobe answer is that it's too risky not to do our products on Rhapsody.

AG. What do you think of the NeXT technology?

RR. First, we appreciate the fact that it offers an environment that is rich with things such as threading. With threading, we can begin to distribute work so that users can be more productive.

I think the other part that really excites us is that one of NeXT's great hallmarks is rapid application development. And, of course, the fact that Display PostScript, which is an Adobe technology, is part of the NeXT environment is exciting.

AG. Why do you think Apple decided to abandon QuickDraw in favor of Display PostScript?

RR. One thing Adobe has tried to create is a common imaging model for screen and printer so that you know what's on the screen is what you're going to see on your printer. In today's world of the Internet, that need for consistency is even greater. Display PostScript unifies the computer-to-print environment, to not only improve the viewing and printing process for conventional documents but also to change the whole Web experience.

AG. Could you summarize Adobe's feelings about the Mac market as a whole?

RR. We need to work together with Apple to grow this market. We've got to deliver returns to our stockholders, and we've got to make sure we keep our customers in place. We don't want our customers to think about switching platforms. We want them to be Mac customers for a long, long time. So we want Apple to succeed, and we're going to work with Apple to try to make it a success.

[*For the unabridged version of this interview, go to http://www.macuser.com/onlinecol/roblin.html. — Ed.*]

NEW & NOTABLE

Audiotracer 1.0. Create custom audio CDs by copying single audio tracks directly onto recordable CDs via Audiotracer's simple, drag-and-drop interface. Asynchronous data transfer and hard-disk caching reduce the risk of disc-copy failure. $99. Optical Media: 800-347-2664 or 408-376-3511; http://www.microtest.com/.

Sony PRD-650 Discman. This lightweight, portable CD-ROM drive for desktop or laptop Macs provides a 6x transfer rate and uses only four AAA batteries or an AC adapter. $400. Sony: 800-352-7669 or 408-432-1600; http://www.sony.com/technology.

SoftBoard System 423. Try interactive conferencing with this 800-x-600-pixel, 58.5-inch rear-projection system, which uses an infrared pen and PictureTalk software to enable remote desktop conferencing. $27,500. SoftBoard: 800-334-4922 or 503-620-4000; http://www.softboard.com/.

InterPrint 1.0. This utility enables cross-platform printing over the Internet, using SMTP or LPR/LPD. It sends print jobs as e-mail attachments and supports multiple file types. Personal, $39; corporate, $995. Zenographics: 800-366-7494 or 714-851-6352; http://www.zeno.com/.

▲ **DesignWorkshop 1.5.** The new features of this CAD/architectural-design-software upgrade include texture mapping; Apple QuickDraw 3D support; and more rendering capabilities, including Phong shading. $595; upgrade, $198. Artifice: 800-203-8324 or 541-345-7421; http://www.artifice.com/.

Virtual Home Space Builder 2.0. Create interactive 3-D/multimedia Web pages with this VRML 2.0 authoring software. VHSB home pages can be viewed with standard VRML 2.0 plug-ins. Download, $29.95; CD-ROM, $49.95. ParaGraph International: 800-810-0055 or 408-364-7700; http://www.paragraph.com/.

WebCollage 1.0. Automate Web-graphics updating with Apple-events scripting. This integrated drawing program lets you design templates, and an assembly module updates GIF and JPEG files according to your preset schedule. $250. Pensée: 707-875-9452; http://www.webcollage.com/. / *BROOKE C. WHEELER*

FIRST LOOKS

BeOS: Still the only Mac OS alternative.

BE MAY HAVE LOST the competition with NeXT Software to provide Apple with a modern operating system, but the BeOS for Power Macintosh itself is alive and well. It still has a dedicated developer community, and it remains the only viable alternative to the aging Mac OS 7.x — at least until Apple can cobble together a Mac OS/NeXTstep hybrid.

You can install the BeOS and the Mac OS on separate hard-disk partitions and choose which one you want to run at startup time.

Scheduled to be available early in '97 (pricing is not yet set), the BeOS Preview Release gives you all you need to run the BeOS on most current Mac OS-compatible Power-PC systems. Power Computing plans to bundle the initial release with some of its systems.

PROS: Memory protection. Object-oriented design. Preemptive multitasking. Fast.
CONS: No compelling applications — yet. No serial-port or floppy-drive support — yet.
INFO: Price not yet set. Be: 415-462-4100; http://www.be.com/.

The prerelease version we tested supports a limited set of the newest Power Macs and Mac OS-compatibles. These machines include Power Computing's PowerCenter, PowerTower, PowerTower Pro, and PowerWave systems; UMAX's SuperMac S900 series; and Apple's Power Mac 7600, 8500, and 9500 lines. Support for additional systems is being added — see Be's Web site for the latest compatibility list. (Be says that it is likely to provide support for 601-based PCI systems, but

Microsoft FrontPage:

MICROSOFT'S LATEST TARGET is Web publishing. We took a look at a beta version of its latest weapon, FrontPage 1.0 for the Macintosh, a Power Mac-only WYSIWYG HTML editor that has extensive Web-site-management features and an interface straight out of the Microsoft design book.

FrontPage 1.0 actually comprises two applications that have separate functions: FrontPage Editor is a WYSIWYG Web authoring tool that tries to act like Adobe PageMill but that looks like Word's long-lost identical cousin; FrontPage Explorer is a site-management tool that lets you build and modify Web-site structures.

FrontPage Editor supports most commonly used HTML tags, including tables, frames, forms, fonts, colored text, varied text sizes, background images, image-map creation, and embedded plug-in objects. Using FrontPage to open an HTML page created in another HTML editor — or even written in raw HTML code in a text editor — is an impressive experience: This is the first WYSIWYG Web program we've seen that can handle just about every HTML tag. And FrontPage offers one amazing feature we've never seen in a WYSIWYG tool before: If your document includes embedded images stored on a remote Web server, FrontPage can automatically download those images over the Web and display them in place, so you know exactly how the page is supposed to look.

PROS: Site-management features. Support for all major HTML tags. Interface consistent with that of Microsoft Office applications.
CONS: Slow. Dialog-box-laden interface is often an impediment to speedy work. Interface consistent with that of Microsoft Office applications.
INFO: $149. Microsoft: 800-426-9400 or 206-882-8080; http://www.microsoft.com/frontpage/.

But although FrontPage covers all the bases in terms of features, its interface is one only a die-hard Microsoft fan could love. You specify every possible HTML preference via a dialog box, which seems like a much slower way to work than the floating-palette approach taken by most other Web-authoring-tool developers. We also found the beta version of FrontPage we tested to be very slow moving — believe it or not, it was even slower than Word 6. Microsoft claims that the product will be appreciably faster when the final version ships this spring; we hope so.

FrontPage Explorer, the site-management component of FrontPage, offers many powerful site-management features no other graphical Web authoring tool offers. In Explorer, you can move

it has no plans to do so for the NuBus-based Power Mac 6100, 7100, and 8100.)

To install the BeOS, you need a whopping 150 MB of hard-disk space, although you can use a partition on a disk that also contains a Mac OS partition, thus creating a dual-boot system — we did just that on an Apple Power Mac 8500/180. The BeOS works only with SCSI hard drives, although Be cautions that there are stability problems with IBM's Ultrastar ES model 32160 drive.

Installation is straightforward, albeit time-consuming. We repartitioned the Power Mac's internal disk, using FWB Software's Hard Disk ToolKit, as recommended by Be. We then ran the BeOS installer utility from the supplied CD-ROM. Among other things, the utility installs an extension that lets you select which OS to run at boot time. We restarted the Mac, launching the BeOS, and the installation completed by copying files from the Be CD-ROM to the BeOS partition. The entire process took about an hour.

As we reported in our January '97 issue (see "Plan Be," page 64), the BeOS is both fast and feature-rich. However, a lot of hardware features Mac users take for granted don't work yet. Mac serial ports, for example, aren't enabled in this release, so you can't connect to the Internet — or anything else — via modem. You can connect via Ethernet, however. Sound control is limited to the basics. Also, the Power Mac 8500's built-in graphics system could display only 8-bit color. Be says that it plans to offer support for full 32-bit-color graphics over time — it had better do so, and soon, if the BeOS is to attract developers of DTP and graphics software.

Most annoying is that the Mac floppy drive isn't yet supported, so simple file exchange with other Mac OS systems is limited to FTP file transfers over Ethernet. You can exchange files between Mac OS and BeOS partitions on the same hard disk, however, with the supplied utility BeOS File System Tool — it uses a crude but simple command-line interface, not a Mac-like drag-and-drop system.

Be's hardware, the BeBox, comes with a two-button mouse (the BeOS supports up to three mouse buttons). The Mac doesn't. To get around this limitation, Be has implemented a couple of alternatives to the second mouse button, which activates context-sensitive pop-up menus: Holding down the Command and Option keys while clicking the mouse or clicking and holding for about a second brings up these menus.

The BeOS for Power Macintosh gives Mac users the opportunity to use a powerful new operating system on their existing hardware — even on a single-processor Mac box, the BeOS is quite snappy. The BeBox is a fun machine, but not everyone needs its developer-oriented GeekPort or its dual PowerPC 603e microprocessors. And those dancing green lights may be cute, but they're certainly not necessary. By running the BeOS on a similarly priced Mac OS-compatible, you can switch between the modern, powerful OS and the old familiar Mac OS, so you can run all that software you can't run on a BeBox — that is, until those feisty Be developers get around to shipping versions for the BeOS. / JEFF PITTELKAU

BeHive

Buzz Into the BeHive Get all the latest Be news, plus tips on how to set up the BeOS on your Mac, on ZD Net's new BeHive Web site, at http://www.behive.com/.

Word for the World Wide Web.

FrontPage Editor is a WYSIWYG Web authoring tool that bears more than a passing resemblance to Microsoft Word.

files around in your Web hierarchy, and all the hyperlinks in your site automatically update to point to the files' new locations. You can also see all the external and internal links that exist on your site and modify them if necessary. Once you've finished creating or updating your site, FrontPage can automatically make it live by uploading it to a remote Web server via FTP.

Microsoft provides two types of assistance in FrontPage: Wizards and WebBots. Wizards — which behave a lot like the Wizards in Word — use a series of dialog boxes to walk you through the creation of a site structure or a Web page. More interesting are WebBots, which perform actions that would usually require knowledge of CGI scripting. As much potential as WebBots have, however, they rely on server-based extensions, and Microsoft currently doesn't provide that functionality for Mac-based servers. So if your Web site is hosted on a Mac, you can't use WebBots — although Microsoft says that if enough people request that WebBots work with Mac servers, it will consider fixing this limitation. Call Microsoft.

For dyed-in-the-wool Web authors, FrontPage may not be an attractive option, but for people who spend all their time working with Microsoft Office, it's a feature-rich Web editor that carries the face of an old friend. / JASON SNELL

The Geek Beat

NEXTSTEP. Altura Software, whose Mac2Win tools help developers port applications to "that other platform," plans a similar tool for Mac coders looking to take the NeXT step. No release date or pricing has been announced. 408-655-8005; http://www.altura.com/.

FORTRAN. LS Fortran for CodeWarrior, from Fortner Research, gives Metrowerks CodeWarrior developers a FORTRAN compiler. FORTRAN routines can be mixed with C, C++, and Pascal software, such as the PowerTap MP library. $595. 800-252-6479 or 703-478-0181; http://www.fortner.com/.

WEB TOOLS. OMNIS Web RAD (Rapid Application Development) combines Blyth Software's OMNIS client/server-application-development environment with the company's new OMNIS Web Enabler SDK. The package enables developers to create Web-accessible database applications. Web RAD costs $990 per developer per operating system. OMNIS Enterprise Web RAD, which includes Web Enabler SDK, Version Control, and Change Management, is priced at $3,490 per developer for all operating systems. 415-571-0222; http://www.blyth.com/.

Phantom 2.0, from Maxum Development, is an upgrade to the company's Macintosh-based search-engine software. Version 2.0 can be administered from a Web browser and adds controls for fine-tuning the Web crawlers you create. $395. 630-830-1113; http://www.maxum.com/Phantom. / SHELLY BRISBIN

NEW & NOTABLE

Kodak DC25. A new color LCD and built-in flash make this digital camera an improvement over the DC20. It uses Kodak's CompactFlash removable memory cards, which users can take to Kodak-partner retail stores to have them create instant digital prints. $499. Eastman Kodak: 800-235-6325 or 702-352-1600; http://www.kodak.com/.

LightWave 3D 5.0. Moving to the Mac from SGI, Windows, and Amiga is LightWave 3D 5.0, which offers both polygonal and NURBS (non-uniform rational B-spline) 3-D modeling. Other features include inverse kinematics, ray tracing, metaballs, and QuickDraw 3D support. $1,495. NewTek: 800-843-8934 or 913-228-8000; http://www.newtek.com/3d/3danim.html.

▼ **Ricoh RDC-2.** A less pricey follow-up to the RDC-1, this digital camera captures still images, sound, and video and has 2 MB of flash RAM. An optional removable LCD has a speaker for playback preview. $999 and up. Ricoh: 800-225-1899 or 702-352-1600; http://www.ricohcpg.com/.

CalComp UltraSlate. A cordless and batteryless pen, programmable on-screen menus, and custom pressure settings distinguish this graphics tablet. It has a Mouse and a Tablet mode and comes in two sizes. 4 x 5 inches, $155; 6 x 9 inches, $330. CalComp: 800-932-1212 or 714-821-2000; http://www.calcomp.com/.

Kyocera FS-1700. This network printer offers high-resolution printing at 12 ppm — up to 2,400 x 600 dpi. A 15,000-page toner container and Kyocera's "cartridge-free" engine help reduce the usual printer-operating costs. $1,645. Kyocera Electronics: 800-232-6797 or 908-560-3400; http://www.kyocera.com/printers/.

ITC Fonts. ITC Out of the Fridge, ITC Vintage, ITC Temble, and ITC Juanita are a sampling of 15 newcomers to the ITC font fold. DesignFonts ITC Totspots and ITC Connectivities include themed images. $39.95 each; DesignFonts, $89.95 each. International Typeface: 212-949-8072; http://www.esselte.com/itc/.

Pioneer RVD-XG1. This portable color projector provides a large display area (38.5 to 200 inches diagonal) and offers 400 ANSI lumen/1,000 lux at 40 inches diagonal — one of the brightest XGA-resolution displays available. $12,800. Pioneer New Media Technologies: 800-527-3766 or 310-952-2111; http://www.pioneerusa.com/. / *BROOKE C. WHEELER*

FIRST LOOKS

Bandai @World:
Underwhelming Pippin fails to impress.

IF YOU LIKE UNDERDOGS, you'll love the Bandai @World, the first product to use Apple's Pippin technology. Our first look at the @World shows that Pippin technology has the potential for success — but an even greater potential for failure.

For $500, you get an @World unit containing a 66-MHz PowerPC 603 processor and 5 MB of RAM (expandable to 13 MB via an 8-MB module), a banana-shaped controller, a Motorola 28.8-kbps modem, all cables, and a poster that guides you step by step through a simple setup process. You can connect to a television monitor via standard NTSC TV or higher-quality S-video, or you can hook up a computer monitor via a VGA port.

You navigate @World software with a joypad (similar to those of game consoles), a keypad, a minitrackball, and nine buttons: two "mouse" buttons on the front of the joypad, four color-coded buttons on the top, and three buttons on the back. Users who have large hands will find the joypad too small.

The @World is being touted as a low-cost Internet-access device, and although accessing the Internet with your TV set may sound practical, we found that it's not as easy on the eyes as using a Macintosh — even though some JPEG photos and colors actually look better on TV than on a monitor. The version of Spyglass Mosaic Bandai bundles is more than merely competent, but we weren't able to view Web-page-based QuickTime movies and some page formats were lost. Bandai plans to update the browser regularly.

The @World comes bundled with TV Works, which includes basic word-processing, painting, and e-mail applications. Because the @World has no keyboard, though, you can type only via an on-screen keyboard interface. If you intend to use TV Works extensively, you'll want to shell out an extra $70 for the keyboard/drawing-tablet unit.

As with any game machine, the success of the @World will depend on its software library. If the boring Power Ranger Zeo, from Graphix Zone, remains the only game available at release, then Nintendo, Sega, and Sony have absolutely nothing to worry about — it ain't no Super Mario 64, NiGHTS, or Crash Bandicoot, dude.

The @World also has stiff competition in the Internet-appliance category: Television-set-top Internet-access boxes are now available, and the $200 Sega Saturn now provides an optional $200 modem. / *ROMAN LOYOLA*

PROS: Potentially powerful Internet-access capabilities. Crisp display on standard TV.
CONS: No 3-D-graphics acceleration. No compelling titles available — yet.
INFO: $500. Bandai: 888-992-9000 or 310-404-1600; http://www.bdec.com/.

THE OFF BEAT

Power Thigh Master or Hi-Tech Tourniquet?

WE DON'T RECOMMEND this gadget for running through airports with your PowerBook attached to your leg, but Pitbull Chains' $60 Laptop Support System — made of sturdy, light metal and with three rubber suction cups designed to hold a PowerBook in place — does give you freedom of movement and extra assurance that the PowerBook won't fall off your lap while you're seated. Our research also revealed that if you wear it without a PowerBook attached, it's an effective conversation starter at parties or around the office. 503-557-0761. / *NANCY PETERSON*

PHOTOGRAPHY / LON CLARK

AOL 3.0: Better late than never — but better never late.

WE CAN ALL BREATHE A SIGH of relief: The long-awaited — too-long-awaited, in our opinion — release of AOL 3.0 for Macintosh is finally upon us. (Although a 680x0 version will arrive no sooner than late winter 1997.)

The first thing we noticed when we used a beta version of AOL 3.0 was its speed. Art loads more rapidly, and it loads progressively in the background while you're performing other tasks. Also, the interface has been improved: It's easier to get to popular areas, and having more pointers on each page saves time. Users can bookmark frequently visited sites, and content that wasn't previously available to Mac users now is.

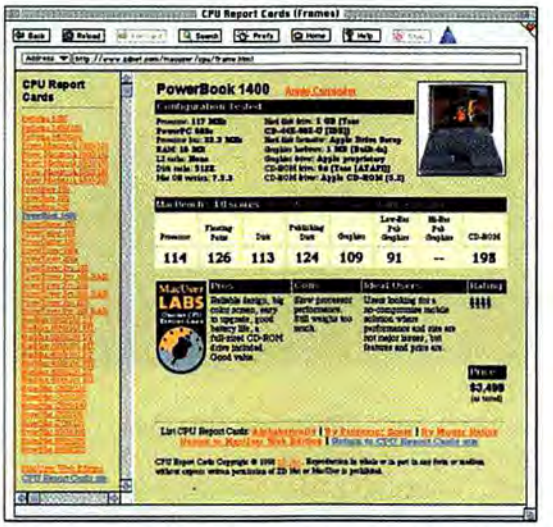
AOL 3.0's e-mail features include support for multiple attachments, styled or colored text and hyperlinks within e-mail messages, a built-in thesaurus, speech capabilities, and a completely reworked address book.

A couple of the best new features and interface improvements involve instant messaging, chat rooms, and other functions related to online socializing. You can now store friends' screen names and create buddy lists, so you're alerted when a buddy logs on or off and getting to your buddy's location or shooting him an instant message is as easy as pie. AOL's David Gang, vice president of product marketing, says that in the near future, it will be possible to insert images into instant messages or drag and drop them into the body of e-mail messages.

The most important development in AOL 3.0 for Macintosh is the integration of the full-featured Microsoft Internet Explorer browser, although it looks different — there's an odd, oatmeal-colored background, and the familiar Explorer 3.0 tool bar has been pared down to one simple row of buttons. Users can download and use the Netscape browser with AOL 3.0 as well, but since it piggybacks onto the AOL/Explorer combination, a considerably larger RAM requirement is necessary — up to 8 or 9 MB.

AOL gives users more control over setting Web, download, and other preferences at keyword MY AOL. There's even a download preference that lets you set helper applications and MIME types. AOL 3.0 will use applet technology for updating client-software features automatically, which means that users need not download a new version of the AOL client software every time it changes. But if you currently have an IP connection, watch out! AOL will try to install an extension called AOLLink that commandeers your TCP/IP control panel.

For around 7 million users, using AOL is a relatively easy, user-friendly experience. The AOL organization is becoming stronger — despite the $8 million settlement to a class-action lawsuit filed by users last year, the massive system failure in August 1996, and what many perceive as a general lack of responsiveness to customers. Of all the AOL users who feel alienated, Mac users have the greatest cause. For some, the improvements in AOL 3.0 will compensate for the shameful amount of time we've spent waiting for decent Mac client software. Some Mac users will stay solely for the online community AOL provides. The rest will leave, find a nice local ISP, and settle down. */ JODI NAAS*



The new browser in AOL 3.0 has a more simplified look but includes all the power of Microsoft Internet Explorer. For example, it can accurately render tables within frames, such as those used to create MacUser Online CPU Report Card pages.

PROS: Connect with a large community of like-minded users. Inexpensive for heavy users.
CONS: Large RAM requirement for browsers other than integrated Explorer browser.
INFO: Service, $19.95 per month and up. America Online: 800-827-6364; http://www.aol.com/.

MACINTOSH PRICE INDEX

THE UNITED COMPUTER EXCHANGE index reflects average sales prices of new and used Macs as of January 6, 1997. Prices (other than those for compact models, Performas, and LCs) do not include a monitor or a keyboard. The United Computer Exchange is a national clearinghouse of used microcomputer equipment.

MAC MODEL	NEW	USED
Classic II (4/40)	•	$225
LC III (4/80)	•	$225
Performa 5215CD (8/1GB)	•	$1,075
Performa 6220CD (16/1GB)	•	$875
IIsi (5/80)	•	$175
IIci (4/80)	•	$225
IIfx (4/80)	•	$275
Quadra 610 (8/160)	•	$400
Quadra 630 CD (4/250)	•	$500
Quadra 650 (8/230)	•	$600
Quadra 800 (8/230)	•	$800
Quadra 840AV (8/230/CD)	•	$950
Quadra 950 (8/230)	•	$850
Power Mac 6100/66 (8/350/CD)	•	$650
Power Mac 7100/80 (8/700/CD)	•	$875
Power Mac 7200/90 (8/500/CD)	•	$950
Power Mac 7500/100 (16/1GB/CD)	•	$1,200
Power Mac 8100/100 (16/1GB/CD)	•	$1,450
Power Mac 8500/120 (16/2GB/CD)	•	$1,800
Power Mac 9500/132 (16/2GB)	•	$2,100
PowerBook 165c (4/80)	•	$675
PowerBook 180 (4/80)	•	$700
PowerBook 190cs/66 (8/500)	•	$1,050
PowerBook 520c (4/160)	•	$850
PowerBook 540c (4/320)	•	$1,375
PowerBook 5300cs 100 (8/500)	•	$1,550
Duo 250 (4/200)	•	$575
Duo 280c (4/320)	•	$975
Duo 2300c/100 (8/750)	$1,499	$1,150
Power Computing Power 100 (16/1GB/CD)	•	$775
Power Computing PowerWave 604/150 (8/1GB/CD)	•	$1,650

• = discontinued model

For more pricing information on these and other models, call 800-755-3033 or 770-955-0569 or visit http://www.uce.com/. And find it on ZD Net, in Library 1 (Special Reports) of the MacUser Forum (GO ZMC :MACUSER).

MACUSER UTILITY OF THE MONTH

Cheaper OpenDoc

TWO YEARS AGO, *MacUser* produced The Cheaper Image, a graphics-processing application that lets you edit scanned photos, captured video frames, digitally acquired pictures, and other images. This month, we offer you The Cheaper Image OpenDoc, a reimplementation of this same application as an OpenDoc part that will become increasingly more powerful when new features are added as separate parts and "helper parts" over the coming months.

The Cheaper Image OpenDoc is available free, beginning February 28, exclusively from *MacUser*'s Software Central on the Web (http://www.zdnet.com/macuser/software) and CompuServe (GO ZMC:MACUSER). */ PHILIP DYER*

REVIEWS

Mac OS Systems

APS M•Power 604e200 ★★★★

APS M•Power 603e200 ★★★½

APS M•Power 603e160 ★★★

Inexpensive clone systems offer mixed bargains.

MacUser LABS

THE PARTY JUST KEEPS on getting bigger: Another Mac OS-system vendor has joined the festivities — APS Technologies, a venerable mail-order supplier of storage hardware, memory, and accessories for Mac OS systems. The first three offerings in APS' M•Power Mac-clone line — the M•Power 604e200, 603e200, and 603e160 — boast flexible custom-configuration options with more accessory choices than systems from rival Power Computing. And their prices are astonishingly low — even when compared with the low-cost Motorola systems they're based on.

After putting these systems through their paces with our industry-standard MacBench 4.0 test suite, we found that, to an extent, you get what you pay for with the APS systems — but that may be perfectly adequate for many home or small-business uses.

All three APS systems are based on the Apple/Motorola Tanzania board design, and all three are built for APS by Motorola Computer Group. In fact, all three are nearly identical to models in Motorola's StarMax line (see review, December '96, page 33); the only difference is in the supplied hard-disk drives, bundled software, and RAM and Level 2 (L2)-cache configurations. As you might guess, the M•Power 604e200 is based on the 200-MHz PowerPC 604e processor. It comes with 24 MB of RAM — which is perfectly adequate — but it's 8 MB shy of the standard 32-MB memory configuration on competing systems based on the 200-MHz PowerPC 604e; add about $90 to the price to boost RAM to match the competition. It's equipped with a 512K speed-boosting L2 cache, which is standard for 200-MHz 604e systems, except for the Power Computing PowerTower 200e, which ships with a 1-MB L2 cache. The 604e200 is housed in a minitower enclosure with five PCI expansion-card slots and room for eight additional internal drives.

The 603e200 and 603e160 models are based on 200-MHz and 160-MHz PowerPC 603e processors, respectively. They each ship with 16 MB of RAM and come in horizontal desktop-style enclosures, with three PCI slots and space inside for one 3.5-inch SCSI drive. The 603e200 ships with a 256K L2 cache, and the 603e160 has no L2 cache at all.

REVIEWS RATING KEY	
★★★★★	OUTSTANDING
★★★★	VERY GOOD
★★★	ACCEPTABLE
★★	POOR
★	SERIOUSLY FLAWED
●	DANGEROUS

The APS systems' resemblance to Motorola StarMax machines is unmistakable. The front panels of the machines in both product lines share slightly different "smile" vents, and the complement of ports along the back plane is exactly the same: single ADB, stereo-in and -out, and VGA-monitor ports; dual serial and PC-standard PS/2 keyboard and mouse ports.

The M•Powers' soldered-down, main processors, which are not upgradable, are Motorola's doing. Still, in a few instances, APS had opportunities to improve on Motorola's offerings but didn't. For one, we wish APS would ship a Mac-monitor adapter for the VGA-monitor port. (The company will gladly sell you one for $9.95.) Furthermore, if you want to add an internal SCSI drive to your M•Power system, you'll first have to buy a splitter for the internal drive's power cable.

The APS software bundle consists of the NisusWriter word processor; Diskfit Direct, Dantz Development's personal backup package; Leader Technologies' PowerMerge file synchronizer; and three products from CE Software — QuickMail Express e-mail client software and demo versions of the QuicKeys macro-scripting program and WebArranger, a personal organizer oriented toward the Internet. These products are all useful, but the bundle falls short of those offered by Power on its systems. In the case of the 603e-based systems, Apple, Motorola, and UMAX all offer

PHOTOGRAPHY / MICHAEL FALCONER

better bundles. At press time, APS was exploring additional bundles, so this disparity may no longer exist by the time you read this.

Speed Tests

We all know a low price isn't the only determinant of value; it's what you get for that low price that counts. To see just what the M•Power systems can do, we tested them with MacBench 4.0 and compared their scores with those of similar systems from other vendors. Full results appear in the accompanying charts, but a few general trends stand out.

The most striking observation is that hard drives installed in the M•Power systems are slower than those in competing systems — dramatically so in some cases: On our Disk test, which gauges transfer speed of typical business-application data, the drives in the Apple Power Mac 9500/200 and the Power Computing PowerTower 200e scored more than twice as much as the drive in the M•Power 604e200.

On the other MacBench tests, the M•Power systems' scores were respectable, if unremarkable. On the Processor test, our primary test of computing horsepower, the M•Power 604e200 lagged behind the Power Mac 9500/200, whose system bus runs 20 percent faster; the M•Power 604e system trailed the PowerTower 200e as well — no doubt due to that machine's faster bus and larger L2 cache.

Lack of an L2 cache was doubtless the culprit in the M•Power 603e160's poor showing on the Processor test, relative to its Motorola look-alike, the StarMax 3000/160 DT, which comes with a 256K L2 cache. (Nevertheless, both clones beat the Apple Performa 6360.)

The M•Power 603e200 scored remarkably close to rivals with the same processor on all tests but the Disk test.

APS enjoys a solid reputation for service and product support and offers a one-year warranty on the M•Power systems. That's standard for Apple and every other Mac OS-system vendor but Motorola, which offers a five-year warranty — on hardware that's nearly identical to the M•Powers. (If you're buying a large number of systems, Motorola's extra security may be reassuring, but five years is an epoch in computer time, so there's only a slim chance you'd be exercising that warranty in 2002.)

Let's consider each M•Power system in comparison to rivals. The M•Power 604e200 is by far the least expensive 200-MHz 604e system available. (It's about $600 less than its lowest-priced rival, the Motorola StarMax 4000/200 MT, and its [extremely slow] hard drive has a slightly higher capacity than the StarMax's, to boot.) Even if you add $90 to its price tag to boost its RAM to 32 MB, the result is still an impressive value.

With the 603e-based systems, the price advantage diminishes considerably, in part because software bundles come into play: Apple, Motorola, Power, and UMAX are all aiming their 603e-based systems at the home market, and all four companies offer hefty software bundles that include entertainment and personal-productivity software. APS' software offerings don't match up.

The M•Power 603e200 is $400 less expensive than similar systems from Motorola and UMAX. But its hard drive is not only slow but also less capacious than UMAX's offering. Factor in the lesser software bundle, and you're getting a savings — but not a great one.

Finally, the M•Power 603e160 is a mere $100 cheaper than Motorola's comparable StarMax system, and that's about what you'd pay to add the 256K L2 cache that makes the Motorola system speedier than the APS one. Consider that Motorola also offers a faster hard drive and more bundled software, and the APS system turns out to provide no great savings.

The Bottom Line

APS' debut Mac OS systems offer an impressive range of customization options and are appealingly inexpensive, but the base-model systems each suffer from poor hard-drive speed and the lack of an upgradable processor. The M•Power 604e200, the least expensive 200-MHz PowerPC 604e machine you can buy, saves you enough that you can beef up its RAM and Level 2 cache and still get great price/performance. The M•Power 603e200 closely matches rival systems' speed (on all but hard-disk tasks) but lacks a comparable software bundle; at a savings of about $400 over its least expensive rivals, it's a good, but not great, deal. The M•Power 603e160, which ships without a speed-enhancing Level 2 cache, is only about $100 less expensive than L2-equipped systems from Apple and Motorola — both of which offer more-generous software bundles and faster hard drives. It's really no bargain. / Jim Shatz-Akin

APS M•Power 604e200, $2,599; **APS M•Power 603e200,** $1,599; **APS M•Power 603e160,** $1,399 (direct). **Company:** APS Technologies, Kansas City, MO; 800-374-5681 or 816-483-1600; http://www.apstech.com/. **Reader Service:** Circle #401.

MacUser LABS

M•POWER VERSUS THE WORLD / how APS' systems compare to rivals

These charts show how APS' new M•Power Mac OS systems stack up against the competition for a variety of tasks. Speed tests were conducted with MacBench 4.0, Ziff-Davis' industry-standard benchmark suite for evaluating Mac OS-system speed. MacBench 4.0 scores are relative to those of an Apple Power Mac 6100/60 with a 30-MHz memory bus, a 250-MB hard drive, 2 MB of built-in graphics RAM, and no L2 cache. This system is assigned a score of 100 on all tests.

MACBENCH 4.0 SCORES

	Processor	Floating Point	Disk	Publishing Disk	Graphics	Lo-Res Publishing Graphics	CD-ROM
APS M•Power 604e200	365	385	147	162	366	354	280
Apple Power Macintosh 9500/200	409	402	317	249	442	440	365
Motorola StarMax 4000/200 MT	367	384	189	184	366	364	295
Power Computing PowerTower 200e	456	400	303	206	487	471	240
APS M•Power 603e200	282	273	131	155	258	248	281
Apple Performa 6400/200	258	262	163	167	242	218	304
Motorola StarMax 3000/200 DT	277	272	154	166	234	241	310
Power Computing PowerBase 200	279	266	261	159	275	271	303
UMAX SuperMac C600/200	280	271	*	*	264	239	274
APS M•Power 603e160	200	207	108	143	172	174	217
Apple Performa 6360	175	198	*	*	157	148	253
Motorola StarMax 3000/160 DT	253	236	153	165	211	214	308
	SCORE BETTER	SCORE BETTER	SCORE BETTER	SCORE BETTER	SCORE BETTER	SCORE BETTER	SCORE BETTER

* Test not run.

Fractal Design Expression 1.0.1

★★★½

Vector-based drawing tool offers natural-media features.

FRACTAL DESIGN EXPRESSION is an entirely new type of graphics application that fuses vector-based PostScript drawing tools (which generate Bézier curves with editable control points) with a "natural media" approach. Taking a cue from its sister product, Fractal Design Painter, Expression lets you "stroke" vector paths with patterns that simulate realistic brushes, pens, and other traditional artist's tools — or custom tools you create yourself. But unlike the bitmap-based Painter, Expression generates continuously editable paths.

Expression uses sophisticated blending and transparency effects to simulate the behavior of paints, pastels, and other media — and the results are remarkably good, as long as you're working within Expression itself. Ironically, however, Expression's unique capabilities are also its Achilles' heel. Neither the PostScript page-description language nor the many vector-based export file formats Expression supports are capable of reproducing Expression's transparency effects accurately. That means Expression files lack the ability of traditional vector-based illustrations to be edited or resized in any illustration or layout program and still print at top resolution on any output device. Expression images look great when printed (or rasterized) from within Expression itself, but their appearance varies wildly when they're printed from any other program.

That leaves you only with the option of rasterizing your image in Expression — at exactly the size you need — and then placing the bitmap image into your page. Apart from being unwieldy, this approach is slow: A bitmap conversion can take many minutes, even with a reasonably simple drawing, and will feel painfully slow for artists used to rasterizing Illustrator artwork within Photoshop.

Users of vector-based drawing tools will find Expression's interface familiar: Paths can be drawn freehand or point by point, with Bézier controls available to adjust the path's curves. A new handle at the end of the path (the Shear/Width control) lets you adjust stroke width. Expression supports unlimited numbers of layers in each file and includes all the standard drawing and transformation tools you'd expect in a full-featured illustration program. It also supports variable transparency of strokes, fills, and patterns and can even do 2-D Boolean operations, much as Adobe Illustrator's Pathfinder filters do.

Expression ships with more than 350 sample strokes and enables you to create any number yourself. These strokes fall into three categories: *natural-media* strokes, *graphic-element* strokes, and *multiview* strokes. The natural-media strokes, as their name suggests, simulate real-world media such as pastels, charcoal, and paint. This is Fractal Design's forte, and these tools excel.

Graphic-element strokes consist of drawings you can "paint" along a path. Any group of drawn objects can be used as the basis for a graphic-element stroke. When you create a graphic-element stroke, you draw a "skeletal stroke" through your chosen graphic, to specify the axis that will curve along your brush stroke; you can also specify portions of the graphic that will remain undistorted as you paint. Thus, you can, for example, make a stroke from a drawing of a fish, in which the head and tail retain their original shapes but the body stretches along your stroke path. You can also turn abstract patterns into graphic-element strokes, to achieve special effects.

Multiview strokes let you paint in patterns that consist of multiple different-but-related images, much as you can with Painter's Image Hose tool. You might, for instance, use as your "views" drawings of flowers that vary somewhat in shape and color. As long as each view has the same number of objects and control points, Expression will interpolate among them as you paint, generating repeating, but subtly different, flowers along your stroke path. Multiview strokes are great for creating nonmonotonous patterns and fills, and they can also be used to add natural-looking variation to "traditional" brush strokes.

Expression offers only rudimentary type-handling tools, at least in comparison to those of Adobe Illustrator. You can control type style, size, alignment, and leading (but without kerning or baseline controls). Type can be applied to paths or turned into vector outlines for further processing.

Expression is extremely RAM-hungry and not entirely stable. It requires a minimum RAM allocation of 14 MB, and even with twice that much RAM assigned to it, there are still some complex strokes that can bring your entire system to its knees. Even if your image contains only a few simple paths, rasterization time increases dramatically with the more textural brush strokes. The interface is standard Fractal Design fare, similar in look and operation to Painter; Expression certainly takes some time to get used to.

Fractal Design Expression's output varies greatly, depending on how you save or export your work. For example, the image on the left was rasterized from within Expression and saved as a Photoshop file and looks as it should. The middle image is an exported Illustrator file, rasterized in Photoshop; the last image was saved as a PICT file and acquired in Photoshop. Notice that the latter two images (rasterized by Photoshop) lack transparency effects.

The Bottom Line

Fractal Design Expression is unique in the graphics-software field and is good at what it does — so good, in fact, that other programs' inability to match it limits the usefulness of Expression artwork. But even with its sluggishness and heavy memory requirements, Expression brings naturalistic creative tools into the realm of vector-based drawing, with visually (and artistically) satisfying results.

/ Nathan Moody and David Biedny

Fractal Design Expression 1.0.1, $449 (list). **Company:** Fractal Design, Scotts Valley, CA; 800-846-0111 or 408-430-4100; http://www.fractal.com/. **Reader Service:** Circle #402.

Consumer Pocket Cameras

Epson PhotoPC 500	★★★½
Olympus D-200L	★★★★
Olympus D-300L	★★★

Better features, image quality mark new generation.

FANS OF *STAR TREK* might call it "consumer digital cameras: the next generation." Three new pocket models, the D-200L and D-300L, from Olympus, and the PhotoPC 500, from Epson, build on the promise of the first round of digital cameras that emerged a couple of years ago. More important, the companies have learned from their previous mistakes and have corrected some (but not all) of the early cameras' most notable shortcomings — offering higher image resolution, greater image-storage capacity, and better ease of use. But all three cameras still devour battery power.

Each camera is compact and fits easily in a coat pocket. The Olympus models, which share the same basic design and chiefly differ in image resolution and storage capacity, boast a curved body that's particularly comfortable to hold. The Epson PhotoPC 500 is a bit boxier and less elegant, but it's still easy to grip. All three cameras have built-in flash units that are adequate for capturing indoor images from a distance of 20 to 30 feet.

All three cameras offer standard optical viewfinders, and the Olympus models also feature LCD screens for previewing shots. The Epson viewfinder is prone to annoying glare, and worse, it literally takes a dim view of things: Images appear far less lit than they really are (or than they appear in captured images). The Olympus viewfinder is superior.

The Olympus cameras' preview screens, which can be used to frame shots or to browse stored images, are an improvement on earlier LCD screens in a couple of ways. The preview screens aren't turned on all the time, for one thing, which spares the cameras' batteries a heavy burden. Even better, you can view stored images not only 1 by 1 but also 9 at a time, in a 3-by-3 thumbnail array.

The Olympus D-200L captures up to 20 High Quality-mode images at a resolution of 640 x 480 pixels and 80 images in Standard mode at 320 x 240 pixels. The D-300L has a capacity of up to 30 images at 1,024 x 768 pixels and 120 at 512 x 384 pixels. The Epson PhotoPC 500 captures up to 30 images at 640 x 480 pixels or up to 60 at 320 x 240 pixels. Although removable storage would be a welcome feature in these cameras, their image capacity is far more practical than that of first-generation pocket digital cameras.

Each camera connects to your computer via a serial cable, and you use software installed on your computer to download and manipulate images. The Olympus cameras use Adobe PhotoDeluxe in conjunction with a supplied plug-in module; the PhotoPC 500 uses Storm Software's EasyPhoto application. Both software packages give you a good set of basic image-editing and retouching tools, including painting and special effects. PhotoDeluxe is a little more full-featured than EasyPhoto — it includes a set of templates for greeting cards, invitations, and so on, and it alone supports Photoshop effects filters. On the other hand, the PhotoDeluxe/Olympus plug-in combination is far more RAM-hungry than EasyPhoto: It requires 16 MB of *free* RAM; EasyPhoto is content with about 5 MB.

The Olympus D-200L, Epson PhotoPC 500, and Olympus D-300L (from top) have higher image resolution and greater image-storage capacity than the first generation of consumer digital cameras.

All three cameras use four standard AA batteries for power and ship with a set of alkaline cells. You'll probably want to pick some longer-lasting lithium batteries, however, because battery life for all three cameras is pretty short. The Epson PhotoPC 500 fares better than the Olympus cameras, with their power-hungry LCD screens.

You'll definitely want to use an AC adapter when the camera is tethered to your computer for downloading. Unfortunately, none of the cameras ships with an adapter — you have to buy one separately (estimated street price for the Olympus cameras, $40; $49 list price for the Epson camera). This foolish cost-reduction move is the most disappointing aspect of these cameras.

Image Quality

The critical factor for any digital camera is the quality of the images it captures. Here, we found something of a surprise. The Olympus D-200L boasted the best-looking photos — dramatically better than those of its more expensive, higher-resolution sibling. The D-300L images all suffered from a pronounced blue cast and exhibited noticeable noise in the blue channel.

The Epson PhotoPC 500 images exhibited less noise than the D-300L's, but they showed signs of a yellow cast on every image as well as noticeable "Christmas-tree light" artifacts — strings of blue and yellow pixels at the edges of contrasting objects. Compared to the D-200L, which showed significantly less noise, insignificant color cast, and less pronounced artifacts, the PhotoPC 500 comes in second, but it does show significant improvement over Epson's previous entry, the PhotoPC.

The Bottom Line

The Olympus D-200L is by far the pick of the litter here. It's well designed and easy to use and delivers clear, crisp images with realistic color. The costlier D-300L has the same great design, but despite its higher resolution, its images are of lower quality. The Epson PhotoPC 500 has many improvements, but the poorly designed viewfinder will make it difficult for users to be sure they are capturing what they want. / Rick Oldano

Epson PhotoPC 500, $599; AC adapter, $49 (list). **Company:** Epson America, Torrance, CA; 800-463-7766; http://www.epson.com/. **Reader Service:** Circle #403.

Olympus D-200L, $600; **Olympus D-300L,** $900; AC adapter, $40 (estimated street). **Company:** Olympus, Melville, NY; 800-622-6372 or 516-844-5000; http://www.olympus.com/digital/. **Reader Service:** Circle #404.

PHOTOGRAPHY / LON CLARK

Fault-Tolerant RAID

MicroNet DataDock 7000 ★★★★½

StreamLogic SledgeHammer•Pro FT ★★★★

Fault-tolerant arrays build on removable-storage systems.

IF YOU'RE THE KEEPER OF a graphics, video, database, or Web server, your worst nightmare is a drive crash that cuts off data access. The best preventive — fault-tolerant storage using Level 5 RAID (redundant array of independent disks) arrays with backup power supplies and fans — is hardly a new idea. But two new RAID systems, the DataDock 7000, from MicroNet, and the SledgeHammer•Pro FT, from StreamLogic's Hammer Storage Solutions division, bring fault tolerance to relatively low-cost removable-drive systems.

The DataDock 7000 and the SledgeHammer•Pro FT consist of enclosures with bays that accommodate removable drive modules; the DataDock holds seven drives, the SledgeHammer, eight. Seven SledgeHammer modules are for online storage, with the eighth configured for warm swapping — a sort of safety net for your safety net: If one drive in the array fails, the spare takes over and the system rebuilds itself into *another* array that can safely lose a drive.

You can buy each enclosure in a variety of configurations — with drives of various capacities (or no drives at all), with or without SCSI adapter cards, and so on. We looked at systems that had a full complement of identical drives, outfitted with PCI Fast-and-Wide SCSI-2 adapter cards. The systems were configured as single RAID Level 5 arrays, which means they write data across all disks in such a way that if one drive fails, all stored data can be reconstructed on the remaining disks without an interruption in data availability.

Hot Swapping Is Cool

Practically every component of the DataDock and SledgeHammer•Pro FT is removable, including the drive modules; the onboard RAID controller, which coordinates RAID Level 5 reads and writes; and load-sharing power supplies with fans. The DataDock has three of the latter, the SledgeHammer•Pro FT, two. Both systems can run safely with just one working power supply and fan.

To protect modules from damage, the DataDock locks to prevent removal of drives until their disks have spun down. You can also lock the DataDock cabinet. The SledgeHammer•Pro FT has no such safeguards: We found it unsettling that we could remove a drive with a spinning disk from the SledgeHammer•Pro FT enclosure by simply pushing a release button and giving the drive a firm tug. (A good deal of force is required to pull out a module — enough to damage a drive whose disk is spinning.)

The DataDock 7000 has seven SCSI channels built in. You can assign one channel to each drive, place all seven drives on a single channel, or create any combination of arrays and single-spindle drives within the enclosure. The SledgeHammer•Pro FT is designed to run as a single array on one channel.

The MicroNet DataDock 7000 (top) offers seven drive bays and seven separate SCSI channels. The StreamLogic SledgeHammer•Pro FT comes preconfigured as a RAID Level 5 array that spans seven drives, with the eighth set up as a "warm spare."

The SledgeHammer•Pro FT comes preconfigured for RAID Level 5 to maximize redundancy and performance, but it can also be set up as RAID Level 10 — a still unofficial combination of mirroring and striping that includes fault tolerance. The SledgeHammer•Pro FT software package is one of the system's strongest features. The program works with the RAID controller to let you set up, configure, and monitor the array for RAID Levels 0, 1, 5, or 10. You can also use the FT software to specify how the system should notify you in the event of a drive or component failure — by pager or through e-mail.

DataDocks don't come preconfigured, and setting one up for RAID Level 5 requires considerable effort, at least the first time you do it. That's because MicroNet, aiming at cross-platform markets, designed the configuration software for its RAID controller hardware to run under terminal emulation. That means you'll have to track down a copy of ZTerm or another emulation program, because MicroNet does not provide any. Once you're in emulation mode, the RAID 5 configuration process is fairly straightforward.

You also use terminal emulation to configure the DataDock's niftiest feature, the Intelligent Control Unit (ICU). The ICU is an optional "brain" that monitors DataDock status, checking for any hardware failure and even monitoring the temperature of the drives (and that of the room they're in). If any characteristic exceeds limits you set, you can have the ICU page you or send you e-mail via the DataDock 7000's built-in modem. After you've been notified, you can use terminal emulation from virtually any computer to tell the ICU how to handle the problem: Shut down the DataDock, spin down individual disks, or even reconfigure your array.

The Bottom Line

The MicroNet DataDock 7000 and the StreamLogic SledgeHammer•Pro FT offer solid RAID 5 support and fail-safe hardware components. The SledgeHammer system is great for getting up and running quickly — setting up the preconfigured system took us less than an hour, thanks to extremely intuitive software. However, because of the ease with which a drive with a spinning disk can be accidentally removed from the SledgeHammer•Pro FT, we have to rate the DataDock 7000 (with hardware RAID controller, ICU, and modem options) as the more ironclad of the two, despite its somewhat kludgey terminal-emulation configuration process. / John Christopher

MicroNet DataDock 7000 with seven 4-GB drives, ICU, and RAID controller, $21,269 (list). **Company:** MicroNet, Irvine, CA; 800-800-3475 or 714-453-6100; http://www.micronet.com/. **Reader Service:** Circle #405.

StreamLogic SledgeHammer•Pro FT with eight 4-GB drives and RAID controller, $21,149 (list). **Company:** StreamLogic, Chatsworth, CA; 800-592-9919 or 818-701-8400; http://www.streamlogic.com/. **Reader Service:** Circle #406.

PHOTOGRAPHY / MICHAEL FALCONER

Radius ThunderPower 30/1920

High-resolution acceleration, at a high price.

MacUser LABS **GRAPHICS PROFESSIONALS** who constantly work with millions of colors need graphics acceleration to redraw all that information on-screen. And although the $1,399 Radius ThunderPower 30/1920 offers a speed boost, the key phrase to remember here is *constantly work with millions of colors.* The Radius accelerator is made specifically to boost graphics speed at a 24-bit color depth. It doesn't provide *any* acceleration for 256 colors; in fact, our tests suggest that it could reduce graphics speed for working in 8-bit color.

The ThunderPower 30/1920 is unique in a couple of ways: At press time, it was the only Macintosh card available that supported a resolution of 1,920 x 1,200 pixels. Only one monitor that supports this resolution is currently available — Sony's 24-inch GDM W900, which is geared for high-end publishing work, just as the ThunderPower is. In addition, the ThunderPower makes use of a 30-bit DAC (digital-to-analog converter), which allows for extraordinary color fidelity when used in conjunction with certain monitor-calibration systems, including the Radius ProSense Display Calibrator ($799 list) or the Light Source Colortron, which comes bundled with the Sony GDM W900 monitor.

To find out how well the Radius accelerator performs with 24-bit images, we conducted several scrolling tests of an 18-MB file in Adobe Photoshop and ran the MacBench 4.0 ScrollRect graphics subtest — both good indicators of Photoshop speed. We compared results for the ThunderPower installed in a Power Mac 7600/132 with those of built-in video in a Power Mac 7600/132 and of a Number Nine Imagine 128 card with 8 MB of graphics RAM — the overall winner of our graphics-card roundup, "High-Performance Graphics Accelerators," elsewhere in this issue — also installed in a Power Mac 7600/132. Our monitor was a Radius PressView 17 SR, set at millions of colors at a 1,152-x-870-pixel resolution.

Our test results show that, in 24-bit color, the Radius accelerator is more than three times as fast as the 7600/132's built-in video — but that it's marginally slower than the Number Nine card, which is $700 cheaper and which accelerates 8-bit color as well as 24-bit.

Another factor that may affect the Radius accelerator's speed is its arcane structure — the ThunderPower 30/1920 is actually based on NuBus architecture and uses a PCI-to-NuBus converter. The result is that the accelerator cannot fully take advantage of the speedy PCI bus.

The Bottom Line

If you work exclusively in 24-bit color, need 1,920-x-1,080- or 1,920-x-1,200-pixel resolution, and want to use a high-end calibration system that takes advantage of a 30-bit DAC, the ThunderPower is for you. But those are some big "ifs." If you're satisfied with a resolution of 1,152 x 870 pixels and simply want graphics acceleration at *any* bit depth, purchase the Number Nine card instead — and save $700. / Roman Loyola

Radius ThunderPower 30/1920, $1,399 (list). **Company:** Radius, Sunnyvale, CA; 800-227-2795 or 408-541-6100; http://www.radius.com/. **Reader Service:** Circle #407.

ATI Xclaim VR

Accelerator speeds QuickTime and 2-D and 3-D graphics.

MacUser LABS **DIGITAL CONTENT** has become more visual than ever, so whenever you surf the Web, pop in a multimedia CD-ROM, or play a 3-D game, your Mac gets a serious rendering workout. With the ATI Xclaim VR PCI multimedia accelerator, you can take a load off your CPU and at the same time enjoy faster screen redraws that enhance your Web, CD-ROM, or game experience. Oh, and by the way, you can also use the card to capture video or, with a $99 option, use it to watch TV from your Mac.

The $349 4-MB Xclaim VR PCI multimedia accelerator (a 2-MB card is available for $269) is actually three accelerators, a video-capture card, and a TV-output card built into one product. It can improve the speed of QuickDraw 2-D display graphics. It can also speed up QuickDraw 3D, accelerate QuickTime, and capture video.

For basic 2-D graphics, the Xclaim VR generally felt snappier than the built-in video on our baseline system, a Power Mac 7600/132. Our testing revealed that you get more benefit from the VR card in 16-bit display mode (thousands of colors) than in 8-bit mode (256 colors).

If you like playing QuickDraw 3D-based games, you'll love the Xclaim VR's QuickDraw 3D accelerator. Bungie's Weekend Warrior, which is bundled with the Xclaim VR card, and Reality Bytes' Havoc both run faster, and with smoother animation, with the Xclaim VR than with built-in video. Note that only games that implement the QuickDraw 3D RAVE standard benefit from this acceleration.

The QuickTime-movie acceleration of the Xclaim VR works extremely well for any QuickTime movie that uses the popular Cinepak compression scheme. We were able to expand several Cinepak movies to full-screen size at a resolution of 640 x 480 pixels without losing any frames. (Movies using compression other than Cinepak noticeably dropped frames when we increased window size.) We also found that QuickTime acceleration improves audio/video synchronization.

If you want to digitize and edit your home videos for fun, the Xclaim VR and its bundled VR Video Player software will do the job quite nicely. VR Video Player has a more elegant interface than that of the Apple Video Player, and it supports more compression schemes as well, so you have more options when trying to balance image quality against file size. But like the Apple player, VR Video Player does little more than capture and splice QuickTime clips. If you want transitions or special effects, you'll need a separate video-editing package such as Adobe Premiere.

The Bottom Line

At $349, the Xclaim VR is a steal. You can get a 2-MB version of the Xclaim VR, but the extra speed you'll get from the 4-MB card is well worth the $80 difference. / Roman Loyola

ATI Xclaim VR, 4-MB configuration, $349 (list). **Company:** ATI Technologies; Thornhill, ON, Canada; 905-882-2600; http://www.atitech.ca/. **Reader Service:** Circle #408.

OmniPage Pro 7.0

$$$

Scan correction gets easier, but no less frequent, in OCR upgrade.

`Om~age ~ ro version7.0` [lets you] `Eosily move text from poper into your computer.`

That's what you'll see on-screen if you use Caere's new OmniPage Pro 7.0, at its default settings, to scan and recognize the company's own marketing flyer on the latest release of its optical-character-recognition software. Caere's right that OmniPage makes OCR easy, but as you can guess by reading the scan results, there's still considerable room for improving its accuracy.

As with the previous version of OmniPage, you can configure and operate the program almost entirely from one uncluttered, easy-to-understand tool bar; its Auto button delivers literally one-click scanning, recognition, and output. New in version 7.0 is an AutoSave option, which enables you to specify the name, location, and format of output files in advance.

Noise Reduction

Other enhancements include thumbnail representations of each page in open documents and an eraser tool, which lets you eliminate unwanted "noise" from the scanned image so it won't complicate recognition. The new Smart Windows feature automatically resizes windows and shows or hides palettes, depending on which window is active. (Unfortunately, a convenience mentioned in the program's Apple Guide — a menu command and a keyboard shortcut for expanding the active window to full size — apparently doesn't exist.)

Version 7.0 also beefs up the application's Direct Input feature, which makes it possible to bring scanned text directly into word processors and other applications. You now have access to nearly all program features in this mode.

Unfortunately, these and other usability enhancements are not matched by improvements in accuracy — Caere's underlying recognition technology is unchanged in this release. This is perplexing, because the company's own research shows that accuracy is far and away the No. 1 concern of OCR users, and on this score OmniPage Pro 7.0 is still far from satisfactory. It works well on pages with simple layouts and large, clear type, but even on these, it's routine to find several errors per page.

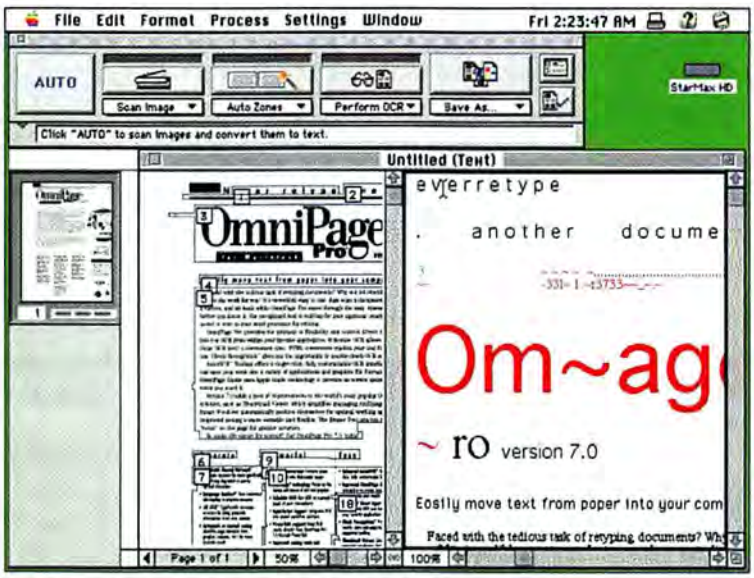
Complexities Complicate Scans

And when you're dealing with even moderately complex documents, things go downhill quickly. In the flyer mentioned above, for example, one main text block is accompanied by assorted headlines and graphics as well as three bulleted lists in parallel columns. The type itself looks reasonably sharp to the human eye and the paper stock is of high quality, but when we scanned it at OmniPage's default settings, we recorded 157 errors. (And that's not even counting junk produced by banners and logos.) Among the misrecognized words: *OmniPage, Pro, accurate, accuracy,* and *recognition.* (No, the program doesn't have an irony filter.)

In a bid to improve on this troublesome situation, we disregarded the manual's advice and turned on Caere's Language Analyst, which checks recognized words against a dictionary, and switched from Auto Brightness to manual adjustment. Although these changes brought improvement, we never got fewer than 55 mistakes in numerous tries. Noticing that many of the remaining errors involved the lowercase letter *a* being recognized as an *o,* we tried to use the program's training feature to help it make this distinction more accurately. The result? The error count shot up to 90. Some previous misspellings were corrected, to be sure, but they were outnumbered by new mistakes — most of them caused by overcompensation for the original problem: Even *os* that were correctly recognized in the first pass were turned into *as,* yielding goofs such as *layaut, salutians,* and *recagnize.*

OmniPage Pro's verification feature makes it fairly easy to locate and correct errors, but we would like to have to use it far less frequently. Even with the program's good, easy-to-use tools, the correction process is still time-consuming and frustrating.

The full version of OmniPage Pro 7.0 has an estimated street price of $499, but anyone who owns any previous version of OmniPage or Calera's WordScan can purchase an upgrade for $129. If you use OCR frequently and you're working with older software — say, OmniPage Pro 2.0 or earlier or any version of WordScan — the upgrade is probably worth the expenditure.



OmniPage Pro 7.0 builds on the ease-of-use features of its predecessors, including a powerful yet uncluttered tool bar, but frequent recognition errors still undermine the benefits of OCR.

The Bottom Line

With OmniPage Pro 7.0, Caere offers significant improvements in the application's tools for correcting errors in recognized text. Unfortunately, however, the company has done nothing to reduce the frequency of those errors. We wish there had been improvements in accuracy as well as ease of use in this upgrade. If you already have OmniPage 6.0 and you don't have any special need for version 7.0's improved usability features, save your money and wait for a subsequent version that tries to take on the accuracy problem. / Henry Norr

OmniPage Pro 7.0, $499 (estimated street). **Company:** Caere, Los Gatos, CA; 800-535-7226 or 408-395-7000; http://www.caere.com/. **Reader Service:** Circle #411.

Virus-Protection Software

VirusScan 2.0 ★★½

Symantec AntiVirus for Macintosh (SAM) 4.5 ★★★★½

Virex 5.68 ★★★★

Practice safe computing with antivirus protection for your Mac.

THE MAC HAS LONG BEEN an oasis of almost virus-free delight (at least in comparison to the PC). But that's changing, with the appearance of so-called macro viruses. Concocted in the macro command languages of Microsoft Word and Excel, these cross-platform nasties can infect and wreak damage on both Macs and PCs. Macro viruses, along with the widespread use of the Internet, practically guarantee that viral outbreaks in the Mac community will become more frequent. It's time to prepare, so we took a look at three commercial antivirus packages — McAfee's VirusScan 2.0, Symantec's Symantec AntiVirus for Macintosh (SAM) 4.5, and Datawatch's Virex 5.68 — to find the best you can buy.

On the face of it, all three of these programs work in much the same way. Each consists of an application and a control panel or extension. Each compares your data with built-in databases of known viruses and alerts you when it recognizes an interloper. All three let you scan selected files, folders, and volumes on the fly or at scheduled intervals, and all repair or dispose of infected files.

In addition, all the programs offer speed scanning, which saves time in that the program examines only new data on a previously checked volume. And all three are regularly updated with descriptions of new viruses, by means of files you can obtain online.

A closer examination reveals differences that help distinguish the best of this trio.

VirusScan 2.0 is a complete rewrite of version 1.0, which was essentially a souped-up version of the freeware Disinfectant. Among PC users, *McAfee* is almost synonymous with *antivirus,* so we were eager to see how the company's first real Mac product stacks up. Aside from an outstanding installation-and-setup procedure, VirusScan disappointed.

First the good news: VirusScan's Config Wizard makes it easy for technophobes and geeks alike to configure antivirus protection appropriately. In a friendly, MacInTax-like interview, VirusScan asks you several questions about your work habits and preferences and then configures the software in a way that best conforms to your answers. You can also set options manually for greater control.

VirusScan's data inspector monitors files and programs as they open; lets you manually scan selected files, folders, and volumes; and lets you schedule full-system scans at shutdown or any other convenient time.

VirusScan's most glaring omission — a major one in this era of the Internet and e-mail attachments — is its inability to scan compressed-file archives. This deficiency certainly makes VirusScan quicker than its competitors, but it also makes it hard to rely on VirusScan for rock-solid protection.

Virex sports an uncomplicated interface and, among the three products we compared, it's the fastest at thoroughly scanning your computer for infection.

The two workhorses of Mac antivirus software, Symantec AntiVirus for the Macintosh (SAM) and Virex, provide features and a level of protection much better suited to the Internet Age. In addition to having features like those found in VirusScan, SAM and Virex both scan archive contents — and offer other important enhancements as well.

SAM and Virex both offer a watched-folder feature that lets you designate any folder (including the desktop) to be scanned as new files enter it. Using it is a great way to ensure that files downloaded from the Internet or received via e-mail don't infect your Mac. SAM and Virex are also fully PowerPC-native, and each is capable of flagging suspicious behavior that might indicate a virus that's not in its database. Only SAM's implementation of this feature is automatic and practical, however: Virex looks for suspicious activity by comparing "snapshots" of your hard-disk data, which you must capture manually at various intervals. Doing so is a pain.

SAM's updater also wins best-of-show in this roundup. If you have a modem, all you have to do to update SAM is activate a menu command. SAM calls a number, downloads the update file, and installs it. It's automatic, fast, and foolproof. The only drawback is that updating requires a toll call. (Symantec's Windows 95 antivirus product offers the option of updating via the Internet — a toll-free approach for most people and a courtesy we'd like to see extended to Mac users.)

Virex took slightly more than three minutes to scan 135 MB of data; SAM required nearly four and a half minutes. (VirusScan performed the scan in less than two minutes, but — of course — it skipped over compressed archives.)

The Bottom Line

VirusScan's inability to deal with compressed archives and its lack of watched-folder functionality make the current version unacceptable for serious antivirus protection. SAM and Virex are both well suited for virus-vulnerable users who spend significant amounts of time on the Internet or commercial services. We loved Virex's speed (and we'll be eagerly watching for an early-1997 update that promises even faster scanning, drag-and-drop operation that doesn't require the application be launched, and other enhancements). But for now, we give the nod to SAM for its handy online update feature and ability to monitor suspicious activity automatically. / Gregory Wasson

Symantec AntiVirus for Macintosh (SAM) 4.5, $69 (estimated street). **Company:** Symantec, Cupertino, CA; 800-441-7234 or 541-334-6054; http://www.symantec.com/avcenter/. **Reader Service:** Circle #412.

Virex 5.68, $69 (estimated street). **Company:** Datawatch, Wilmington, MA; 800-847-3982 or 508-988-9700; http://www.datawatch.com/. **Reader Service:** Circle #413.

VirusScan 2.0, $65 (estimated street). **Company:** McAfee Associates, Santa Clara, CA; 408-988-3832; http://www.mcafee.com/. **Reader Service:** Circle #414.

Color Inkjets

Canon BJC-4550 ★★★

Epson Stylus Color 500 ★★★

Hewlett-Packard DeskWriter 680C ★★★½

An affordable trio delivers output for home or school.

THEY CAN'T QUITE MATCH the speed of laser printers or the output quality of thermal-wax or dye-sublimation printers, but for those of us with relatively modest output needs or tight budgets, a color inkjet printer is the ideal output device. For starters, they're affordable: All three models we compare here — the Canon BJC-4550, the Epson Stylus Color 500, and the Hewlett-Packard DeskWriter 680C — are priced under $500. All work satisfactorily with plain copier paper, which helps keep per-page costs low. Factor in ease of use and setup, and you can see why color inkjet printers have won favor in homes, classrooms, and small offices.

To help you decide which inkjet printer meets your specific needs, we took a look at the latest models from Canon, Epson, and HP and compared them with each other and their competition from Apple, the Color StyleWriter 2500, which we awarded three and a half mice in our August '96 issue (page 94).

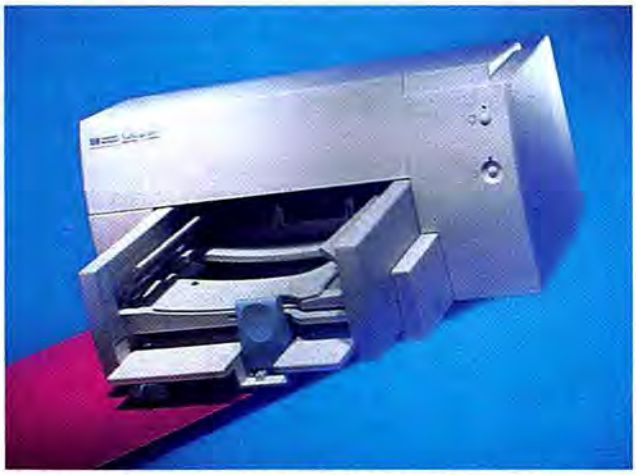
There's plenty that sets these printers apart (more on that shortly), but there are also many ways in which they're similar: The Canon, Epson, and HP printers use four ink colors (cyan, magenta, yellow, and black) to generate images. Cyan, magenta, and yellow inks are furnished in a single cartridge (which must be replaced as soon as any single ink color is used up); black ink is supplied in a second cartridge. With all three printers, cartridge replacement is literally a snap.

All three printers are QuickDraw devices, which means they use your computer's processing power to generate images. (That means that if your document is complex — or just large — you will notice a degradation in your Mac's speed while printing.

One major difference among these printers involves their top output resolution in dots per inch (dpi). The Epson Stylus Color 500 has the highest-possible resolution among these three printers, 720 x 720 dpi; its default, or Normal, mode is 360 x 360 dpi. The Canon BJC-4550 also defaults to 360 x 360 dpi but is capable of delivering 720 x 360 dpi. The HP DeskWriter 680C is something of a hybrid: Its ColorSmart technology lets it print black-only images or text at 600 x 600 dpi and color images at 600 x 300 dpi — even if both types of images are on the same page.

Another difference among the printers has to do with their ability to be shared over a network — a highly desirable option for small offices or classrooms. The Epson Stylus Color 500 has no networking capabilities. The Canon BJC-4550 goes a step further: You can connect it to your computer and configure it so that others on the network can use it too — but your computer becomes everyone's image processor, with the speed penalties that entails. Only the HP DeskWriter 680C comes equipped as a full network citizen: Its built-in LocalTalk interface means that with the right cables, you can assign it its own node on an AppleTalk network, for use by anyone in your office or lab.

Still another way the three color inkjet printers differ is in their paper-handling capabilities. All three accommodate standard letter-sized (8.5 x 11 inch) and legal-sized (8.5 x 17 inch) paper, but only the Canon BJC-4550 is capable of printing on tabloid-sized (11 x 17 inch) paper. The HP DeskWriter 680C can print multisheet continuous banners, and HP sells accordion-folded paper for that purpose. All three printers support a variety of media, including transparency slides and postcards.



The Hewlett-Packard DeskWriter 680C is easy to use and provides vivid color quality.

Speed

To gauge these printers' speed, we timed how long it took to print four real-world documents. The setup for all the tests included a serial connection on a Performa 5260 with background printing on.

Output times and full descriptions of the test documents are found in the accompanying charts, but generally none of these three printers is as fast as the Apple Color StyleWriter 2500 when operating in normal mode on plain paper. The HP printer proved speediest at printing text-only pages but was slowest of the bunch on color-intensive pages. The Epson Stylus Color 500, in contrast, was the slowest on the all-text file but fared best on our complex QuarkXPress document, largely because it used plain paper and the other printers slowed down dramatically when printing on coated paper.

FLYING COLORS? / comparing inkjet-printer output speeds

To determine how speedily three color inkjet printers do their work, we connected each to a Performa 5260 and measured print times for four real-world documents: a five-page all-text Microsoft Word file, a handbill created in Word that contains text and simple color graphics, a three-page Microsoft PowerPoint transparency handout, and a QuarkXPress newsletter containing multiple fonts and photographic images. The QuarkXPress page was printed at each printer's maximum resolution on paper recommended by the vendor for optimal output; all other files were printed at normal resolution, using plain copier paper. Results for the Apple Color StyleWriter 2500 are provided for reference.

	WORD TEXT	WORD HANDBILL	POWERPOINT	QUARKXPRESS
Canon BJC-4550	2:36	4:07	11:26	9:42
Epson Stylus Color 500	2:49	3:23	10:39	6:10
Hewlett-Packard DeskWriter 680C	2:15	4:53	14:56	9:40
REFERENCE PRINTER				
Apple Color StyleWriter 2500	2:09	3:32	11:01	9:20
	MINUTES SLOWER	MINUTES SLOWER	MINUTES SLOWER	MINUTES SLOWER

PHOTOGRAPHY / MICHAEL FALCONER

Image Quality

The final basis for judging a printer is output quality. High resolution is an important contributor to document appearance, but it's not everything: Colors must be reasonably realistic — neither dull nor overly "hot" — and text should be crisp and truly black.

Among the three printers, the HP DeskWriter 680C produced the best overall image quality — even though it doesn't offer the highest resolution. Its colors were vivid and remarkably even. Text, which was surprisingly challenging for all three of these printers, had speckles of ink near the edges of characters, which resulted in a light shadowlike effect.

The Epson Stylus Color 500's color tones were good, but it exhibited annoying bands in color blends and areas of solid color. Using the printer's MicroWeave mode eliminated most of the banding but also slowed down printing. The Stylus Color 500's biggest strength is its 720-x-720-dpi output on plain paper, which makes photographic images look exceptionally good.

The Canon BJC-4550 offered the worst-quality text in normal mode. The black text was light, and it did not appear crisp and sharp like the other printers' black output. The Canon printer produced reasonably good color tone, and although some color banding was noticeable, it was far less severe than with the Epson printer. On coated paper, the output improved tremendously.

The Bottom Line

This new crop of color inkjet printers raises the bar on quality at an affordable price. The Hewlett-Packard DeskWriter 680C's ease of use, vivid color quality, and built-in network connectivity make it the top dog in this pack. The Epson Stylus Color 500 produces solid output (especially at 720 x 720 dpi on plain paper), which suffers from some banding, and the printer is limited in terms of connectivity. The Canon printer offers tabloid-sized output at a great price, but its normal-mode print quality, particularly with text, leaves much to be desired. / Tony Bojorquez

Canon BJC-4550, $499 (list). **Company:** Canon America, Lake Success, NY; 516-488-6700; http://www.usa.canon.com/. **Reader Service:** Circle #415.

Epson Stylus Color 500, $279 (list). **Company:** Epson America, Torrance, CA; 800-463-7766; http://www.epson.com/. **Reader Service:** Circle #416.

Hewlett-Packard DeskWriter 680C, $289 (list). **Company:** Hewlett-Packard, Palo Alto, CA; 800-527-3753 or 415-857-1501; http://www.hp.com/. **Reader Service:** Circle #417.

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MacUser

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JUNE '97

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DIGITAL VIDEO

Interest in digital video is spreading faster than Hollywood gossip. That's why in the June issue, MacUser Labs spotlights digital video for the non-expert to discover just how easy D.V. can be. The experts will review stand-alone boards, software and computer systems that come bundled with the boards and software. If you have always wanted to digitize your VHS vacation footage or incorporate digital video into a dazzling business presentation, then don't miss the June issue of MacUser!

PHOTOSHOP PLUG-INS

If a picture is worth a thousand words, then using the right Photoshop plug-ins can make it worth a million. Graphic designers, pre-press professionals, or anyone who works with images, check out the June issue of MacUser to find out how to maximize the power of plug-ins. MacUser experts, including Bruce Fraser, will review and mouse-rate key Adobe Photoshop plug-ins in the areas of special effects, productivity, pre-press and the Web. Plug-in to MacUser!

TRAVELING LIGHT

Can you replace your PowerBook with a Newton? Find out in the June issue when MacUser puts the PowerBook up against the Newton MessagePad 2000 to learn which one is the ultimate mobile computing device.

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CIRCLE **124** ON READER SERVICE CARD

4-Sight Fax 4.0 For Macintosh

★★★★½

Fax server combines ease of use, sophisticated business features.

SENDING AND RECEIVING FAXES from your Mac is convenient and productive, but running a dedicated fax phone line to everyone in your company gets expensive fast. The 4-Sight Fax 4.0 is a hardware/software combination that allows multiple members of your office to share one or more fax modems over a network. Users get the ease of use of the best single-user fax software, and it also delivers extra features at both the user and the organizational level.

The 4-Sight Fax system consists of server software that runs on a Mac connected to one or more Class 2 fax modems. With the addition of NuBus or PCI serial cards, the server can support up to 12 fax-modem lines. The server software spools and sends users' outgoing fax jobs and distributes incoming faxes over AppleTalk, using 4-Sight's proprietary 4-Talk protocol. (With appropriate modem and router hardware, you can use your phone company's DTMF (Dual-Tone Multiple Frequency) service to assign everyone in your office separate fax numbers that all come in over one line; the 4-Sight Fax can use this setup to automatically route incoming faxes to their intended recipients. Without this arrangement, an administrator would have to route incoming faxes manually. 4-Sight claims that 4-Talk is up to 60 times as fast in the 4-Sight Fax 4.0 as it was in the previous version. We found sending and receiving faxes over the network very fast, even with files containing large graphics.

Recognizing that not all users in a company are equal, the 4-Sight Fax lets you set fax priorities, so a vice president's outgoing faxes can go ahead of those of the worker bees. The server's security features mean incoming faxes are seen only by the intended recipient. And like e-mail software, the software supports groups — so you can send a fax just once from your computer and have it automatically sent to multiple recipients. You can also prevent users from hogging the fax server by limiting the number of faxes each user can have in the queue.

The included 4-Link utility adds a menu item that lets users fax from within any application. From the Finder, you can send a fax by dragging a file on top of the icon of the Fax Draggin' utility, which launches the file's application, prepares the document for faxing, and opens your address book.

Additional user controls let you create cover pages; fax multiple files in one transmission, using the Enclose button; delay sending a fax until phone rates are cheaper; and suspend, edit, and resend faxes that have already been submitted to the server. Users can be notified of incoming faxes and outgoing-fax receipts by e-mail or by the 4-Link software.

For billing purposes, you can set up the 4-Sight Fax to track fax usage in a variety of ways. You can set up a billing code book, similar to a user's fax address book, that users can employ to assign fax documents to different billing accounts. You can configure the server software to collect billing data for all users, and all users can also collect data locally on their own computers.

The 4-Sight Fax's Message Queue window lets the administrator see a list of any user's outgoing faxes or view all outgoing jobs for an entire workgroup.

If the 4-Sight Fax's extensive customization features aren't enough for you, you can use AppleScript to control the server further.

The Bottom Line

The flexible and sophisticated business and user features of the 4-Sight Fax 4.0 For Macintosh are top-notch and well implemented. Yet, for users, the 4-Sight Fax 4.0 software is among the easiest fax software to operate. The 4-Sight Fax 4.0 takes computer faxing to new heights. / John Rizzo

4-Sight Fax 4.0 For Macintosh, with ten-user license, $795 (list). **Company:** 4-Sight, West Des Moines, IA; 800-243-0516 or 515-221-3000; http://www.4sight.com/. **Reader Service:** Circle #418.

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Ziff-Davis Benchmark Operation, 1001 Aviation Parkway, Suite 400, Morrisville, NC 27560

After Effects Plug-Ins

Aurorix	★★★★
Berserk Effects	★★★★
Studio Effects	★★★★

Three eclectic collections offer unique special effects.

ALMOST ANY DIGITAL VIDEOGRAPHER will tell you that Adobe After Effects is to video and animation as Adobe Photoshop is to still images. And, like Photoshop's, After Effects' powerful special-effects and editing features can be extended by use of its plug-in architecture. Three new plug-in collections — Aurorix and Berserk Effects, both from DigiEffects, and Studio Effects, from MetaTools — add a battery of truly special — and specialized — effects to After Effects' arsenal. Some are variations on features already in After Effects, but many are completely new.

DigiEffects Packages

The two packages from DigiEffects, Aurorix and Berserk Effects, add several simple but impressive filters to your arsenal.

The Aurorix package includes 26 effects, ranging from distortion filters such as Infinity Warp, which provides drainlike vortex distortions, to rendering filters such as Soap Film, which creates psychedelic, soapy colors and patterns.

Notable filters include Aged Film, which adds flicker, scratches, and dust; Earthquake, which shakes a layer on its *x* or *y* axis (with motion blur); and Light Zoom, which creates a streaky, accelerated "warp speed" effect in a selected layer.

Berserk Effects is a collection of 20 filters that are a little less "out there" than those of the Aurorix package. Blizzard and Fog Bank let you add falling snow or drifting fog to a layer (although for realistic effects, you need to be sure your source footage is snowy or dark to begin with).

Several other Berserk effects mimic traditional media: Newsprint renders a layer as a halftone, and Vangoughist and Oil Paint create natural paint effects. Also providing distortion effects, CycloWarp and Perspectron apply distinctive bends and warps to a layer. And, of course, all these filters have several keyframable properties for creating different effects over time.

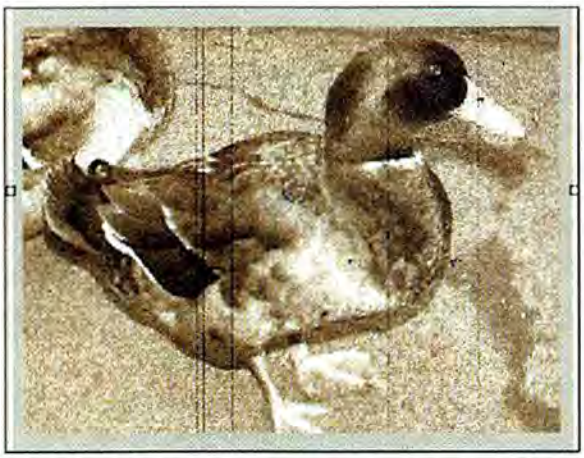
Berserk's best feature, however, is its Laser plug-in, which creates several types of laser-beam and ray-gun effects that have a range of powerful controls. Laser's high-quality results include glowing beams of varying color.

We'd like to see DigiEffects include better documentation and follow MetaTools' lead and provide multiprocessing acceleration.

Although many of these filters may, at first, appear to create simple, wacky special effects, they can create some startling special effects when used in conjunction with other filters. Constructing your images and layers with particular filters in mind is essential, however.

Studio Effects

MetaTools has followed up its powerful Final Effects collection with Studio Effects, a new package of 19 effects, ranging from burning film to sophisticated particle effects. Like Final Effects, Studio Effects is a package of powerful, high-quality filters. Even better, the Studio Effects package supports multiprocessing — to great advantage.



This video footage of a duck was prematurely aged with the help of both the Aged Film filter from DigiEffects' Aurorix (which added graininess, scratches, and flicker) and the SE Toner filter from MetaTools' Studio Effects collection (which added sepia color tones).

Studio Effects' filters install into After Effects' existing Filter submenus and are easily identifiable by their SE prefix. Falling into several categories, Studio Effects plug-ins include the Alpha Map plug-in, a simple filter that lets you manipulate the alpha channel of any layer to create glows and auras.

Studio Effects includes several distort plug-ins, ranging from Bender, which lets you bend and twist a layer over time, to Split, which lets you create animatable mouth- and zipperlike splits in a layer. Although Studio Effects' distort tools are easy to use, they're not as powerful or as high-quality as the distort tools in The Valis Group's Movie Flo'.

Other standout filters include the Glue Gun filter, which lets you create blobby streaks that look as if they're being written by a glue gun or a tube of toothpaste; Time Blend, which adds ghosting trails to other time-based effects, such as particle systems; and Toner, a colorizing effect that bases its changes on the luminance values of your image.

Studio Effects' most compelling filters are its two particle-system filters, which can be used to create everything from fireworks to rocket flames to bubbling lava. With comprehensive, powerful controls and excellent results, Studio Effects' particle systems give users who've been relying on 3-D programs to create these types of effects a much speedier alternative.

And speaking of speed, Studio Effects' special set of multiprocessing filters really pays off: On a DayStar Genesis MP 720+ (equipped with four 180-MHz PowerPC 604 processors), the filters proved dramatically faster than their single-processor counterparts. Studio Effects' multiprocessing performance is so impressive that you can actually preview effects in After Effects in real time, forgoing the need to create test renderings.

The Bottom Line

None of these packages includes essential, everyday effects. But if you need one of them for a specific project, such as adding laser blasts to an animation, simulating an old movie, or making magma flow, you can rest assured that all three deliver comprehensive controls and high-quality results. / Ben Long

Aurorix 1.0, $289 (list); **Berserk Effects 1.0,** $289 (list). **Company:** DigiEffects, San Francisco, CA; 888-344-4339 or 415-563-4318; http://www.digieffects.com/. **Reader Service:** Circle #420.

Studio Effects 1.0, $695 (list). **Company:** MetaTools, Carpinteria, CA; 800-472-9025 or 805-566-6200; http://www.metatools.com/. **Reader Service:** Circle #422.

Franklin Quest Ascend 4.0

Bugs, bad design, and lack of features mar this PIM.

ACKNOWLEDGING THAT ITS previous version was little more than a Windows port, Franklin Quest claims to have written Ascend 4.0 from the ground up as a Mac application. However, it's still plagued by bad design, bugs, and a lack of features.

Ascend is designed to mimic the Franklin Day Planner system in its range of features and its ability to print pages that fit its binders, on plain paper or preprinted forms. Ascend also embraces a concept called Values & Goals. To "experience inner peace," you're encouraged to identify your governing values, set long-range goals based on them, list intermediate steps to reach these goals, and then divide these steps into daily events. Whether you buy into this New Age philosophy is a personal matter, but there's no arguing about Ascend's clumsiness and lack of features.

Importing data from other PIMs (besides Ascend 3.0) is impracticably difficult. The Import dialog box works only for contact information (not calendar entries) and offers no way to create templates for importing data from the same source. Our Power Mac 7600 crashed repeatedly when we tried importing 2,000 records as a tab-delimited text file. Franklin Quest tech support told us there's no limit to the number of records Ascend can contain but suggested importing 100 records at a time — manually mapping input fields to Ascend's each time. No thanks!

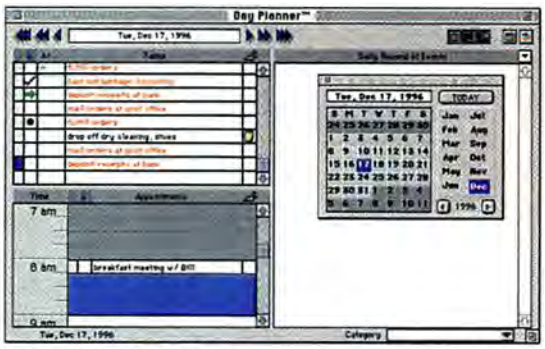
We finally managed to import 46 records for testing purposes, but even these had problems: Fields containing commas became enclosed in quotation marks, for instance.

Entering contact information by hand is no easier. Ascend contains none of the indispensable autofill and autoformat features that are standard on most PIMs today. Worse, if you goof and save an individual as a company, or vice versa, your record will vanish without warning. Furthermore, Ascend's autodialing feature cannot distinguish between local and long-distance calls or open a new entry in the contact's note field when you autodial a number (as many other PIMs do).

The list of inconsistencies and shortcomings goes on and on. Some more examples (but by no means all): Contrary to what the manual says, you can't drag and drop tasks to reprioritize them. You can drag an appointment or task from the task list to a calendar to reschedule, but you can't drag an item from one day in the calendar to another. In many places, you can't Shift-click to select multiple items.

The Bottom Line

Far from bringing "inner peace," this awkward, overpriced PIM will frustrate all but die-hard devotees of Franklin Quest's paper-based personal organizers. / Owen W. Linzmayer



Franklin Quest Ascend's Day Planner window looks Mac-like, but many features don't work as expected.

Ascend 4.0, $99.95; upgrade from Ascend 3.0, $39.95 (list). **Company:** Franklin Quest, Salt Lake City, UT; 800-877-1814 or 801-975-9992; http://www.franklinquest.com/. **Reader Service:** Circle #423.

GlobalTransfer

Modem-to-modem file transfer made easy but not painless.

FIVE OR TEN YEARS AGO, GlobalTransfer — Global Village's easy-to-use modem-to-modem file-transfer software — would have been a huge hit. Back then, when using direct phone connections was the only way to move files efficiently over long distances, users grappled with cryptic AT modem commands and struggled to memorize their dial-up partners' phone numbers.

In today's world, when file transfers are theoretically as easy as clicking on a button in your browser or mail reader, the need for GlobalTransfer is definitely less urgent. But if you've ever endured a painfully slow download from an online service or a busy Internet server, only to obtain a corrupted file, you may appreciate GlobalTransfer's simple, direct approach. Unfortunately, though, using GlobalTransfer may not improve your odds of file-transfer success.

GT lets you send files via modem directly to or receive them from any Mac or PC running telecommunications software that supports Zmodem file-transfer protocol. (Nearly all telecom packages support Zmodem.)

Setting up GlobalTransfer for your Mac is wonderfully simple: Click on the Auto Configure button, and GT identifies your modem and automatically selects the appropriate connection file for it. An intuitive address book lets you save the names and phone numbers of those with whom you exchange files. Both the sending and receiving of files can be set to occur in the background, and GT can even be set up in auto-answer mode.

Although it's easier to use than the no-frills telecom software ZTerm, GlobalTransfer is less capable of getting files to their destinations intact. Small files arrived without any trouble, but sending 200K or larger files, or any group of files, required several attempts. We gave up in frustration after repeated failures to transmit files larger than 1 MB.

That effort made us acutely aware of a disadvantage GT has in comparison to the Net and online services: With the latter, you can get online via a local call, whether you're sending files across town or across the country; in contrast, GT requires long-distance dialing (sometimes *lots* of it) for long-distance transfers. GT also lacks the ability of many Net and online programs to transfer folders or to automatically compress files before sending them. What's more, GT's display of estimated send time proved wildly inaccurate — especially over a noisy phone line.

The Bottom Line

Although Global Village's GlobalTransfer is a remarkably easy application to use, it's worthwhile only if you need to share small files with someone who doesn't use an online service — assuming you don't mind incurring long-distance charges for sending files long distances. / Carolyn Bickford and Shelly Brisbin

GlobalTransfer, $29.95 (list). **Company:** Global Village, Sunnyvale, CA; 800-469-9892 or 408-523-1000; http://www.globalvillag.com/. **Reader Service:** Circle #424.

Momentum Power Port Juggler

$$$

Four extra GeoPorts are nice, and they even work.

FOUR GEOPORT-COMPATIBLE serial ports where there used to be one — for about a hundred bucks. The premise of the Power Port Juggler, from Momentum, is certainly appealing, particularly as a growing number of goodies compete for your printer and modem ports.

Unlike its predecessor for conventional eight-pin serial ports, the Port Juggler, the Power Port Juggler allows higher-speed connections over the nine-pin serial ports found on AV Macs and PowerPC systems and it supports the Connectix Color QuickCam (although not the original black-and-white QuickCam). Also unlike its flaky predecessor, the Power Port Juggler and its software are admirably stable.

The Power Port Juggler is not able to create four simultaneously active ports. Instead, it switches among them, enabling each device to talk to the computer when it needs to. You install the Power Port Juggler's software, tell it which of your computer's ports the Power Port Juggler is attached to, and use the Port Juggler extension in the Chooser to identify the attached devices. If a device isn't listed, you can select Other and then use a standard Open dialog box to assign the port to the appropriate hardware (or the software that controls it).

In most of our tests, the Power Port Juggler worked admirably. For instance, it smoothly brokered among a serial inkjet printer, a digital camera, a Newton MessagePad, and a Visioneer PaperPort.

But it didn't take long for us to find a situation that stumped the Power Port Juggler. Storm Technology's EasyPhoto Reader, a scanner that's included in the Power Port Juggler's device list, simply couldn't communicate from any Power Port Juggler port. An update to the Port Juggler software (to version 4.5), which was issued during our testing period, corrected this problem as well as an incompatibility with LocalTalk connections under System 7.5.5.

The Power Port Juggler, from Momentum.

PHOTOGRAPHY / LON CLARK

Although Momentum appears earnest about maintaining its software, the company's accessibility leaves much to be desired. It has virtually no online presence other than posted updates on America Online's Software Library. Momentum says it's working on a Web site; it's a much needed support channel.

The Bottom Line

The Power Port Juggler improves on the original Port Juggler with support for high-speed GeoPort serial ports and far more-stable software. This time, it really works. / Jim Shatz-Akin

Momentum Power Port Juggler, $129 (list). **Company:** Momentum, Honolulu, HI; 808-947-0055. **Reader Service:** Circle #425.

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FileGuard Remote 3.0

Network file protection made easy with Macintosh Drag and Drop.

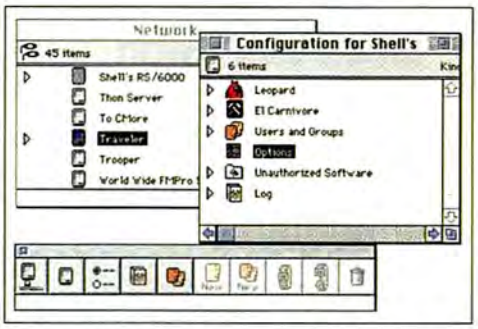
IF DATA SECURITY IS A BIG DEAL in your office, you may already know about FileGuard, ASD Software's data-encryption and folder-locking application. FileGuard, which is designed primarily to safeguard data on single Macs that are shared by multiple users, can encrypt files; lock folders, files, and applications away from prying eyes; and even limit access to your Mac at certain times of day. Now, ASD Software has extended its data-protection reach from single Macs to networks with FileGuard Remote.

FileGuard Remote is an add-on to the original FileGuard program, which remains largely unchanged since we last took a look at it ("For Your Eyes Only," April '96, page 82). It allows the administrator to configure FileGuard on multiple Macs on a network, making it easy to establish networkwide access privileges or authorized-software lists.

Like many network-management packages, FileGuard Remote consists of an application and a system extension. You must install the extension, called Subway, on each Mac you intend to protect with FileGuard Remote. Once Subway is installed on the Macs in your network, you can use the Remote application to configure any or all of FileGuard's settings. You can, for instance, specify user and group access to each system, designate folders and documents that are off-limits to users (or just to certain users), and set up password-protection and encryption options.

Macintosh Drag and Drop is FileGuard Remote's secret weapon. With it, you can establish a set of standard access privileges for your network by configuring one FileGuard Remote setup and then dragging the icon for that Mac onto the icon of another. Just like that, you've duplicated a set of privileges, right down to how often passwords must be changed and whether users can make copies of programs. If you want to apply only some FileGuard settings for one system to another, you can do that with Drag and Drop too.

With your baseline configuration set up, just add or delete any items that need adjustment, and your network is protected. As your needs change, you can alter privileges globally or individually.



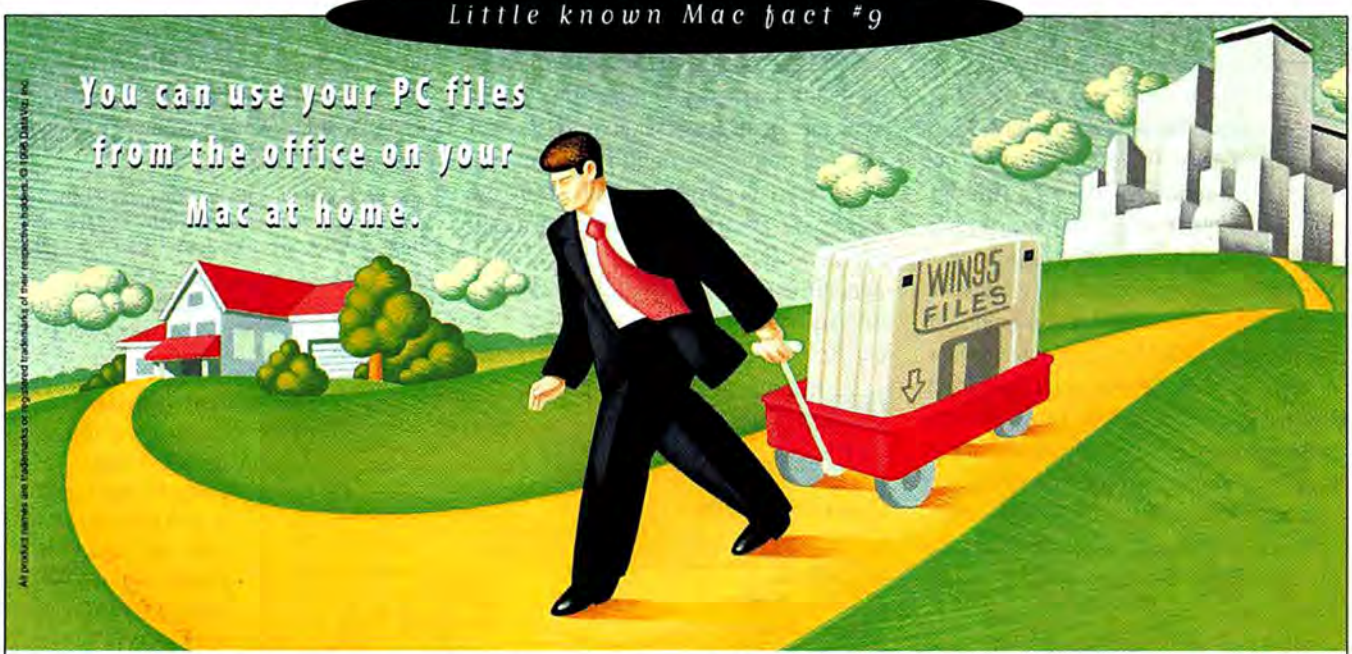
FileGuard Remote lets you see all the Mac OS systems on your network and control access privileges, file-copying privileges, and other security features.

The Bottom Line

FileGuard is probably best suited to settings such as school computer labs, where each computer has multiple users, but using this simple program is a great way to beef up security on any Mac network. / Shelly Brisbin

FileGuard Remote 3.0, $479 for five users (estimated street). **Company:** ASD Software, Montclair, CA; 909-624-2594; http://www.asdsoft.com/. **Reader Service:** Circle #426.

Little known Mac fact #9



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Electronic-Mail Software

Claris OfficeMail ★★★½

FirstClass 3.5 ★★★★

Two good e-mail packages meet different needs.

AS UBIQUITOUS AS E-MAIL has become, one size does not fit all when it comes to LAN-based server software. Claris OfficeMail and SoftArc's FirstClass are e-mail systems that sit on opposite ends of the office-e-mail spectrum: At the top end, FirstClass 3.5 is a full-featured e-mail, conferencing, and workgroup package that is closer to Lotus Notes — a repository for company data as well as a communications tool — than it is to OfficeMail. OfficeMail provides LAN and Internet e-mail for small offices, competing more with Casady & Greene's SnapMail than with First Class. What OfficeMail and FirstClass have in common is that they are both premier products in their categories.

OfficeMail: Simply Powerful

Versatility and ease of use are OfficeMail's biggest strengths. It comprises a server application and five copies of Claris' Emailer, which act as the client software. You can connect up to 100 Macs running Emailer 1.1 (which is now free) or a later version via the server software. The server software also provides a POP3 connection to Internet mail via modem, giving each user an e-mail address with your company name added to Claris' domain name, in the form of Fred@yourcompany.clrs.com. Users at your office can use Emailer to send messages to and receive them from each other locally and also to send and receive mail over the Internet. In addition, if they have appropriate modem setups, Emailer users can dial up any online-service mailboxes they may have.

OfficeMail's simple server-software-setup procedure is easier than installing a single-user copy of Microsoft Office. Establishing user accounts is a matter of typing in user names — the OfficeMail server software automatically sets default passwords to the users' first names. It's also easy to use the server software to sign up for Claris' Internet-mail service provider, ClarisLink (part of HoloNet, with more than 400 access numbers across the country). The service is inexpensive, $39 for ten hours a month for any number of users. For an extra $25 per month and a $100 setup fee, you can get your own domain name, so that a user's e-mail address will be Fred@yourcompany.com. You can also connect to your own Internet provider, but unfortunately the manual does not tell you how to do this.

FirstClass: The Enterprise Choice

Like OfficeMail, FirstClass' client software is free, although you have to pay for user licenses. New client-software features include a spelling checker, a customizable tool bar, and a status bar that provides cursor-sensitive information. You can now drag and drop text, file attachments, and graphics from the Finder and other applications. You can also drag and drop personal addresses into an improved address book and view the history of any message to see who has read it, forwarded it, and so on. With version 3.5, SoftArc filled a hole in FirstClass with FirstClass Personal, a utility that lets you compose e-mail and post conference messages even when you're not connected to a server.

Unlike OfficeMail's simple server software, the FirstClass server software provides a rich set of features, such as built-in bulletin boards, the ability to send mail through the Internet to another FirstClass server, and directory services for automating multiple-server networks. Directory synchronization replicates user lists on all servers and can automatically add new user names and delete old ones. Administrators are now able to hide directory-list user names from different groups of users. Another server-software enhancement allows you to use Dantz's Retrospect or any other program to back up server post offices automatically.

FirstClass fits well into cross-platform environments. The server software is available for Mac and Windows NT, and the client software comes in Macintosh, Windows, and DOS versions.

The FirstClass client software uses an extensible design that lets you add new functionality, much as you might by using plug-ins with your Web browser. New client-software extensions now include viewers for Mac and PC graphic formats, including QuickTime movies and BMP, GIF, PICT, and JPEG images. You can also expand FirstClass' functionality with Database Toolkit 2.0, also from SoftArc, to enable users to look up information in SQL, ODBC, or DAL databases.

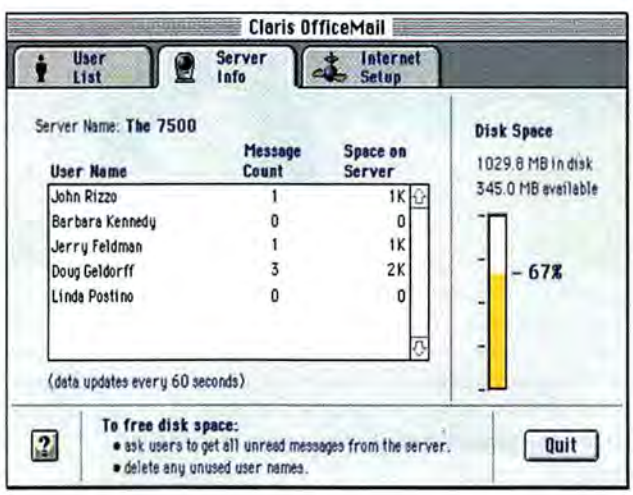
The main thing FirstClass 3.5 still lacks is the ability to send and receive Internet mail without a gateway. This will be fixed in a few months in FirstClass 4.0, a free upgrade for 3.5 owners. Other promised features include group scheduling and the ability to access FirstClass with standard Web browsers and UseNet newsreaders.

The Bottom Line

Claris OfficeMail is an elegant, inexpensive, easy product for providing a school or small office with Internet and LAN-based mail. For large organizations with more-sophisticated needs, FirstClass 3.5 is powerful, expandable groupware. / John Rizzo

Claris OfficeMail 1.0, $399 (list). **Company:** Claris, Santa Clara, CA; 800-544-8554 or 408-727-8227; http://www.claris.com/. **Reader Service:** Circle #427.

FirstClass 3.5, with five-user license, $495 (list). **Company:** SoftArc, Markham, ON, Canada; 800-763-8272 or 905-415-7000; http://www.softarc.com/. **Reader Service:** Circle #428.



Claris OfficeMail's easy-to-use e-mail server software connects Emailer users to each other over a LAN or to the Internet. Emailer users can still access America Online and CompuServe as well.

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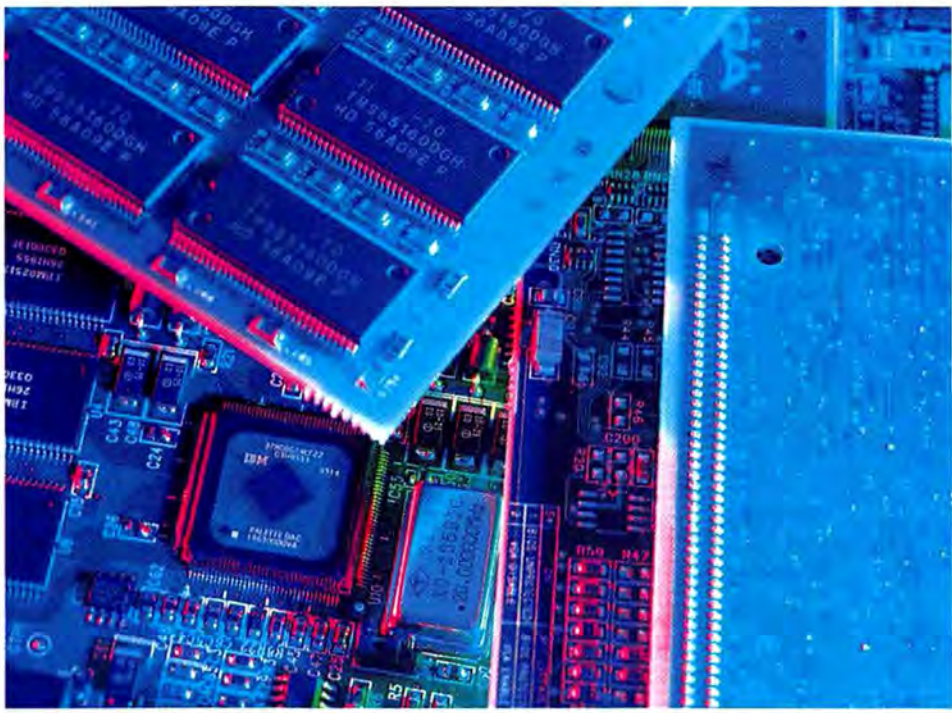
CIRCLE **90** ON READER SERVICE CARD

High-Performance Graphics

TIME ISN'T ON YOUR SIDE when you're using 24-bit color. When you perform a function that requires a screen redraw, the Mac processes QuickDraw commands to redraw the screen pixel by pixel — and at 24-bit color, that's a lot of pixels. You can add more VRAM (video random-access memory) to your system's built-in video, but adding VRAM doesn't necessarily offer more speed than a high-performance graphics accelerator. You can also install an accelerator if you want to make use of a second display, but which card should you get?

We tested eight high-performance 8- to 24-bit-color graphics accelerators in order to find out which performs the fastest and is the best choice for adding a second display. The accelerator that's best for you will be determined by the types of tasks you perform most frequently.



PHOTOGRAPHY / LON CLARK

Mixing It Up

To gauge each accelerator's speed, we ran the MacBench 4.0 graphics tests, which use new ZDBOp (Ziff-Davis Benchmark Operation) proprietary technology that plays back recorded QuickDraw calls made by a series of applications. We used two separate tests within MacBench 4.0's graphics suite: the Graphics test and the Hi-Res Publishing Graphics test. Our test platform was a Power Mac 7600/132 with 36 MB of RAM.

The Graphics test is based on QuickDraw commands common in business applications such as word processors and spreadsheet programs. The top performer in the Graphics test was the IMS TwinTurbo 128M4, and even though it had only 4 MB of VRAM, it actually ran faster than its 8-MB counterpart, the TwinTurbo 128M8. You may need the 8-MB version if you want 24-bit color at 1,920 x 1,080 pixels. Both IMS cards feature special acceleration that allows for

DRAWING CONCLUSIONS / *ratings, specs, and speed charts*

WE EMPLOYED TWO TESTS from MacBench 4.0's graphics suite — the Graphics test and the Hi-Res Publishing Graphics test — in order to gauge the speed boost provided by these graphics accelerators. The test platform we used was an Apple Power Macintosh 7600/132 equipped with 36 MB of RAM. For the Graphics test, we set the screen resolution to 640 x 480 pixels, at a bit depth of 8 bits. The

RATING	PRODUCT	LIST PRICE	VRAM	24-BIT RESOLUTION	MAXIMUM RESOLUTION	WARRANTY
♦♦♦♦	IMS TwinTurbo 128M4	$599	4 MB	1,280 x 1,080 pixels	1,920 x 1,080 pixels, 16 bits	3 years
♦♦♦♦	IMS TwinTurbo 128M8	$899	8 MB	1,920 x 1,080 pixels	1,920 x 1,080 pixels, 24 bits	3 years
♦♦♦♦	✓ Number Nine Imagine 128 4-MB	$349	4 MB	1,152 x 870 pixels	1,920 x 1,080 pixels, 16 bits	5 years
♦♦♦♦	✓ Number Nine Imagine 128 8-MB	$699	8 MB	1,920 x 1,080 pixels	1,920 x 1,080 pixels, 24 bits	5 years
♦♦♦½	Diamond Javelin Video 3400XL	$349	4 MB	1,152 x 870 pixels	1,600 x 1,200 pixels, 16 bits	5 years
♦♦♦½	Matrox MGA Millennium	$498	8 MB	1,440 x 1,080 pixels	1,600 x 1,200 pixels, 8 bits	3 years
♦♦♦	ATI Xclaim GA	$449	4 MB	1,152 x 870 pixels	1,600 x 1,200 pixels, 16 bits	5 years
♦♦½	Village Tronic MacPicasso 520	$366	4 MB	1,024 x 768 pixels	1,600 x 1,200 pixels, 8 bits	2 years

✓ MacUser BEST BUY ■ Best performer(s) in test. *Unable to perform test. LISTING IS ALPHABETICAL WITHIN GROUPS OF EQUAL MOUSE RATINGS.

Accelerators

quicker redraws of text, the most common objects displayed in business applications.

Desktop-publishing professionals tax their systems by using graphics-intensive applications. Because of this, we tested each accelerator with the MacBench 4.0 Hi-Res Publishing Graphics test, which is based on QuickDraw calls common in Adobe Photoshop and QuarkXPress.

The top performers in the Hi-Res Publishing Graphics test were the 4- and 8-MB versions of the Number Nine Imagine 128. These cards use a 128-bit internal bus, and both scored about 20 points more than most of the other cards and about 30 points more than the Diamond Javelin Video 3400XL. The ATI Xclaim GA, Matrox MGA Millennium, and two IMS TwinTurbo 128M cards offer reasonable speed, but the ATI and Matrox cards have lower prices.

If you simply want to add a second display, take a look at one of the sub-$400 accelerators — the Number Nine Imagine 128 4-MB; the Diamond Javelin Video 3400XL; or the Village Tronic MacPicasso 520, which wasn't able to run the Hi-Res Publishing Graphics test because the card's ROM was not able to support a resolution of 1,152 x 870 pixels at 24 bits. Village Tronic has plans to release new ROM that supports this resolution.

Specifications

If you've never been shopping for a graphics accelerator, you might be dazzled by the specifications. Here are some of the features to which you should pay attention:

Bit Depth. The number of bits of data used to describe a pixel. For desktop publishing, the standard is 24 bits per pixel, which produces 16.7 million colors. If you're using business applications, 24-bit color isn't practical and will cause unnecessary slowdowns; work with a bit depth of 8 bits (256 colors).

Display Resolution. The amount of pixels that appear on a screen. The first number denotes the amount of pixels horizontally, and the second number denotes the vertical amount. The higher the numbers, the more detail you can show on a screen; the lower the numbers, the quicker the screen redraws when scrolling.

VRAM. The amount of VRAM on an accelerator determines the resolution and bit depth. Graphics accelerators are available with various amounts of VRAM, and many can be upgraded. More VRAM means you'll be able to display more colors and higher resolutions. It doesn't necessarily mean more speed — our results show little difference in speed between cards with 4 and 8 MB.

Software Features. Each accelerator comes bundled with drivers and software utilities. Some features to look for include zoom/pan, gamma adjustment, screen savers, selective acceleration of QuickDraw functions, text acceleration, and the ability to turn the acceleration on and off.

smart shopper

5 questions to ask when you're buying a graphics accelerator:

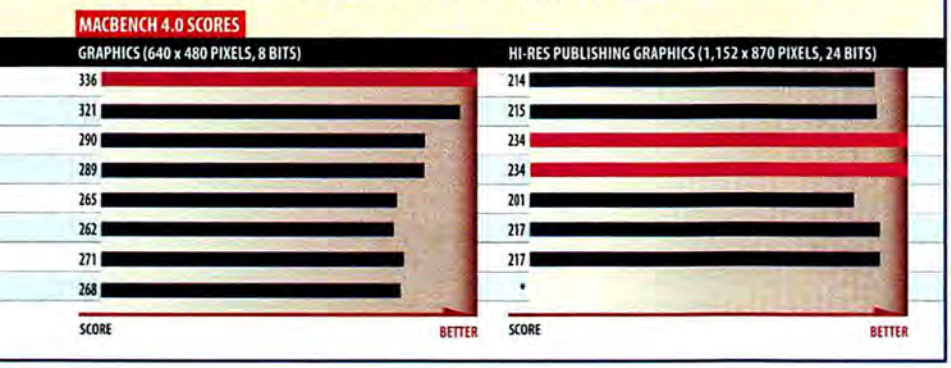
1. Will I need to add more VRAM if I want a specific display resolution or bit depth?
2. What type of monitor connector does the accelerator have, and will I need an adapter for my monitor?
3. What types of functions are included in the software drivers?
4. Can I control the acceleration of specific QuickDraw calls through the software?
5. Does the accelerator come with video-playback acceleration?

The Bottom Line

For those whose livelihood is dependent on 24-bit color, both Number Nine Imagine 128 accelerators offer good speed. If you want to add a second display, consult our table and MacBench scores and pick an accelerator that offers reasonable speed at a price that's right for you. / ERIK GUNTHER

Erik Gunther is a freelance Mac consultant. MacUser Labs Senior Project Leader Jeffy Milstead managed the testing for this report.

Hi-Res Publishing Graphics test was performed at a screen resolution of 1,152 x 870 pixels, at 24-bit color. All MacBench 4.0 scores are relative to those of an Apple Power Macintosh 6100/60 with a 2-MB VRAM card, which scores 100 for each test.



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APPLE'S FAST NEW MAC PORTABLE BLASTS PAST THE COMPETITION. BUT AT WHAT PRICE COMES THE POWER?

ROCKETBOOK

MacUser LABS

EVERY SO OFTEN a product comes along that leaps so far ahead of the status quo that it redefines our expectations for an entire product category. Take, for example, the PowerBook. We all know that if we use a Mac portable computer, we must make certain concessions — learn to live with yesterday's technology, deal with a limited feature set, adapt our work habits to a computer that's slow compared to a desktop Mac. Right?

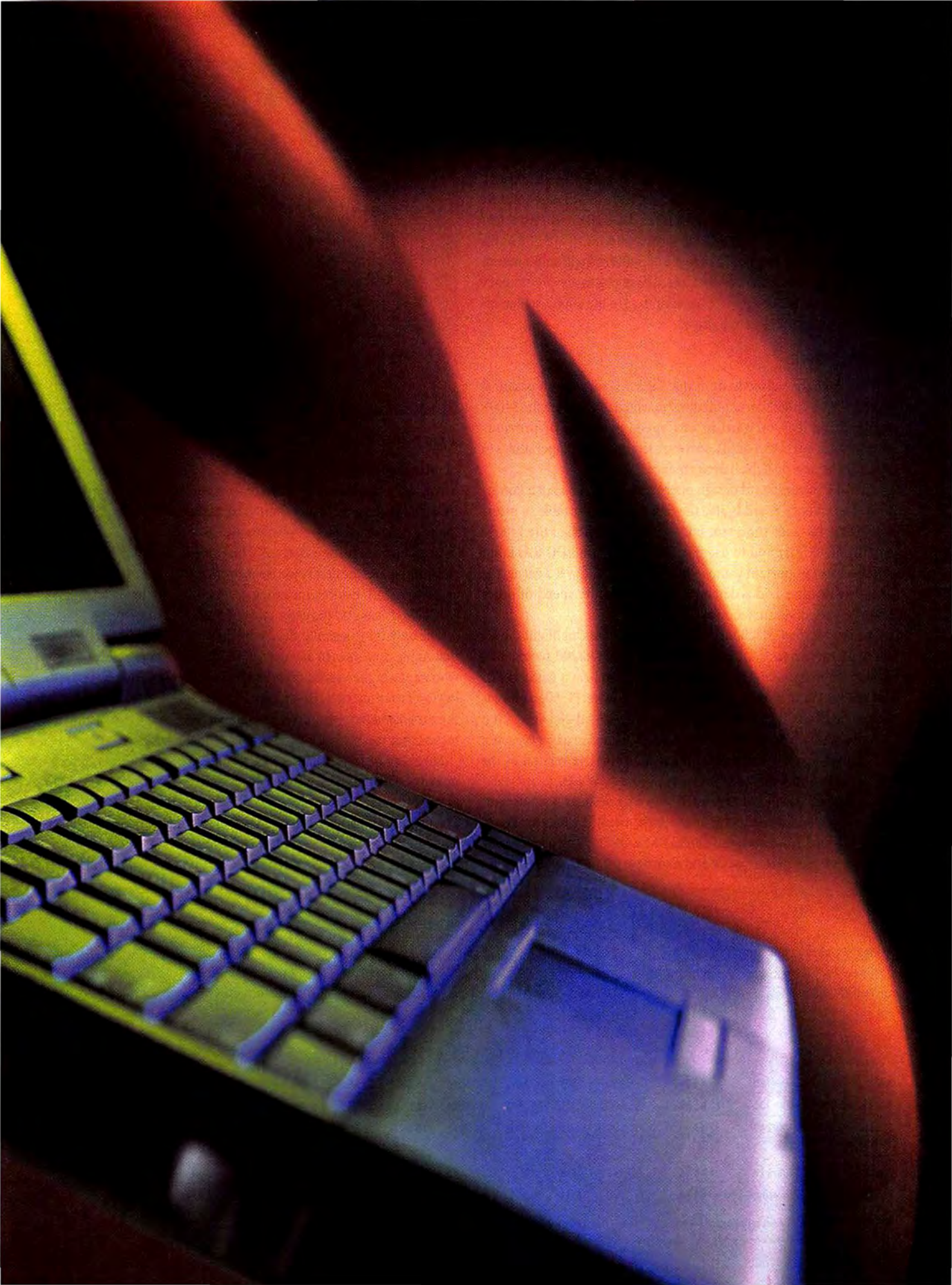
Wrong.

Apple's new PowerBook 3400 is simply the fastest portable computer — Windows- or Mac OS-based — we've ever tested. It's three times as fast as the 1400, which, when it shipped only four months ago, was the fastest Mac portable you could buy. Based on processor speed, the 3400 is also faster than any portable the Wintel world has to offer. It even delivers better MacBench 4.0 Processor scores than any currently shipping desktop Mac OS system that has the same processor (the Power PC 603e), something that has never before happened in the history of mobile Macs.

But that's not all. Developed under the code name Hooper, the 3400 is a state-of-the-art PCI Power Mac. It comes packed with just about every feature mobile users could want and a few they probably wouldn't have guessed could fit inside a portable shell.

BY ANDREW GORE

PHOTOGRAPHY / JIM KARAGEORGE



Performance comes at a price, though. Prospective buyers should be ready to shell out some serious bucks for the Buck Rogers of portable computers. The 3400 comes in four configurations in the U.S. For $4,500, you can get a 3400/180 with a 1.3-GB IDE drive and 16 MB of RAM; for an additional $500, you can add a 6x CD-ROM-drive module and an Argon card (a combination Ethernet/modem card). The $5,500 3400/200 comes only one way: with 16 MB of RAM, a 6x CD-ROM drive, an Argon card, and a faster 2-GB IDE drive. And then there's the top-of-the-line 3400/240 for $6,500 with 16 MB of RAM, a 3-GB drive, and a 12x CD-ROM drive. The 3400/240 will ship a month later than the rest of the product line. These prices are preliminary and are subject to change. The question is, Are the 3400's stellar capabilities worth the sky-high price?

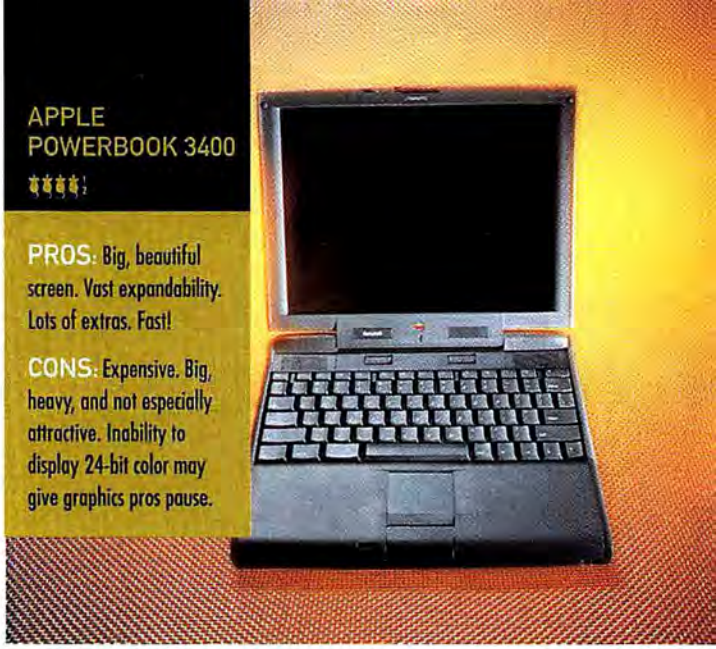
STARSHIP HOOPER

If NASA had gone directly from the *Saturn V* rocket to a practical hyperdrive, we might have something to which to compare the 3400's breathtaking leap forward in raw speed over that of previous PowerBooks. But NASA didn't, so we are left only with superlatives to describe the new portable's performance.

The 3400's logic-board design offers the first PCI bus in a PowerBook. The Hooper board is also the first in a Mac portable to incorporate a 64-bit-wide processor bus (double the width of the 1400's) running at 40 MHz and to use fast, 70-nanosecond EDO RAM. But perhaps most important is the addition of a 256K Level 2 cache, the lack of which has had a detrimental effect on the speed of other PowerPC-based Mac notebooks.

The 3400 series's MacBench 4.0 Processor scores highlight the effect of all these new features. In our tests, the 3400/200 scored 308, almost triple the 1400/117's score of 114. It also beat a desktop PCI Mac OS system that uses the same 200-MHz PowerPC 603e processor — the Power Computing PowerBase 200 scored 285. And, even though it was still a prototype, the 3400/240 turned in a blazing score of 333. Even more surprising was that the 180-MHz version of the 3400 edged out the desktop system, with a score of 293.

Apple attributes the 3400's superiority over desktop systems with similar logic-board designs to component tweaking and tuning of the logic board. However, the 3400 uses Mac OS 7.6, which reportedly improves system performance and may have influenced our results.



WARP DRIVE

Mankind does not live by processor speed alone. We need speedy drives and snappy display subsystems as well. The 3400's display and I/O subsystems aren't faster than those of their desktop brethren, but they do eclipse the 1400's subsystems.

In addition to using a faster, PCI bus for all internal interfaces and slots, the 3400 is the first PowerBook to offer full DMA (direct memory access) to all I/O devices, including the internal IDE, floppy, and ATAPI CD-ROM drives and the external SCSI bus.

The only thing keeping the 3400s' disk-subsystem scores down is that Apple continues to use slower IDE drives in its portables. Those who want a higher-speed drive can remedy this situation by upgrading to a faster internal IDE drive or by installing a faster SCSI drive in the expansion bay. Of course, installing a drive in the expansion bay means that you can't use an internal CD-ROM drive.

Speaking of faster than the 1400, the 3400's new Chips & Technologies 65550 graphics controller absolutely hammers the 1400's graphics controller, as proved by our MacBench 4.0 graphics scores. The C & T chip, which is a standard in the Wintel market, enables the 3400 to push pixels twice as fast as its predecessor and even offers limited QuickDraw acceleration. The only thing the 3400 doesn't have

MacUser LABS LUDICROUS SPEED / how the PowerBook 3400 compares

IN PICKING REFERENCE SYSTEMS for comparing MacBench 4.0 scores with those of the three PowerBook 3400 versions, we selected a desktop computer based on a similar Mac OS-system architecture — a 40-MHz PCI bus and a 200-MHz PowerPC processor. We also included the only other currently shipping Mac OS portable, Apple's PowerBook 1400.

MacBench 4.0 scores are relative to those of an

PRODUCT	RATING	ESTIMATED STREET PRICE AS TESTED	POWERPC/ CLOCK SPEED	MEMORY-BUS SPEED	RAM	SIZE OF L2 CACHE	HARD-DRIVE CAPACITY (TYPE)	CD-ROM SPEED	GRAPHICS RAM	NUMBER OF PCI SLOTS
Apple PowerBook 3400/180	★★★★½	$5,000*	603e/180 MHz	40 MHz	16 MB	256K	1.3 GB (IDE)	6x	1 MB (built-in)	2†
Apple PowerBook 3400/200	★★★★½	$5,500*	603e/200 MHz	40 MHz	16 MB	256K	2.0 GB (IDE)	6x	1 MB (built-in)	2†
Apple PowerBook 3400/240	NA§	$6,500*	603e/240 MHz	40 MHz	16 MB	256K	3.0 GB (IDE)	12x	1 MB (built-in)	2†
REFERENCE SYSTEMS										
Apple PowerBook 1400/117	★★★★	$3,499	603e/117 MHz	33 MHz	16 MB	NA	1.0 GB (IDE)	6x	1 MB (built-in)	0†
Power Computing PowerBase 200	★★★★	$1,795	603e/200 MHz	40 MHz	16 MB	256K	1.2 GB (IDE)	8x	2 MB (built-in)	3

*Pricing is preliminary and subject to change. †The PowerBook 3400 series uses special small, low-power PCI cards and cannot use desktop PCI cards; the 1400 has two PDSs.

§The system tested is a prototype, and therefore results are preliminary. *MacUser* does not mouse-rate prototype products. Listing is alphabetical within groups of equal mouse ratings.

is enough RAM to display 24-bit color on its built-in screen or on an external monitor larger than 12 inches. The 3400's 1 MB of graphics RAM is not expandable, a fairly big omission for a portable that's otherwise perfect for graphics professionals.

Those graphics professionals willing to overlook the lack of support for 24-bit color will be pleased, if not downright thrilled, to hear that built-in Ethernet is back. Focus Enhancements is building the combination 10BASE-T and 33.6-kbps-data-/14.4-kbps-fax-modem card for the 3400. Code-named Argon, the card has a single universal RJ-45/11 jack capable of handling Ethernet as well as telephone lines. Better yet, because it's a full-fledged PCI card, high-speed network connections are once again a reality for PowerBooks.

GIVING YOU ALL IT'S GOT

Thus far we've focused on the impressive guts of the 3400. However, there's more to being a PowerBook than speeds and feeds.

One thing that has made PowerBooks of the past stand out from their PC counterparts is design. Unfortunately, this is one area in which the 3400 falls short. The bottom half of the machine looks exactly like that of the much maligned 5300, complete with the 5300's trademark gaps, seams, and PC-ish look. The top half of the clamshell is thick, sporting a curved hump on its back (more on what lives in the 3400's hump later). The overall chassis is big — 11.5 x 9.4 x 2.4 inches — and it weighs a hefty 7.4 pounds with a CD-ROM drive installed. All this combines to make the 3400 the biggest, heaviest, and least attractive PowerBook Apple has ever shipped.

Despite its Quasimodo-like exterior, the 3400 does have alluring aspects. For example, it's the first PowerBook to come equipped exclusively with a 12.1-inch, active-matrix color screen. The new screen, with its fixed 800-x-600-pixel resolution, is huge, supplying more than enough screen real estate for most users.

The screen belts out its maximum 16-bit color with greater brightness, sharpness, and color saturation than any previous PowerBook screen, beating even the crisp 11.4-inch screen of the 1400. In our tests, the 3400's display remained readable even in strong ambient light, something most portable displays have trouble doing.

The 3400 also offers built-in video-out that supports multisync monitors and that can display 16-bit color at resolutions up to 800 x 600 pixels, or 8-bit color at resolutions up to 1,024 x 768 pixels. Another nice addition is a standard DB-9/15 (also known as VGA/SVGA) connector on the back panel. Special conversion cables or plugs are no longer required to hook this PowerBook up to most monitors.

In addition to the video-out port, the 3400 offers a complete set of standard interfaces, including a serial port; HDI-30 SCSI port; and on the left side of the machine, sound-in and -out ports. Some users may have trouble locating the ADB port (we did). But never fear, Apple didn't forget the connector; it simply hid it behind another one of the 3400's design oddities, a small flip-down door next to the PC Card slots.

The 3400 comes with the same type of twin-slot PC Card cage as the 1400 and the 5300. The cage can accommodate either two Type II PC Cards or one Type III PC Card. Even though the PowerBook engineers did include a 32-bit CardBus bridge chip on the Hooper logic board, the slots still support only the 16-bit PCMCIA PC Card Standard, Release 5.1. According to Apple, software for supporting faster CardBus cards was not completed in time for the 3400's release.

The PC Card interface does support one new feature: zoomed video, which lets specially designed PC Cards pass a video-in signal directly to the C & T graphics controller. This feature will allow users to take advantage of MPEG or TV-tuner PC Cards when they become available for the Mac.

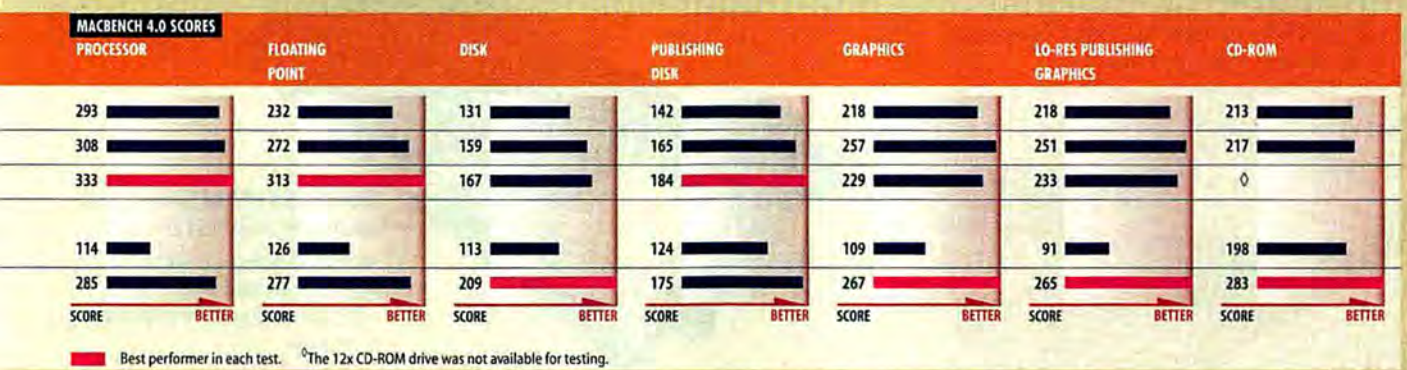
As in the 1400 and the 5300, the expansion bay provides another means of adding functionality to the 3400. In addition to supporting 3.5-inch storage modules designed for the 5300, the expansion bay can take 5.25-inch devices. It does this by means of a small, spring-loaded door that flips up to allow larger modules to slide in.

The expansion bay can also accept specially designed PCI-based modules; unfortunately, it can't handle modules designed for the 1400. Expansion-bay modules are even hot-swappable on the 3400 — all you need to do is unmount a disk and swap the module with another, without shutting down or putting the PowerBook to sleep.

In other respects, the 3400 has a collage of features borrowed and improved on from earlier models: a tap-and-drag trackpad, a full-sized keyboard, faster infrared networking (see the "IR Comes of Age — Sort of" sidebar), and RAM expandability up to 144 MB. The 3400 also marks the return of retractable legs on a PowerBook.

Earlier we promised to explain why the 3400 has a hump. Here's why: Not only is Apple's new PowerBook the first since the 500 series

Apple Power Mac 6100/60 with a 250-MB hard drive, 2 MB of built-in graphics RAM, and no L2 cache. This baseline system is given a score of 100 for each test. We tested each system as configured by the vendor but with AppleTalk off. We set the screen resolution to 640 x 480 pixels with a bit depth of 8 bits on desktop systems; due to their fixed resolution, all the PowerBooks were tested with screen resolutions of 800 x 600 pixels at 256 colors.



Inside the PowerBook 3400

ENTER WITH CARE

UNLIKE THE EASILY SERVICED PowerBook 1400, Apple's latest PowerBook has dozens of Torx screws and delicate cables that must be removed before you can gain access to the internal expansion slots or hard drive. We disassembled a 3400 to give you a view of what you're unlikely to ever see, unless you are very brave or an Apple authorized service technician:

1. The speaker panel that normally sits above the keyboard connects to the logic board via this tiny ribbon-cable connector. In addition to holding the two front speakers, the speaker panel also contains the brightness and volume controls. The 3400 does not have a contrast control.

2. This PC Card bay can contain either one Type III or two Type II PC Cards. Even though it connects to the computer via a CardBus bridge chip, it cannot use faster, 32-bit CardBus PC Cards.

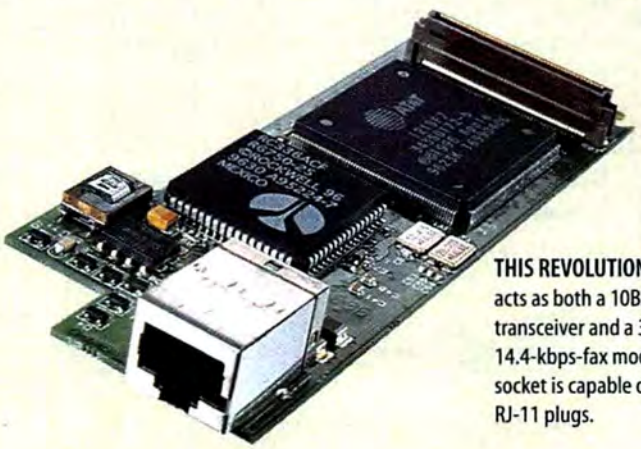
3. Although hard to see so close to the PC Card bay, the 3400's single RAM-expansion slot can accept up to 128 MB of additional fast EDO RAM.

4. Both the keyboard and the palm-rest/trackpad assembly must be removed to access the 3400's internal IDE drive.

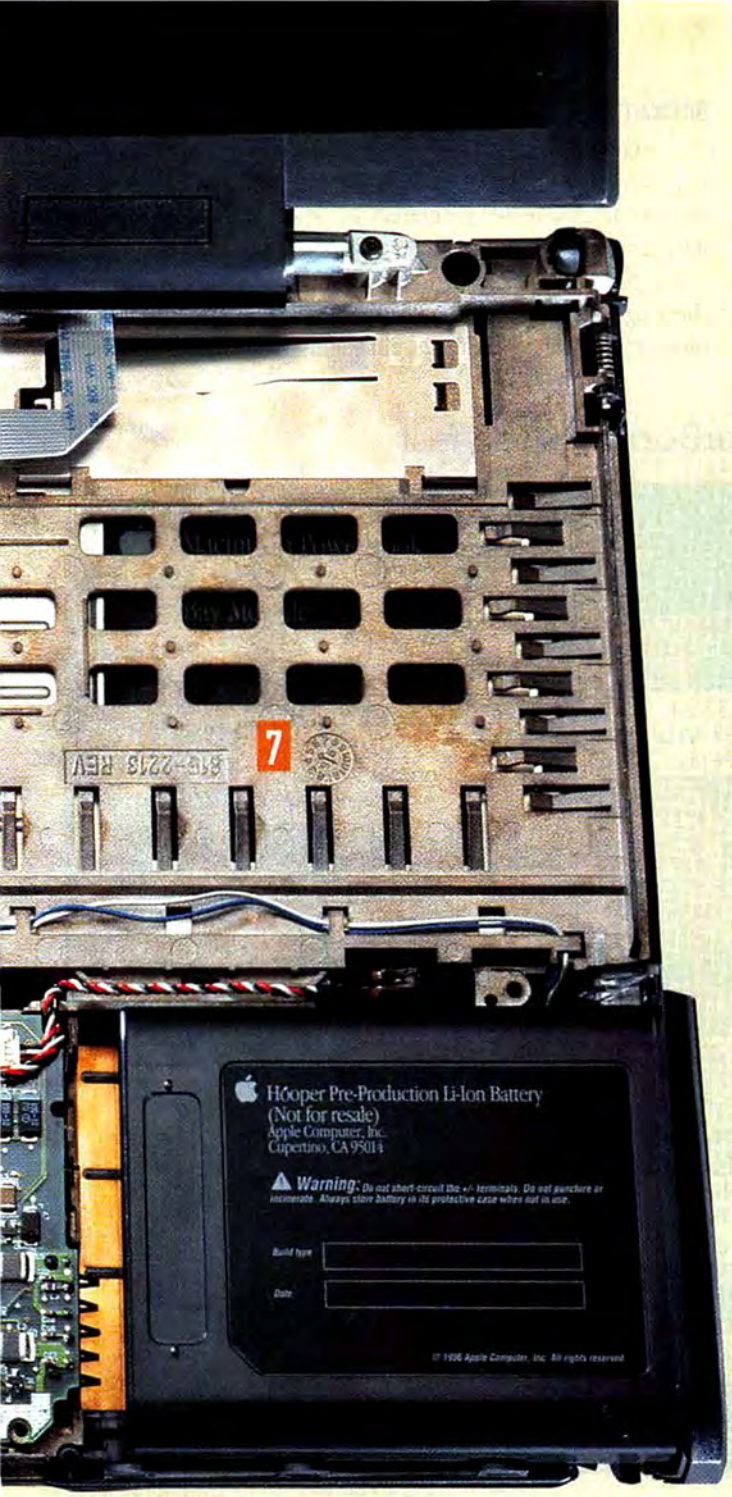
5. Below this analog power board is the 3400's PowerPC 603e processor. The small black rectangle jutting up from the board is actually the top of a tiny electric fan that keeps the processor cool.

6. This is the 3400's internal PCI expansion slot, which can be filled with an Argon Ethernet/modem card. You must remove the 3400's heat sink to get to the slot.

7. This expansion bay can be used to add either storage devices or PCI cards to the 3400.

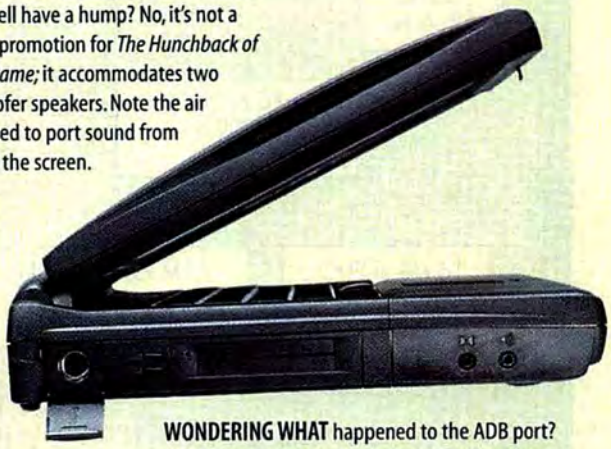


THIS REVOLUTIONARY new PCI card acts as both a 10BASE-T Ethernet transceiver and a 33.6-kbps-data/14.4-kbps-fax modem. The single socket is capable of taking RJ-45 or RJ-11 plugs.



THE BACK OF the 3400 may look familiar, but it offers at least one new sight — a standard VGA/SVGA connector that can hook directly to most external monitors.

SO WHY DOES the top half of the 3400's clamshell have a hump? No, it's not a Disney promotion for *The Hunchback of Notre Dame;* it accommodates two subwoofer speakers. Note the air dam used to port sound from behind the screen.



WONDERING WHAT happened to the ADB port? Don't worry, it's just hidden from view by a "secret door" next to the PC Card slots. Also, the sound-in and -out ports have been moved to the right side of the PowerBook, for easier access.

THE 3400 MARKS the return of the lithium-ion battery. This high-power battery can handle the new PowerBook's bigger power load while delivering the same battery life per charge as the 1400's. Although the 3400 has inherited the battery design of the 5300 (it can use the 5300's nickel-metal-hydride packs), it doesn't exhibit the 5300's more inflammatory behavior.

THANKS TO THE small, spring-loaded door in the right corner of the bay entrance, the bay can accept either 5.25 or 3.5-inch modules, including those used in the 5300. However, it can't use modules built for the 1400.

to have stereo speakers on the front but it's also the first to have two *subwoofers* embedded in its back, under that hump.

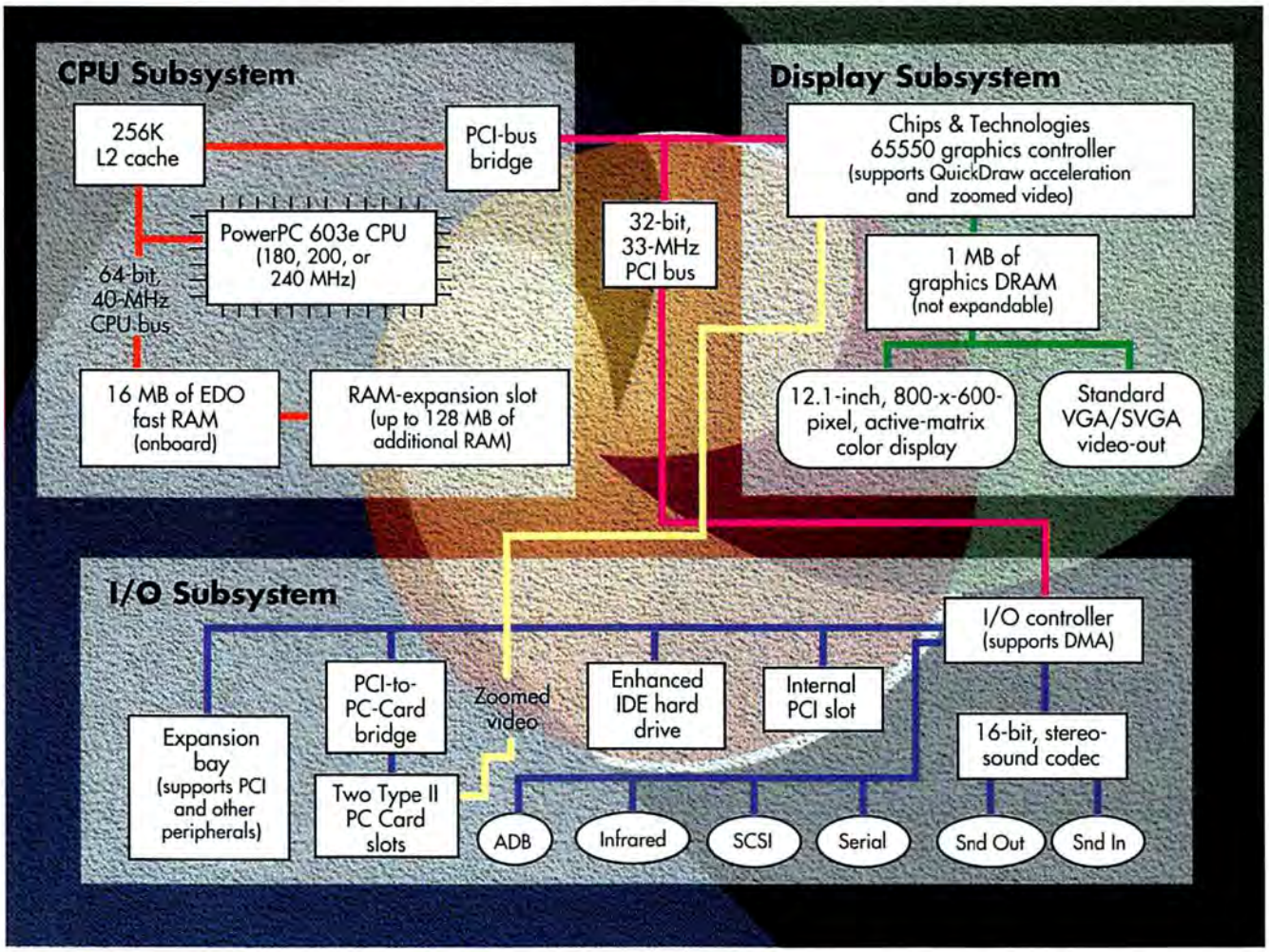
Although we applaud Apple's attempt to give the 3400 robust sound, the results fall somewhat short of ideal. The sound is tinny, lacking the full, robust quality associated with subwoofers. The 3400 can produce better sound than other portables we've listened to, but it's still poor compared to what can be had with a cheap pair of powered external speakers and a real subwoofer or even a good pair of earphones.

BUT WAIT, THERE'S MORE

The 3400 offers so many new and improved features, it's almost impossible to fit them all into a single story. However, we knew we couldn't finish without mentioning the return of the LiIon (lithium ion) battery.

The 3400 uses the same battery design (with much-improved charging firmware) as the 5300 and can even use the 5300 series' nickel-metal-hydride batteries, although with a significant loss of

SECRET PLANS / what makes the PowerBook 3400 so fast



ALL YOU HAVE TO DO is look at the PowerBook 3400's MacBench 4.0 scores to see there's something more than just a 180-, 200-, or 240-MHz PowerPC processor behind the machine's speed. Here's a detailed look at the state-of-the-art PCI design of Apple's speedy new portable:

CPU Subsystem. This is where the 3400 gets most of its speed. In addition to sporting a PowerPC 603e, which is roughly equivalent to a Pentium in raw speed, the 3400's CPU subsystem is based on a 64-bit bus, double the width of the 1400's. The bus is faster too, running at 40 MHz.

But perhaps the most critical boost to overall CPU speed comes from the 256K Level 2 cache. This is the first PowerBook to offer an L2 cache.

Display Subsystem. The next stop is the display subsystem, which is connected to the CPU subsystem — and the rest of the computer — via the 32-bit-wide, 33-MHz PCI bus. The display subsystem is based on the industry-standard Chips & Technologies 65550 graphics controller, which offers several enhancements over previous PowerBook graphics controllers. Among these are onboard QuickDraw acceleration and support for zoomed video, which allows for direct playback on the 3400 from a PC Card source.

The 1 MB of dynamic RAM for graphics is not expandable, limiting resolutions and color bit depths. (The built-in screen supports up to 16-bit color at a fixed 800-x-600-pixel resolution.) A signal can be split between the PowerBook's built-in screen and the video-out port, allowing for screen mirroring.

I/O Subsystem. I/O has always been the PowerBook's Achilles' heel. Apple tried to address this problem in the 3400 by making it the first portable to not only offer a fast PCI bus for all peripheral interfaces but also to provide DMA (direct memory access) on that bus. Although these boost disk-subsystem performance somewhat, the 3400 still uses a slow, power-saving IDE internal drive. However, the expansion bay's support for PCI-based peripherals should allow a user to add a faster, SCSI drive. In addition to the expansion-bay slot, the 3400 also has an internal small-form-factor PCI slot and two 16-bit Type II PC Card slots.

ILLUSTRATION / ANDREW FAULKNER

running time compared to that of its own LiIon power packs. Although 5300 batteries can work in a 3400, the reverse is not true.

And before anyone asks, yes, the 3400's LiIon batteries are safe. We ran them through a grueling month-long ordeal. With the two models we tested, we never had a problem — they didn't even get hot.

As for battery life, it's easy to see why everyone considers LiIon batteries so important for portable use. Even with the extra load of all the new features and a faster processor, the 3400/200 produced a worst-case battery life of 1 hour, 45 minutes, with the CD-ROM drive, hard drive, screen, and processor maxed out. Not surprisingly, the 3400/180 did a little better, with a worst-case battery life of just over two hours. Under best-case conditions, the battery life on these two versions of the portable topped four hours with LiIon batteries (the 3400/240 was not available for battery tests).

It's unfortunate that we can't yet write a review of a new PowerBook without at least touching on reliability. Besides conducting speed tests, we ran the 3400/180 and the 3400/200 through a full gamut of reliability and compatibility tests. We're happy to report that, like the 1400, the 3400 passed all the tests with flying colors. Perhaps Apple and the rest of us can now put the issue of PowerBook reliability behind us.

We can't conclude this story without mentioning the software goodies. In addition to the usual assortment of stuff — Apple Internet Connection Kit 1.2, ClarisWorks, PowerBook File Assistant, Eric's Solitaire Sampler, and Apple Remote Access — the 3400 comes with two new utilities, ForeFront's WebWhacker and Apple Location Manager (ALM).

WebWhacker lets you automatically download the contents of a Web site for viewing off-line. The ALM utility is useful for managing system settings according to location — for example, it lets you set a different default printer and specify different TCP/IP, AppleTalk, sound, time-zone, and Extensions Manager settings, depending on location. ALM works on most PowerBooks and can be downloaded free from http://www.powerbook.apple.com/.

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  What's new on the PowerBook grapevine? Check out O'Grady's PowerBook page for the latest dirt.

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THE BOTTOM LINE

Although $6,500 may sound steep for a portable, pricing for the 3400 is in line with that of top-of-the-line PC notebooks. As we went to press, 200-MHz Pentium-based notebooks were not yet shipping, much less 240-MHz notebooks.

As to which configuration to choose, we found the 3400/180 with the CD-ROM drive and the Argon card the best value. True, the internal drive is a little slower and smaller than the 2-GB drive in the 3400/200, but with the $500 you save, you can get a bigger, faster drive.

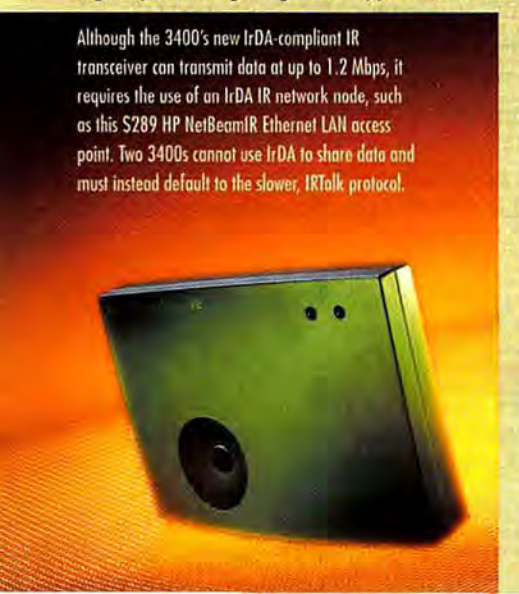
Despite trivial annoyances, such as slow internal drives and the lack of a second megabyte of RAM for graphics, we can't help but be impressed by the 3400's combination of speed and features. Even its daunting size and weight are not enough to give us pause. Apple's newly reinvigorated PowerBook division has created a machine that's bound to strike a major blow for the Mac in the portable arena, just as Power Computing's PowerTower Pro 225 did for desktop Macs last summer by topping what the fastest Intel-based machines offer.

Andrew Gore is *MacUser*'s editor.

The latest version of the MacBench benchmark software is available online on ZD Net from Ziff-Davis Benchmark Operation at http://www.zdnet.com/zdbop/.

IR Comes of Age — Sort of

SINCE IT FIRST CAME to the PowerBook 5300 in 1995, IR has been treated like the infraredheaded stepchild of Mac networking. Although Apple did a good job of integrating IR and AppleTalk, which made file transfers among computers as easy as opening the Chooser, the speed of its proprietary point-to-point IR protocol was abysmal.



Although the 3400's new IrDA-compliant IR transceiver can transmit data at up to 1.2 Mbps, it requires the use of an IrDA IR network node, such as this $289 HP NetBeamIR Ethernet LAN access point. Two 3400s cannot use IrDA to share data and must instead default to the slower, IRTalk protocol.

As seems to be the case with the rest of the PowerBook 3400's features, IR networking has been significantly improved. In addition to supporting the standard 115-kbps IRTalk transmission speed used by the 1400 and the 5300, the 3400 can handle 230-kbps IRTalk and 1.2-Mbps IrDA (Infrared Data Association) links. We tested all three options by timing the transfer of an 18.4-MB file, using each protocol. The results from the 3400's two new high-speed IR protocols were significantly better than those from standard IRTalk, which took 58 minutes to transfer the test file versus 15 minutes for 230-kbps IRTalk and 6 minutes for IrDA.

However, before IR fans break out the champagne, be aware that the 3400's new IR functionality does suffer from some annoying limitations. The 230-kbps IRTalk currently works only between 3400 portables — when beaming to an earlier-model PowerBook, the transfer rate drops to the slower, 115-kbps IRTalk rate. Also, to use IrDA, users must first acquire an IrDA-compatible Ethernet-network node; IrDA does not work between 3400s.

The $289 HP NetBeamIR Ethernet LAN access point we used in our tests worked without a hitch or additional software. We simply put the 3400 in front of the LAN transceiver to make a connection, and off we went.

The only other Apple-made products the 3400 will be able to beam to using IrDA are the IrDA-compliant Newton MessagePad 2000 and eMate 300. Unfortunately, the software required to establish an IrDA link between a MessagePad and a 3400 was not ready for testing as we went to press.

The 3400's new IR protocols manage to take what was little more than a technological curiosity in the 1400 and the 5300 and make it useful. Although using IR is by far the easiest way to hook a 3400 to a network, Apple still has a way to go before IR is ready to displace 10BASE-T as the high-speed networking connection of choice for PowerBooks.

THE PROOF IS ON THE SCREEN

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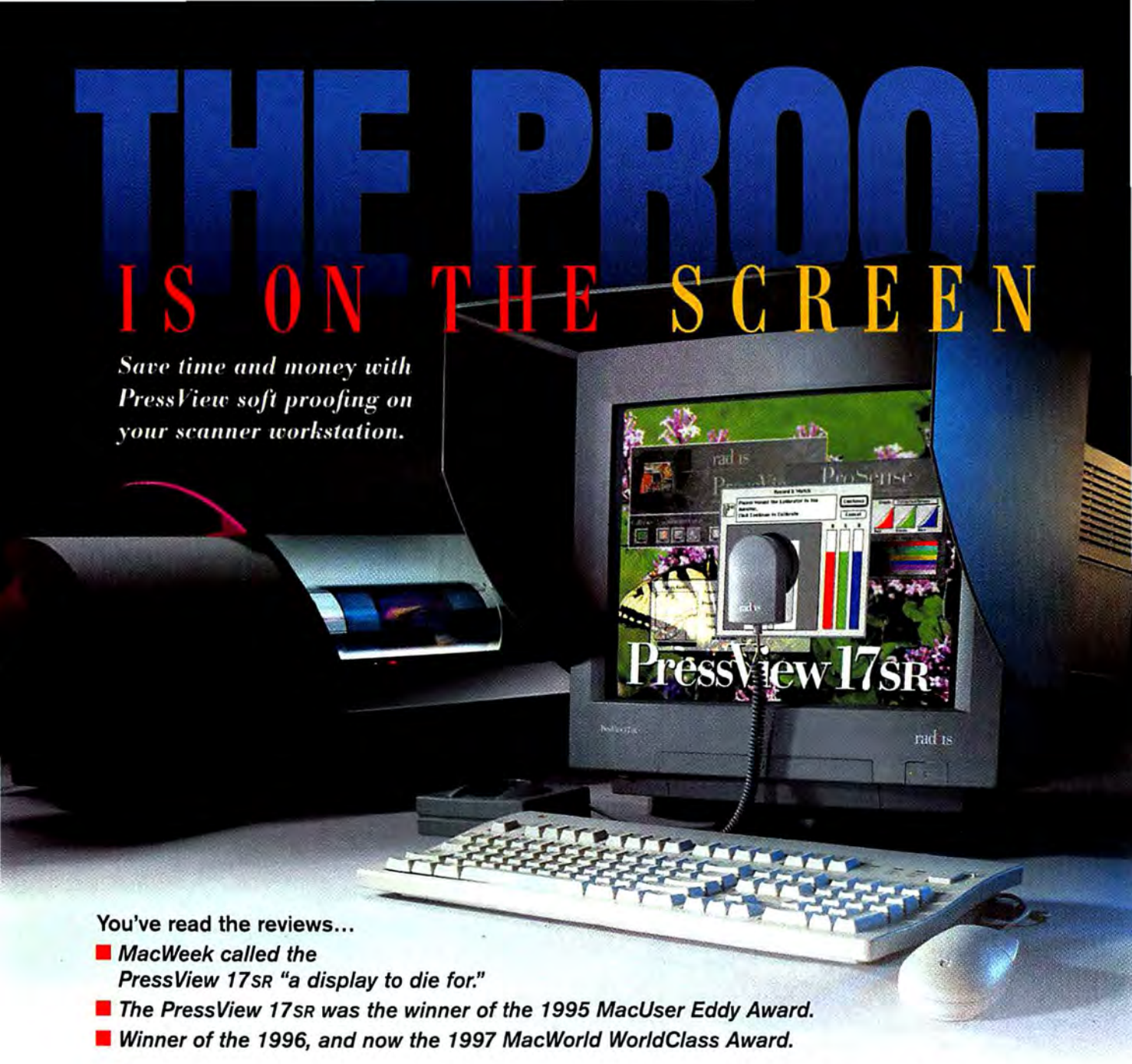

You've read the reviews...

- ***MacWeek called the PressView 17SR "a display to die for."***
- ***The PressView 17SR was the winner of the 1995 MacUser Eddy Award.***
- ***Winner of the 1996, and now the 1997 MacWorld WorldClass Award.***

A Radius PressView 17SR on your scanner workstation will save you money. PressView soft proofing means less film and proofing materials, fewer rescans, and faster color correction—all of which go directly to your bottom line.

PressView displays automatically calibrate to the Radius ColorMatch® RGB Standard—the widest color gamut of any display. Radius ColorMatch profiles with our exclusive perceptual-matching technology provide an unsurpassed proofing solution. See on screen what your scan will look like on press, or as an Imation MatchPrint III or Fuji ColorArt proof.

The 1600 x 1200 super-resolution capability means that every pixel of a 4 x 5" transparency at 300 ppi will fit on your screen with room to spare. PressView is a ColorSync 2.0-savvy display system providing compatability with all ICC-compliant applications including scanner software from Lino-Hell, Agfa, ScanView, and many others.

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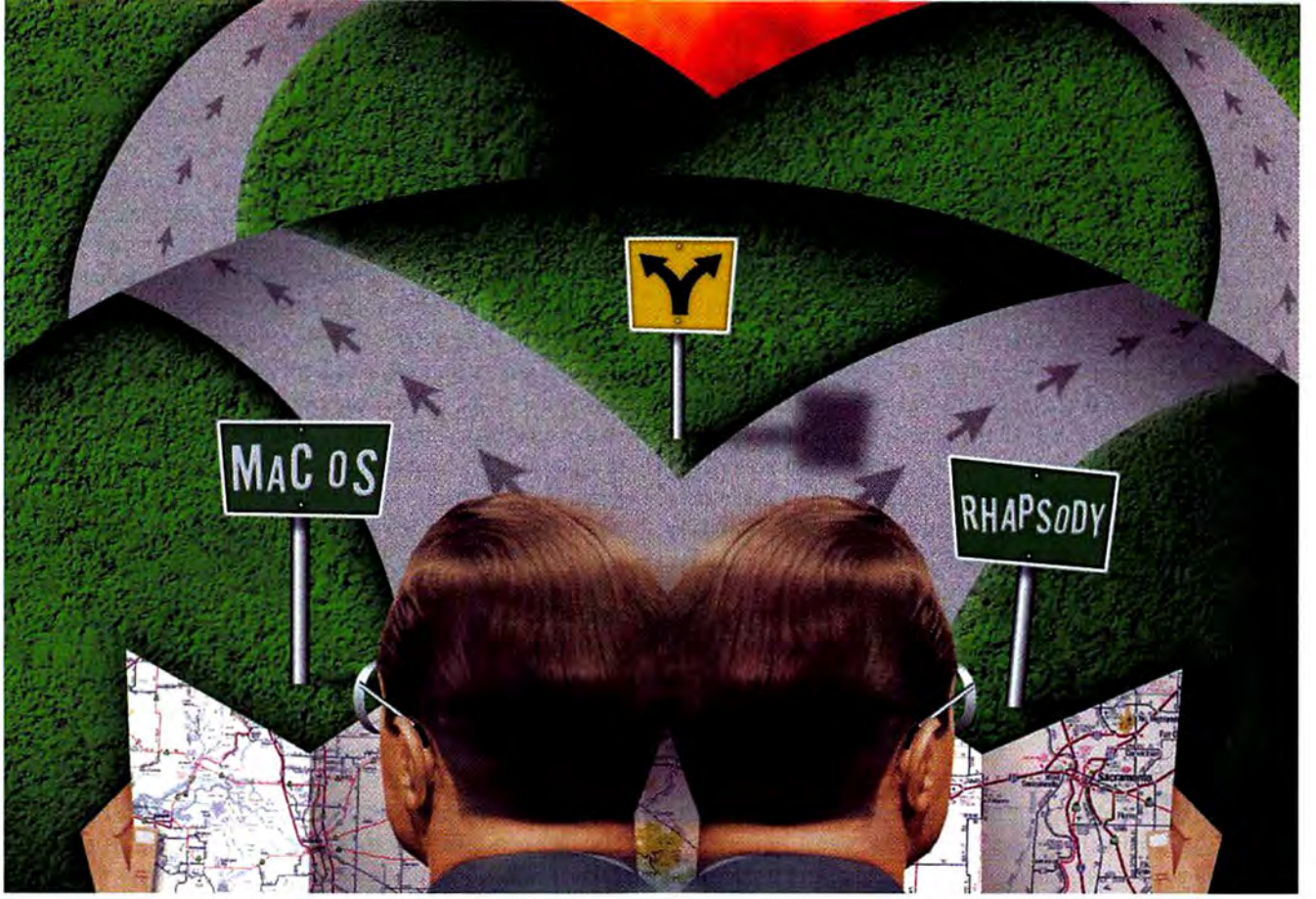


Apple's OS Double Feature

Apple came to a fork in the Mac OS road — and decided to take both paths.

COPLAND IS DEAD. LONG LIVE RHAPSODY.

Several months after scrubbing its plans for Mac OS 8, code-named Copland, Apple last January unveiled its new strategy for delivering a modern OS, code-named Rhapsody, to Macintosh users. In a surprise move, the company bought Steve Jobs' NeXT Software and announced that it would base its new operating system on NeXT's OpenStep technology. OpenStep is a set of object-oriented APIs (application programming interfaces) that enable developers to build robust applications quickly. It currently runs on several modern operating systems, including Sun's Solaris and Windows NT.

By Henry Bortman and Jeff Pittelkau

ILLUSTRATION / JOHN UELAND

Although Apple had other choices for delivering an OS that met all the key modern-OS criteria, OpenStep offered what Apple considered to be the most compelling combination of benefits. Like Apple's other alternatives, OpenStep can take advantage of underlying modern-OS features such as preemptive multitasking, multithreading, symmetric multiprocessing, and protected memory, which improve performance and stability. (For an explanation of these and other modern-OS features, see "Plan Be," January '97, page 64.)

In addition, OpenStep's being object-oriented simplifies the task of building and revising applications and makes the OS well suited for distributed systems that run across networks. NeXT also provides developers with an innovative development tool, InterfaceBuilder, a kind of construction kit for building application interfaces by dragging and dropping buttons, menu items, and other controls. And perhaps most important, it has been battle-tested. The NeXTstep OS, from which OpenStep is derived, has been around for nearly a decade and is considered reliable enough to be used in many mission-critical Fortune 100 custom applications. Apple is undoubtedly hoping that this legacy will give the Mac a shot at establishing a beachhead in Corporate America outside the publishing department.

APPLE'S OS TWO-STEP

You might think that, given its inherent strengths, Apple would simply port NeXTstep to the PowerPC and be done with it. However, such a strategy would leave millions of Mac users in the lurch, without benefit of any backward compatibility with current Mac OS apps.

That's where Blue Box comes in. Apple's new Rhapsody OS plan will give the Mac OS a path to a thoroughly modern future as well as eventually carry forward compatibility with System 7.x applications through a Mac OS-compatibility box code-named Blue Box. With Blue Box, your existing applications will continue to run as they do now, albeit more slowly (how much more slowly has yet to be determined). However, Blue Box will not appear in Rhapsody until sometime in 1998, well after the Premier Release of the new OS.

As a result, many users, satisfied with their current software, may choose not to upgrade to Rhapsody, at least not at first. Others, because of hardware limitations — to date, Apple has committed only to supporting Rhapsody on currently shipping and future PowerPC-based Mac OS systems — will be unable to switch without acquiring new hardware. Which is why Apple will continue to support and enhance System 7 for several years to come (see the "System 7 Forever" sidebar).

Perhaps a bit of terminology is in order here. What you have known and loved as "System 7" for lo these many years is now being referred to by Apple as "Mac OS." (Apple's latest release, for example, is called Mac OS 7.6, not System 7.6.) Apple's future System 7 releases will continue to be branded as Mac OS upgrades. Meanwhile, Mac OS 8, the official name of what was originally code-named Copland, has an uncertain future. Apple hasn't said whether its new OS will be called Mac OS 8 or not. For now, the new operating system has only a code name — Rhapsody. So, when we talk about the Mac OS, we mean the System 7-based Mac OS, and when we talk about Rhapsody, we mean

Apple's Dual-OS Road Map

APPLE PLANS TO DELIVER its new modern operating system, code-named Rhapsody, in stages, while simultaneously continuing to enhance the System 7-based Mac OS.

1997 JANUARY — JULY — **1998**

RHAPSODY

RHAPSODY DEVELOPER RELEASE

Although the first release of Apple's new OS, dubbed the Rhapsody Developer Release, will include the new modern-OS kernel, it won't really be Rhapsody in the true sense. Rather, it will be a straight port of OpenStep to Power Mac and (most likely) PowerPC Platform hardware. OpenStep currently doesn't support PowerPC processors.

The Rhapsody Developer Release will allow users to run OpenStep applications that have been recompiled for the PowerPC. It won't offer the Macintosh interface, instead using the NeXTstep interface. The Developer Release will also not include Mac OS compatibility or any Mac OS middleware such as QuickTime.

MAC OS

MAC OS 7.6
- New Extensions Manager
- Open Transport 1.1.1
- OpenDoc 1.1.2
- Cyberdog 1.2.1

TEMPO
- Multithreaded Finder
- New grayscale appearance
- Spring-loaded folders
- Pop-up folder tabs
- Live scrolling
- Java Virtual Machine
- Cyberdog 2.0

the OpenStep-based modern OS, with System 7 compatibility.

Apple has laid out an ambitious timeline for how and when it intends to deliver successive versions of these two operating systems (see the "Apple's Dual-OS Road Map" figure). Rhapsody will be the OS in which Apple first offers its new modern OS and object-oriented OpenStep technology, but innovation on the human-interface front will take place first in the Mac OS and then be folded into Rhapsody.

For example, the interface enhancements Apple builds into Tempo, the version of the Mac OS due in July 1997, will form the basis of the interface used in the Rhapsody Premier Release, which will follow several months later. And the interface enhancements in Allegro, the Mac OS release due in January 1998, will be rolled into the Rhapsody Unified Release, due out in mid-1998.

STONE SOUP

If you're one of those who thinks the Mac OS' user interface is the best in the world, you'll be pleased to know that Apple agrees with you. Rhapsody's UI will be based firmly on the Mac's and, as we just mentioned, will be derived from work that first appears in the Mac OS. Only in those cases where the NeXTstep UI offers features that the Mac's doesn't — such as its application dock and inspector panels — will Apple incorporate elements of the NeXTstep user interface into Rhapsody.

So you can expect Rhapsody to include features such as drag-and-drop printing, close and zoom boxes in familiar places, a single unified menu bar at the top of the screen, and icons on the desktop. (And, if we're lucky, Apple will take this opportunity to get rid of the Chooser.)

This à la carte approach to constructing the new OS extends beyond the arena of user interface. Wherever Apple and NeXT both offer similar functionality, Apple is likely to opt for its own implementations. OpenStep, for example, has a 3D Graphics Kit, but Apple is unlikely to favor it over its own QuickDraw 3D. NeXTstep provides support for Pantone color matching and color-monitor and -printer calibration, but again we'd be surprised to see Apple adopt NeXT's technology over its own ColorSync, which has found wide acceptance in the desktop-publishing industry.

One critical area in which Apple will go with NeXTstep middleware instead of its own is in how the operating system draws things to the screen. Since the first release of the Mac OS, back in 1984, the Mac's graphics-display model has been based on QuickDraw. NeXTstep, in contrast, utilizes Adobe's Display PostScript. Here, Apple has chosen to break with tradition and incorporate Display PostScript or its more contemporary cousin, Adobe's Bravo, into Rhapsody.

Although developers may have to do some extra work to get used to the new graphics model, Apple's choice is likely to be a boon to desktop publishers. Display PostScript is a variant of the same language — PostScript — that is used widely in high-end printers and imagesetters. Using the same language to draw images on the screen that is used for printing will allow desktop publishers to preview the results of their work on-screen with greater accuracy.

Many other Apple technologies that are key benefits of the Mac are

JANUARY

RHAPSODY PREMIER RELEASE

Toward the end of 1997, Apple will roll out the Rhapsody Premier Release. This version will differ significantly from the Developer Release: It will be the first to integrate a "modernized" Mac user interface, which will be based on the Tempo release of the Mac OS; it will also be the first to offer some of Apple's graphics and multimedia technologies. A Java Virtual Machine, which will allow users to run Java applets, will also make its debut in this release.

The Mac OS-compatibility environment, sometimes referred to as Blue Box, will also appear in this release, although it will offer only "limited" support for System 7-based applications. What that means is currently open to interpretation.

JULY

RHAPSODY UNIFIED RELEASE

The switch to Rhapsody will most likely begin in earnest with the Unified Release, due out by mid-1998. This release will fully integrate all of Apple's key middleware technologies with the OpenStep API. The Unified Release will also provide a complete Mac OS-compatibility environment and a user interface based on the Allegro release of the Mac OS.

ALLEGRO

- **OpenDoc-based Finder**
- **Internet functions integrated throughout the OS**
- **Multimedia icons in the Finder**

SONATA

- **Too early to tell**

BOOKMARK

RELATED INTERNET SITES

- **Apple's Mac OS Strategy Page**
  From here, you can link to press releases, FAQs, and technical white papers about Apple's dual-OS strctegy.
- **Stepwise NeXTstep/OpenStep Server**
  The most comprehensive source for news and information about NeXT's system-software technology.

GO TO http://www.zdnet.com/macuser/0497.html#DualOS

likely to find their way into Rhapsody as well. The QuickTime Media Layer — which includes QuickTime, QuickTime Conferencing, QuickTime VR, and QuickDraw 3D — is a prime example of Apple technology that will make it into Rhapsody as soon as possible. Apple has also committed unequivocally to including and expanding OpenDoc, its component-software architecture, in the new OS. Apple may also look for an opportunity — at long last — to integrate the extended character sets and line-layout-manager functionality of QuickDraw GX into Rhapsody. Game Sprockets, text-to-speech and voice-recognition technologies, and AppleScript are other likely candidates for integration.

In other areas of the OS, it remains unclear which direction Apple will turn. In networking, for example, Apple has put a great deal of effort into such features as plug-and-play networking, Open Transport, remote access, and file sharing. NeXTstep, on the other hand, has some robust network-management capabilities. Another example: Both operating systems offer tools for localizing applications for languages other than English, including 2-byte languages such as Japanese that are not based on the Roman character set. In these cases, Apple's choice will most likely be based on an assessment of which technology delivers a better user experience — and which can be integrated into Rhapsody more quickly.

DEVELOPER DILEMMA

Mac developers today typically support more than one platform. On the Mac alone, most applications still ship in both 680x0- and PowerPC-native versions. Many developers also generate applications for Windows from the same code base they use to create Mac apps. With Rhapsody, the picture will become still more complex.

The economics of the marketplace will pull developers in two directions. On the one hand, they will want to quickly port their Mac OS applications to Rhapsody to tap into the rich application-upgrade market that will no doubt accompany the new OS. On the other hand, until a significant majority of Mac users switch over to Rhapsody, developers will still need to deploy new versions for Rhapsody as well as for the Mac OS. If Apple wants to guarantee the success of its new OS, it would be wise to (a) commit both time and money to ensuring that development tools exist to ease the burden of supporting both OSes and (b) make it possible to develop off a single code base.

Of course, this may be a challenge. Most Mac and Windows application development these days is done in C++. However, NeXTstep and OpenStep both base their development on the more fully object-oriented Objective C. Although developers may like what Objective C offers them in terms of new functionality and reduced coding time, some may be reluctant to learn another development language and maintain a separate code base to support Mac efforts. To ease this burden, the most aggressive developer of Mac OS development tools, Metrowerks, is modifying its C++ compilers to support Objective C objects in NeXTstep and OpenStep. However, the Metrowerks compiler will only port C++ to Objective C; additional work will be required to take advantage of Objective C's unique features.

And then there's the challenge of packaging and marketing two

System 7 Forever

WITH ALL THE HOOPLA surrounding Apple's new Rhapsody operating system, many users are wondering what will become of the Mac OS they know and love. What if you don't want to upgrade to the new OS or your hardware won't support it? Will Apple continue improving System 7 or let it fall by the wayside?

For once, the answer is all good news: Apple Chief Technology Officer, Ellen Hancock, committed the company to sticking by its plan to deliver two Mac OS upgrades a year through the year 2000. In fact, Apple even shared its code names with the public for the next three releases of the Mac OS.

Here's the plan. By now you probably know that Apple released Mac OS 7.6, formerly known as Harmony, in January 1997 — on schedule. Of course, to meet that schedule, Apple had to decide not to deliver a whole lot of value in the new release — and it still has the nerve to charge current System 7.5.x owners $69 for the upgrade. But we digress. For details of what's included in the Mac OS 7.6 release, see "The Spirit of 7.6," February '97, page 63.

Next up on the schedule will be Tempo, due in July 1997. Tempo is a bit more compelling. This release will deliver several features originally slated for Mac OS 8. Users will probably be most excited about the multithreaded Finder. At last it will be possible to initiate multiple file copies, empty the Trash, and launch an application all at the same time.

Tempo will also sport the Mac OS 3-D look and feel, officially known as the "Apple grayscale appearance." For those of you who don't want to wait till Tempo to get this new look, a popular shareware extension called Aaron is available for refreshing your Mac desktop's appearance (you can find Aaron in *MacUser*'s software library at http://www.hotfiles.com/swbrowse/MC14/0/9/mac-MC14094.html). Along with the new look, Tempo will offer spring-loaded folders, which will make it easier to place a file in a folder buried within several other folders, and pop-up folder tabs, which will allow you to shrink a window down to a single tab on the bottom of the screen.

On the Internet front, Tempo will feature a Java Virtual Machine (VM) and Cyberdog 2.0. The Java VM will not only enable you to view Java applets within Web-browser windows but, when used in conjunction with OpenDoc, will also enable you to embed and run Java applets within any OpenDoc document. Cyberdog 2.0 will finally support some of the more advanced features of leading Web browsers, such as frames and transparent GIFs.

Beyond Tempo, the crystal ball gets hazy. The January 1998 release, code-named Allegro, will introduce a radical shift in the Mac-desktop experience: The Finder will be able to use OpenDoc components. No, all your files and folders won't suddenly be treated as OpenDoc parts; they'll continue to behave as they always have. But with Allegro, you'll also be able to open a Cyberdog browser window, for example, directly on the Mac's desktop.

Of the July 1998 release, we know nothing but its code name: Sonata.

In short, if you're not ready to take the leap to Apple's new OS, and aren't sure you ever will be, your Mac's future is safe. Apple knows you're out there and has every intention of keeping you happy with new OS goodies for years to come.

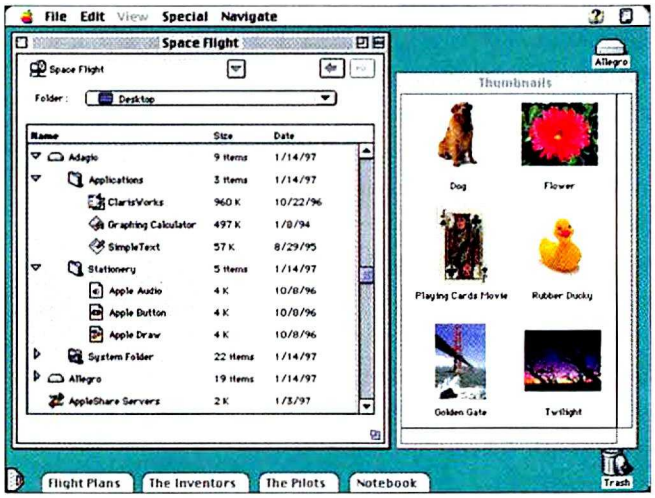
versions of the same application into the relatively small Mac market. Some developers may choose to support only one OS. Which they choose will depend largely on what is more important to them: gaining access to Rhapsody's greater functionality and performance or going with the Mac OS' larger market share.

KEEPING PROMISES

The next two years will be decisive ones for Apple. In committing to deliver the Rhapsody Premier Release by year's end and the Unified Release by mid-1998, Apple has set itself a Herculean task. Frankly, we're a bit skeptical that a company that was unable to deliver Copland, despite a three-year effort, can pull it off. But Apple did make good on its promise to ship Mac OS 7.6 in January. And it seems well on its way to a repeat performance with the Tempo release in July. And, it should be noted, the team tasked with delivering Rhapsody is not the same group that labored with Copland — in many respects, Apple's past performance in the OS arena cannot be used as a predictor of how the newly reinvigorated OS organization will perform.

Still, combining bits and pieces of two distinct operating systems, together with a sprinkling of completely new software technology, and ensuring that the result will run properly not only on Apple's own Power Macs, Performas, and PowerBooks but on clone vendors' systems as well is a daunting task. Apple's ability to fulfill the commitments it has made about Rhapsody could well determine the fate of an operating system that even Windows users will tell you, in private, has the potential to be just plain better than anything else around.

Henry Bortman is *MacUser*'s technical director. Jeff Pittelkau is MacUser Labs' group labs director.



THE OPENDOC-ENABLED FINDER: In this prototype of the Allegro release of the Mac OS, the Finder is an OpenDoc container. Here, Cyberdog's browser has been enhanced to provide an alternative view of the contents of local disk volumes and file servers (left). Because the browser is the active window, Cyberdog's Navigate menu appears along with the standard Finder menus. Allegro will also enable new icon types, such as the multimedia thumbnails shown here (right).

THE VERDICT —

We Need a Bohemian Rhapsody

IN LAYING OUT ITS PLANS for Rhapsody, Apple appears to have taken its own marketing slogan — "Expect the Impossible" — to heart. Barely back on its feet after scrapping the Copland project, Apple's OS management has constructed an intricate obstacle course and has promised to negotiate it with a deftness yet to be demonstrated by any other OS vendor.

Whether they'll succeed remains an open question. Perhaps what matters more at this point is how that success is defined.

The success of Rhapsody hinges entirely on what Apple delivers when. In laying out its two-year plan, Apple has (perhaps wisely) left itself quite a bit of wiggle room in this department. For example, the Rhapsody timeline calls for "some" Mac OS compatibility in the Premier release. How much is "some"? At press time, Apple wasn't saying.

Perhaps more important, Apple has yet to specify exactly which of its own technologies will be integrated into the Premier release. As we see it, this is the critical question. Why? Because customers who are most likely to adopt Rhapsody first are publishing, Web, and media professionals. These power users are the ones who need Rhapsody's performance and stability most. But they are also the ones who most rely on middleware such as the QuickTime Media Layer and ColorSync.

What concerns us most is that in its eagerness to deliver the Premier Release within a year as promised, Apple will opt to leave out technologies that developers desperately need in order to deliver groundbreaking apps — apps that give these media professionals a reason to adopt the new OS.

But Apple faces a far more serious challenge than having to implement technology and deliver it on schedule. It has to convince loyal Mac users that Rhapsody will be worth the wait. It's not going to be enough just to repeat the mantra "The Mac is great. Stick with us."

Windows, particularly Windows NT, is nipping at the Mac's heels. Microsoft knows that while Mac users are waiting for Rhapsody, many of them will be tempted to make the switch. More and more Windows machines are showing up in prepress houses and Web-authoring shops. And by the time the Rhapsody Unified Release ships, it will be competing not against today's Windows NT but against NT 5.0.

Apple may well meet the challenge of delivering Rhapsody on time. But it needs to do more. It needs to clearly articulate how Rhapsody will serve the needs of its target users — better than what Redmond will have to offer. And it needs to start articulating that message now. We're happy that Apple moved away from the "hard stop" strategy that would have tried to force users to adopt its modern OS and dump System 7. However, with the Mac OS safety net firmly in place, it becomes even more critical that Apple give users compelling reasons to move to the new OS.

Host-It-Yourself

TAKE CONTROL OF YOUR WEB SITE WITH WEB-SERVER SOFTWARE YOU CAN RUN ON AN IN-HOUSE MAC.

Web Servers

THE THRILL OF JUST GETTING your company's home page live on the Web was enough to keep you excited for a while, but that excitement is starting to fade as you realize how little control you really have over your Web site. Sure, it made sense to *start* by putting your site on someone else's server — all you paid was a reasonable monthly fee, and you didn't have to invest in a complicated Windows NT or UNIX server, a 24-hour-a-day Internet connection, or training of the site manager.

But now every time you want to change your site, whether you're just modifying your page or sprucing it up with cool interactive elements, you're being hamstrung by the inherent limits of relying on someone *else's* Web server: You experience a lack of control; slow access to files that need updating; and the inability to connect your Web site to other resources on your network, such as databases.

Running your own Web server isn't as hard as you may think, and unless you're planning to run a massively high-volume site, you can do it all from a Mac. With several commercial and freeware Web-server-software options to choose from, you should be able to find one that fits your needs *and* your budget.

To help you sort through the Web-server-software options, MacUser Labs tested eight popular software packages for speediness of connection and data throughput; we also evaluated how each one scored in terms of all the major issues you need to consider for a Web server, from ease of administration to compatibility and access control. Finally, we checked out some *non*-Web-server features notable in a few of these products.

BY JON WIEDERSPAN

ILLUSTRATION / ANDREW FAULKNER

MAC SERVERS: READY AND ABLE

If you're still not sure a Mac will do the job, consider these points about Mac Web servers:

Their speed meets real-world needs. Although it's true that the top Macintosh servers can't keep up with the top Windows NT and UNIX servers (see the "Not Fastest, but Plenty Fast" figure), it's also true that Mac servers can handle far more traffic than any single Web site is ever likely to need. The vast majority of Web sites don't get anywhere near as much traffic as the most-powerful servers can handle. A site that gets 100,000 connections per day is probably in the top 5 percent of the highest-traffic-volume sites on the Internet. Most Web sites handle fewer than 20,000 connections per day. Almost all the current Mac servers can handle 20,000 or even 100,000 connections a day with ease. And if you find that your site needs to handle higher loads, you can simply add another Mac — a cheaper and easier fix than moving to a Windows NT or UNIX server.

They're easy to install and maintain. The process of installing server software, configuring it for the network, and getting it to the point where your Web server is actually running is far easier on the Mac than on other platforms, as is the ongoing process of fine-tuning server settings and installing upgrades. Anyone who knows how to launch an application on a Mac can get a Web server up and running in very little time — a claim we wouldn't stand behind for a Windows NT server or *ever* make for a UNIX server.

They allow easy interapplication communication. Most Mac applications support a basic suite of Apple events for launching, opening, printing, and quitting documents. More and more applications are also providing advanced event interfaces that enable other applications to

control them. These capabilities make it easy to tie your Web-server software to other software for paging, faxing, doing spreadsheet calculations and database searches, and even authorizing credit cards. Whatever application you're using to store business information, chances are good you can link it to your Web-server software to make that information available over the Internet.

They offer better built-in security. Out of the box, Macintosh servers provide much better security than either Windows NT or UNIX servers, for two reasons. First, Mac servers tend to run only one or two services — say, Web-server and FTP-server software — not the dozens of services that are usually running on a UNIX system. Many of the methods for cracking into a server depend on exploiting services such as Telnet, which doesn't usually run on Mac servers. Second, Macs communicate among themselves by using AppleTalk and Apple events — and there is nothing in the Mac OS that allows these protocols to communicate with TCP/IP, the protocol used for Internet communication. That means there is no way for anyone to connect to your Web server over the Internet and use that connection to attack other Macs on your network.

THE BOTTOM LINE

SPEED ISN'T *EVERYTHING* when it comes to Mac Web-server software, but lack of speed can limit a product significantly. In ranking these packages as Web-server software, we based the rankings half on the speed results from our lab tests and half on our combined evaluations of ease of use; support; and features, with security features weighted most prominently. Since budget can also be an important consideration, we've grouped the products by commercial or shareware/freeware status, with a recommended Best Buy in each group. The remaining products are ranked in descending order.

+ / OUTSTANDING ● / ACCEPTABLE − / POOR

RATING	PRODUCT	SPEED	EASE OF USE	SUPPORT	SECURITY
	COMMERCIAL SOFTWARE				
BEST BUY	**WebSTAR 2.0**	+	+	+	+
	The fastest and best-supported Web-server software for the Mac, WebSTAR is also quite easy to use and secure. Although it lacks a few features, such as virtual directories, that are standard in software for other platforms, it's an extremely capable product and the standard-setter to watch.				
	InterServer Publisher 1.2.2	+	●	−	●
	TeleFinder Internet Server 5.1.2*	●	+	●	●
	Web Server 4D 1.0.5	+	−	●	+
	SonicWeb Server 1.02	●	●	●	●
	SHAREWARE / FREEWARE				
BEST BUY	**Quid Pro Quo 1.0**	+	+	−	+
	Amazingly capable for a freeware product, Quid Pro Quo was second-fastest in our tests and proved itself extremely easy to use; it also provides excellent plug-in support. Its one major drawback is the lack of guaranteed support inherent in a freeware product.				
	Pictorius Net Servers 1.1	−	●	−	−
	NetPresenz 4.01	−	−	−	−

*Ranking for this product is equivalent to that for the product above.

CHOOSING WEB-SERVER SOFTWARE

When you start looking at the Web-server packages available for the Mac, you'll discover that they vary widely in price and capabilities. At the high end — in terms of cost as well as capabilities — is StarNine Technologies' WebSTAR, the first commercial Web-server software for the Mac and a direct descendant of MacHTTP, the shareware server software that started it all. Already the market leader among Mac Web-server software, WebSTAR set the standard for how Mac Web-server applications process CGI (Common Gateway Interface) applications, and StarNine recently released an interface for Web-server-software plug-ins that has also been widely accepted by Mac developers.

But WebSTAR isn't the only choice. The field also offers two other general-purpose, commercial Web-server applications — InterCon Systems' InterServer Publisher (which includes FTP capabilities) and the new Sonic Systems SonicWeb Server 1.02 — in addition to two more-specialized products and three popular shareware/freeware options. MDG Computer Services' Web Server 4D, which uses ACI US' 4th Dimension database program, offers easy compatibility with other 4D databases. Spider Island Software's TeleFinder Internet Server is a Web-server application, a mail- and news-server application, and BBS software all rolled into one. The shareware and freeware offerings — Stairways Software's NetPresenz, Pictorius' Pictorius Net Servers, and Social Engineering's Quid Pro Quo — are also serious contenders, despite their low (or nonexistent) prices.

In deciding which server software to use, you need to consider such issues as speed, ease of administration, compatibility with CGIs and server-software plug-ins, and security, as well as special features.

SPEED. Speed is the top issue on most people's minds when they think about choosing Web-server software. Even if your site doesn't get much traffic on average, you're probably planning for it to get more traffic in the future — and you don't want that traffic to overwhelm your server. Speed can also be an indicator of the overall quality of Web-server software; programs that have trouble handling many simultaneous connections may also have other, hidden problems.

Speed is one of the few aspects of a Web server that can be quantified and measured. ZDBOp (Ziff-Davis Benchmark Operation) created its WebBench benchmarking software specifically for testing Web-server software. WebBench measures two key speed factors: server response (how many requests can be processed per second) and server throughput (how many bytes can be returned per second). In user terms, these measures describe how quickly a browser can connect to a server and how fast that server can send a page back.

As the "Performance Plateaus and Peaks" figure shows, the range of speed results among the products was large, with WebSTAR 2.0 the clear winner. With 60 clients pounding it, the server running WebSTAR 2.0 — which is as much as four and a half times as fast as its predecessor, WebSTAR 1.31 (our baseline software in the tests) — was able to process as many as 112 connections each second (that's 9.7 million per day). It also far outstripped the rest of the field in data throughput, sending data at nearly 1 MB per second.

Surprisingly, though, the second-fastest server was running a freeware product, Quid Pro Quo 1.0. Roughly three times as fast as

the WebSTAR 1.31 server and slightly faster than the InterServer Publisher 1.2.2 server, the Quid Pro Quo server peaked at a respectable 69 connections per second and a throughput of 574K per second. Although faster than the Quid Pro Quo server with 12 or fewer simultaneous clients, the InterServer Publisher server experienced a noticeable degradation in performance with more than 12 clients.

At the other end of the spectrum were the other two noncommercial products — Pictorius Net Servers 1.1 and NetPresenz 4.01. The server running Pictorius' server software maxed out with only 4 clients connected to it and was never able to process more than 9 connections per second with more than 4 clients connected, meaning this software is unsuitable for commercial use, although ease of customization with Net Servers might still make it a decent product for people who have specialized needs. The server running the slowest software, NetPresenz, had trouble with more than 1 or 2 connections per second; although this still means it could handle 10,000 connections per day, we wouldn't recommend depending on NetPresenz for serious business needs.

EASE OF ADMINISTRATION. Web-server applications aren't faceless, and ease of use in configuring and administering a server application are important criteria when you're looking for one. First, a server package should clearly explain user options, so that Webmasters aren't left wondering what would happen if a setting were changed. Settings should be grouped by function, with pop-up menus or sliders used wherever possible to display the range of options for a setting. In addition, the number of options presented at any one time should probably be a dozen at most, so that administrators won't feel that operating their server is like sitting in the cockpit of a 747.

None of the server applications we looked at passed our interface test with perfect scores, but they were all easier to use than Windows NT or UNIX packages. (Actually, some NT server applications are comparable to their Mac counterparts in ease of use, but once you factor in the complexities of NT, they lose out.)

The Web-server-software interface champ is Quid Pro Quo, which offers a clear, easy-to-use interface for setting server options. However, you must set all those options from within the server application itself — Quid Pro Quo doesn't let you modify those settings from a remote administration application, which is somewhat limiting if you're trying to use several different Macs as servers.

A close interface runner-up is WebSTAR. With WebSTAR, you modify your server options in a separate application that can either live on the server itself or on an administrator's remote Mac, in which case the application updates WebSTAR's settings via an AppleTalk connection. Both WebSTAR and Quid Pro Quo have plug-ins that allow you to administer them remotely via Web pages, but the limitations

WEB MYTHS /

don't be fooled by these bogus Web-server-software claims

MOST PEOPLE SHOPPING FOR WEB-SERVER software aren't experts in the field — the ones who are have already done their shopping. As a result, would-be Webmasters often have to wade through a swamp of misinformation. Here are two common misstatements you'll hear while shopping for server software:

OUR SERVER SOFTWARE SUPPORTS HTML 3.0.

This statement's a lot like boasting that your keyboard supports a college-level vocabulary. The fact is, what Web-server applications do is transfer files — any and all files. Server software doesn't care whether a file's a photo, a text file, an HTML file, a Java applet, or something in any other conceivable file format. Every server application now available supports HTML 3.0 — because there's nothing to support. Don't be impressed by this claim or similarly irrelevant claims that a server application supports Shockwave or Java.

THE MAC OS DOESN'T REALLY DO MULTITASKING.

Some uninformed critics say Mac OS systems don't work well as servers, because they lack multitasking capabilities — the ability to run several applications virtually simultaneously by switching rapidly among them. In fact, although the Mac OS doesn't do *preemptive multitasking* (that's multitasking in which the operating system decides which application gets to run at a given time), as Windows NT and UNIX do, it does do *cooperative multitasking*, in which the foreground application decides when other applications get to run. If you're using your Mac to run a network service, keep the server application in the foreground so it controls how much time it gets. It's that simple.

NOT FASTEST, BUT PLENTY FAST /

our Mac speed champ versus six NT & UNIX servers

MacUser LABS

CAN A MAC RUNNING WEBSTAR 2.0 — the fastest Web-server-software package for the Mac — hold its own against popular Windows NT and UNIX Web servers? To find out, we ran ZDBOp's WebBench benchmarks on six Windows NT and UNIX systems (including an Apple Network Server running AIX, a version of UNIX). We then compared the maximum number of connections per second achieved by each server in tests with 20 to 60 clients, in 4-client increments. Although our fastest system — the HP Windows NT platform running Internet Information Server 2.0 — was eight times as fast, two of the others were roughly equivalent to the Mac OS platform running WebSTAR 2.0. And the WebSTAR server's 112 connections per second is hardly slow; it translates to 9.7 million connections a day — more than enough speed for 95 percent of existing sites. The remaining 5 percent are probably better off if you add more Mac servers than if you rely on one Windows NT or UNIX server.

HP Windows NT platform = HP NetServer Pentium Pro running Windows NT 4.0 Server
Apple UNIX platform = Apple Network Server 700/200 running AIX 4.14
Silicon Graphics UNIX platform = Silicon Graphics O2 R5000-180 running IRIX 6.3
Apple Mac OS platform = Apple Workgroup Server 8550/200 running Mac OS 7.5.3

of the Web make the Web interfaces less usable than an administration app.

We also found InterServer Publisher and SonicWeb Server fairly easy to use, although the use of one interface to administer Web, FTP, and other services was confusing at times.

NetPresenz and Web Server 4D were the most difficult-to-use programs we looked at. NetPresenz began as FTP-server software and is still primarily designed for that purpose; only minimal options are available for the Web-server portion, and they aren't well explained in the documentation. Web Server 4D fails our ease-of-use criteria by cramming too many options into each screen, without much organization. Neither program is impossible to figure out, but both are noticeably less intuitive than the other packages.

COMPATIBILITY. In order to add features beyond the basics of serving Web pages, server software uses either CGI applications or server-software plug-ins. To provide expandability, a Web server should be compatible with a wide range of CGI applications and plug-ins.

Using CGI applications is the most common method for adding new capabilities to a Web server. WebSTAR has led the way in CGI compatibility, in that MacHTTP, WebSTAR's shareware ancestor, defined the CGI interface for Macintosh Web-server software. But now, all the server software we tested provides the same level of CGI support as WebSTAR. We did find some CGI-compatibility problems with InterServer Publisher 1.2, but InterCon fixed these in version 1.2.1.

Plug-ins work somewhat like CGI applications, but they operate much more quickly and have more capabilities, because instead of being separate applications that communicate with the server slowly, using Apple events, they're accessed directly by the server application, just as if they were a part of the application itself.

Currently, there are two proposed standards for Mac Web-server-software plug-ins: W*API, from StarNine, and MOSAPI, from ResNova. However, ResNova's server-software technology was purchased by Microsoft for use in an upcoming product called Personal Web Server, and as a result, the future of MOSAPI is uncertain. Most of the plug-ins that exist today are written for W*API, an interface supported by both WebSTAR and Quid Pro Quo. WebSTAR ships with W*API plug-ins for image-map support, file caching, remote administration, and more. Pictorius Net Servers has its own plug-in-like interface, which allows "agents" to be added directly to the server-software code, but no other server software supports these agents.

You should also consider compatibility with other technologies you may want to use on your Web server, such as streaming audio or video; Adobe's PDF format; and of course, Java. None of the server applications have any direct support for these technologies yet, but there are plug-ins available to help. WebSTAR 2.0 ships with a plug-in that can *byte-serve* PDF files — meaning you can view them one page at a time — and another plug-in that provides a Java virtual machine for running server-side applets, or *applets*. Similar plug-ins are also available for Quid Pro Quo.

SECURITY. In most Web-server environments, there's some need to restrict certain sections of a site to a limited group of users. As a result, your Web-server application should have some form of access-limitation functionality. The three types of access-limitation features we looked for were *allow/deny* capability (the ability to allow or deny site access to users based on their IP addresses or domain names), password-protected *realms*, and CGI-directory limitations. We also looked for one additional security feature, support for the SSL (Secure Sockets Layer) encryption protocol.

All the server-software packages except NetPresenz and TeleFinder Internet Server provide allow/deny capability, which might be used, for example, to prevent users with addresses outside your company from connecting to an internal server.

All but NetPresenz and TeleFinder Internet Server support realms, which let you require a user name and a password for access to specific files or directories. Assigning realms to areas of your Web site lets you share information only with specific users, even if portions of your site are open to the public. Pictorius Net Servers and WebSTAR go an extra step by supporting realms *and* an extension of allow/deny

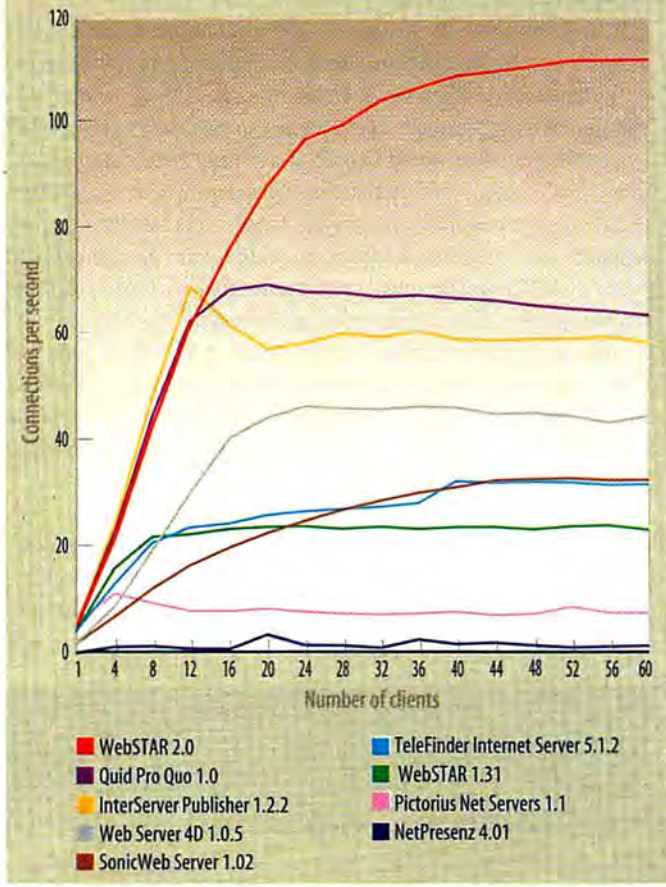
PERFORMANCE PLATEAUS AND PEAKS /

WebSTAR 2.0 breaks through previous barriers

MacUser LABS

HOW WELL CAN MAC Web-server software handle increasing client loads? We ran our WebBench benchmarking tests on the products covered here at Ziff-Davis Labs, where we were able to measure server response (in connections per second, or the number of requests processed by the server per second) and throughput (in bytes returned to the browser per second) with a steadily increasing number of clients, reaching a total of 60. Our test platform was an Apple Workgroup Server 8550/200 running Mac OS 7.5.3. This graph shows connections per second; the throughput results showed virtually the same relative performance among the products.

Although most of the products (including our baseline product, WebSTAR 1.31) hit a plateau somewhere around 16 clients, WebSTAR 2.0 didn't start to level out until it hit 50 or so clients — and its peak result was way above that of our second-place finisher, Quid Pro Quo.



4:45 PM Sending my 48 meg file to be printed.
Color calibrating? Three clicks, all done.
Traps and overprints? They all showed up.
Revisions? OK, so I'm a little obsessive.
The comp? It actually matches the screen.

5:00 PM What's next? I'm out of here.

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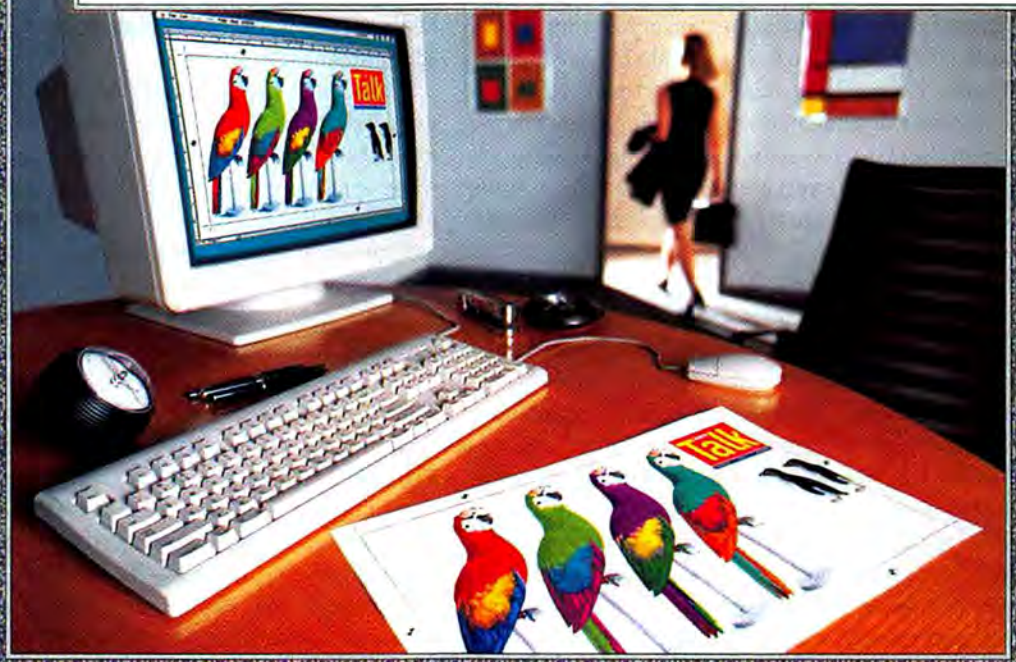

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CIRCLE **68** ON READER SERVICE CARD

THERE ARE SO MANY GOOD CGI applications and server-software plug-ins available that it would be impossible to list them all here. Here's a sample, though, of some of the most useful Mac CGIs — a great starter kit for almost any site. Some of these are included in the **Apple Internet Server Solution 2.0** ($2,299 to $6,449, depending on which Apple Workgroup Server is included), a hardware/software bundle that includes Web- and FTP-server software and demos of development tools, as well as CGI applications for image-map processing, database access, and more.

MapServe 1.6 (shareware fee, $49; http://www.acmetech.com/), from Acme Technologies, is an image-map-processing CGI. Although modern Web browsers have no trouble processing image maps (several hyperlinks overlaid on a single graphic), there are still many people using older browsers that need to have the Web-server software process image maps for them. MapServe is simple to use, fast, and stable.

NetCloak 2.0.1 ($195; http://www.maxum.com/), from Maxum Development, provides a simple language for customizing HTML pages on the fly. Using NetCloak's tags, you can change how your Web page looks, based on the reader's IP address, browser type, or user name and password — or even on the weekday or time. You can also insert user-specific information, page counters, and more. In addition, NetCloak can launch several other CGI applications and pull all the results together in one page. And NetCloak caches pages in memory, which can noticeably improve your Web server's speed.

NetForms 2.0 ($195), from Maxum, provides a very simple language for processing form pages. When a user submits a form, NetForms lets you use the form information to create a new page to return to the user, link the new page into a list (as in a discussion forum), send an e-mail message, save the form information to disk, or perform any combination of these actions. NetForms is very fast and stable and comes with examples for a guest book, a discussion forum, an online cookbook, and more.

WebLock 1.0 ($195), also from Maxum, controls access to folders on your Web server by using the settings in your Users & Groups control panel — a much easier interface for controlling access than those most server software provides. WebLock is especially useful if you have many users sharing a server, each with an individual Web folder.

Tango, from EveryWare Development (http://www.everyware.com/), provides an interface between your Web server and almost any database out there. The Enterprise version ($995 and up) works with everything from FileMaker and FoxPro to NT SQL Server and Oracle. Tango can communicate with databases via ODBC, DAM, or direct drivers (for example, those for FileMaker and Oracle); a version that works *only* with FileMaker costs $349. Tango includes an editor that provides a drag-and-drop interface for building forms for searching or updating your databases. There's no need to learn SQL (although you can write custom SQL scripts if you want to), and the databases are queried directly, so you don't have to remember the various column and table names.

that lets you deny access to a particular section of your site.

InterServer Publisher, Quid Pro Quo, and WebSTAR are the only server applications to provide the third security feature we looked at: the ability to limit CGI applications to a specific directory on the server, preventing the Web-server software from using any not in that folder. This feature protects against users who upload files by using FTP or another method and then try to launch them via the Web-server software.

The fourth security feature we looked at was support for SSL, a Netscape-developed encryption protocol that has become the IETF standard for providing secure connections between browsers and server software. Currently, WebSTAR is the only Web-server software that supports SSL on the Mac. WebSTAR SSL runs as a separate application that allows only SSL-encrypted connections to occur between WebSTAR and the browser. It can run either on the same server as WebSTAR or on a separate one. Because it shares all of WebSTAR's features, the two applications can even share the same file space.

SPECIAL FEATURES. Don't discount the special features of some of these server-software packages in making your choice. Server software that isn't tops in speed or ease of use may still be the best choice for you if it offers specialized capabilities that match your company's needs.

TeleFinder Internet Server's BBS integration, including list-server features and full-featured SMTP/POP e-mail server software, makes it an attractive option for a workgroup or for use by an organization whose main goal is group communications. You could get the same capabilities by running separate Web-server, mail-server, and list-server software, but your server wouldn't be likely to perform as well or be as stable. And TeleFinder's BBS capabilities are top-notch: Users can connect via modem or TCP/IP; there's an SMTP/POP gateway for Internet mail exchange; and TeleFinder offers an intuitive, Finder-like interface for administering user accounts.

If your company has a significant investment in 4D development, using Web Server 4D may be the best way to leverage that investment for your Internet services. Even if your company has another Web-server application already, Web Server 4D can be a good adjunct for providing database access or specialized Web services.

Groups who want to provide FTP access so that users can upload files to a Web site can benefit from NetPresenz's and InterServer Publisher's combination of Web, FTP, and Gopher services in one application. Since one application provides all services, the performance is better and the server is more stable. Both server applications also allow the services to share information, such as user and group names, for restricting access. NetPresenz, which is first and foremost for an FTP server and only secondarily for a Web server, offers FTP-server capabilities that are as easy to use as System 7's file sharing.

If you want to create a heavily customized Web server, consider using Pictorius Net Servers — it's the only one of the server applications for which you can purchase the source code and then add your own special features. Net Servers was written in Pictorius' Prograph CPX, a visual programming language. Pictorius has also announced that other free services — such as SMTP, POP3, News, DNS, and list serving — will be integrated into Net Servers.

Three of the server-software packages mentioned in this section — Pictorius Net Servers, TeleFinder Internet Server, and Web Server 4D — also provide direct support for another specialized feature: the ability to do virtual hosting. Virtual hosting lets you run many different sites from one Web server, each having its own default home page. This capability is very useful for Internet service providers who want to provide Web-site hosting for smaller companies. If you choose a package other than these three, you can still do virtual hosting but you'll need to get one of the plug-ins or system extensions that supports this capability; we recommend HomeDoor, from Open Door Networks (http://www.opendoor.com/), as the best of the current crop.

BOOKMARK

RELATED INTERNET SITES

Macintosh WWW Resources
Includes a comprehensive list of Mac CGI resources and links to the places you can find them.

GO TO http://www.zdnet.com/macuser/0497.html#web

SERVES YOU RIGHT

Although some users' special needs may make other server software right for them, the best Mac Web-server software on the whole is WebSTAR 2.0. Not only is WebSTAR the fastest and most mature of the bunch but it's also the leader in terms of security and compatibility, making it our Best Buy among the commercial products.

However, the free Quid Pro Quo 1.0 gives WebSTAR a serious run for its money, earning our Best Buy designation among the freeware and shareware products. Second-fastest in our tests, it provides a CGI interface, plug-in support, ample security and configuration options, and a particularly easy-to-use interface. Its one notable drawback is a total lack of the service features you get with commercial software — quality tech support, documentation, and a commitment to future development. But it's definitely worth considering if your budget is tight or you want to experiment without making a big investment.

Of course, since other Web-server-software developers haven't had time yet to try to improve on WebSTAR 2.0 (as the "Performance Plateaus and Peaks" figure shows, most had bested WebSTAR 1.31 in speed by the time of our tests), there's every reason to keep watching the Web-server-software arena for further improvements. And remember: Whichever server software you choose, you'll appreciate having your server in-house, where you'll finally have the kind of control that made you want to be a Webmaster to begin with.

Jon Wiederspan is vice president of technical services for ComVista, an Internet consulting group in Seattle, Washington. He is also coauthor of *Planning and Managing Web Sites on the Macintosh*, from Addison-Wesley Developers Press. Associate Project Leader James Galbraith managed the testing for this report.

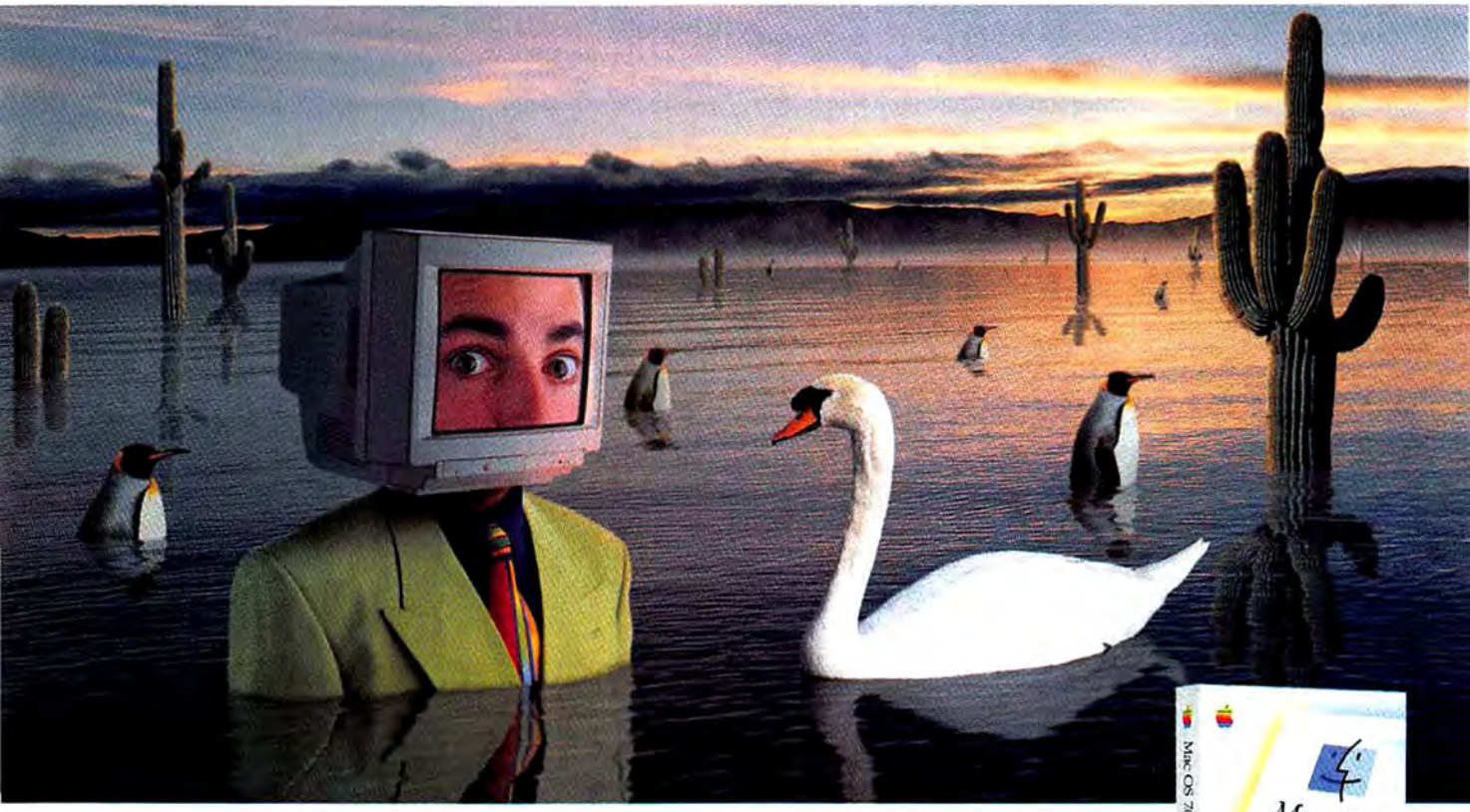
FEATURES OF WEB-SERVER SOFTWARE / which one serves your needs?

✓ MacUser BEST BUY

PRODUCT	InterServer Publisher 1.2.2	NetPresenz 4.01	Pictorius Net Servers 1.1	✓ Quid Pro Quo 1.0	SonicWeb Server 1.02	TeleFinder Internet Server 5.1.2	Web Server 4D 1.0.5	✓ WebSTAR 2.0
	♦♦♦½*	♦♦♦*	♦♦½	♦♦♦♦	♦♦♦	♦♦♦♦†	♦♦♦½	♦♦♦♦½
PRICE	$495	$10 (site license, $500)	free (source code, $695)	free	$499	$675	$295§	$499◊
MINIMUM OS REQUIREMENTS	System 7.0.1	System 7.0.1	System 7.5.3**	System 7.1**	System 7.0.1	System 7.0.1	System 7.0.1	System 7.0.1
MINIMUM RAM	500K††	500K	8 MB	2.5 MB	1 MB	3 MB	5 MB	1.3 MB
OPEN TRANSPORT-NATIVE	●	●	●	●	§§	●	§§	●
ADMINISTRATION METHOD	separate application	separate application	via server	via server	separate application	via server	via server	separate application
SCRIPTING	●	●		●	●	●		●
FILE CACHING	●			●		●	●	●◊◊
PLUG-IN SUPPORT			***	W*API, MOSAPI				W*API
SECURITY FEATURES								
Realm security	●		●	●	●		●	●
Limitation of CGI locations	●			●				●◊◊
Secure Sockets Layer (SSL) support								●†††
SPECIAL FEATURES								
Virtual hosting			●			●	●	
Other noteworthy capabilities	FTP, Gopher	FTP, Gopher	none	none	none	BBS, SMTP, POP3, NNTP, Finger, list server	4D database, SMTP client	ListSTAR, WebSTAR SSL
COMPANY	InterCon Systems Herndon, VA 800-468-7266 703-709-5500 http://www.intercon.com/	Stairways Software http://www.share.com/peterlewis	Pictorius Halifax, NS Canada 800-927-4847 902-492-2880 http://www.pictorius.com	Social Engineering Berkeley, CA 510-238-9120 http://www.slaphappy.com/	Sonic Systems Sunnyvale, CA 800-535-0725 408-736-1900 http://www.sonicsys.com/	Spider Island Software Irvine, CA 714-453-8095 http://www.spiderisland.com/	MDG Computer Services Bartlett, IL 630-497-0220 http://www.mdg.com/	StarNine Technologies A Quarterdeck Co. Berkeley, CA 800-525-2580 510-649-4949 http://www.starnine.com/

*Mouse rating reflects product's capabilities for both a Web server and an FTP server.
†Mouse rating reflects product's capabilities for both a Web server and a BBS.
§Downloaded version, $245; educational discount, 25 percent.
◊Educational version, $295.
**With Thread Manager extension (available from Apple's Web site) installed.
††Runs as an extension and uses system memory.
§§Not native, but works with Open Transport.
◊◊Provided via a plug-in included with the server software.
***Proprietary "agent" technology works much like plug-ins.
†††Provided as separate server software.

The new Mac OS 7.6. Now, wherever your mind goes your computer will follow even faster.



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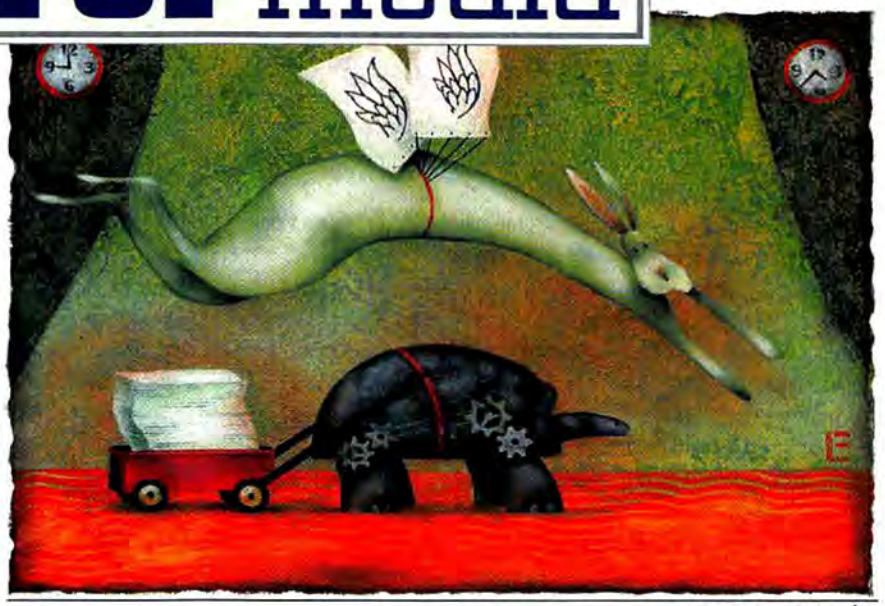

It's fast.
It's filmless.
But is direct-to-press
for you?

By Brian P. Lawler

Pressing Issues

PRINTING "THE OLD-FASHIONED WAY" entails processing film from page-layout files, making plates from the film, and painstakingly setting up a press. This preparation takes up the lion's share of the time and money you'll spend to start an offset printing job and has made short full-color print runs — less than 2,000 copies — a fiscal impossibility for most.

Direct-to-press printing is turning all this on its head — there's no film, in some cases no plates, and no lengthy setup. Direct-to-press systems offer a host of advantages: speed, good color, and the ability to meet deadlines like never before. They even bring new possibilities to printing, namely the ability to customize every piece in a job. Best of all, their output quality is now becoming comparable to that of conventional printing. This is not color copying — it's full-range, full-color printing.

So why hasn't everyone thrown out their old printing presses and forged bravely ahead into an all-digital workflow? Direct-to-press isn't the answer for every job quite yet. In particular, large print runs aren't cost-efficient on digital presses and color issues will disqualify some machines from certain jobs. In this article, we'll help you figure out when it's smart to use direct-to-press and how to get the most out of it when you do.

How It Works

The easiest way to describe a direct-to-press machine is as a cross between a color laser printer, or a color copier, and a conventional offset press. Offset presses, which print most books and magazines, use sets of cylinders (one set for each color) to roll wet ink onto a premade printing plate and then from the plate onto a page. Direct-to-press machines, in their various incarnations, remove some of the steps in this process. Some machines remove the need for film, others also remove the need for printing plates, and a few even shun printing inks as well.

All these different approaches to digital printing have actually created some confusion about what qualifies as "direct-to-press," "direct-to-plate," or simply as a souped-up copy machine. In this article, we decided to focus on some of the leaders in this wide new field while making sure to give you an idea of what features and benefits they share as well as what distinguishes them from one another.

The presses we will examine are the Agfa Chromapress, Heidelberg GTO-DI, Heidelberg QuickMaster DI, Indigo E-print 1000, Scitex Spontane, and Xeikon DCP.

The two machines from Heidelberg are the closest cousins to conventional printing presses. They use plates and ink but don't require you to create the plates from film. Instead, you "burn" the page image straight onto a photosensitive printing plate as it sits on the machine. Other direct-to-press machines, such as the Agfa Chromapress, the Xeikon DCP, and the Indigo E-print 1000, do away with plates and wet ink altogether, instead creating the page image with powdered toner, much as a copier does, or with a laser beam and electrostatic ink, much as a laser printer does.

Weighing the Pros and Cons

So when is direct-to-press a smart choice? In the rest of this article, we sum up the biggest issues you'll need to consider. To see the particular strengths and weaknesses of various machines, take a look at the "Presses at a Glance" table. Also, even if you're a prepress whiz, you'll probably have to modify the design of jobs headed to digital presses. See the "Tips for Trouble-Free Digital Printing" sidebar to find out what's involved.

ILLUSTRATION / ELIZABETH LADA

Pro: Speed. Direct-to-press systems offer turnaround times impressive enough to make conventional-print-shop people faint. Conventional press runs require ink drying, which can add days to the time needed for printing and folding a job. In a matter of hours, many of the direct-to-press machines can print complete jobs, with full-color ink — already dry — on both sides of the page. Any jobs that require double-sided printing within 24 hours or less can be regarded as candidates for application of this speedy technology.

Be aware, however, that numerous conventional printers can also meet short deadlines for certain jobs by printing overtime. If you're already willing to pay direct-to-press prices, you might want to consider having your conventional printer run your job at overtime prices. The benefits of this approach will be the quality you're used to from your regular printer and no extra time for preparing your files.

Pro: Customized Jobs. Direct-to-press machines let you do one thing you could never do before — customize jobs for individual recipients. If there's no plate to create, you can use the RIP to change text and sometimes images on the fly. For some industries, especially marketing and sales, this feature, known as "variable data," sells the technology all by itself. For instance, you could print full-color marketing flyers customized for different regions or customers. Or you could print top-quality diplomas with a different name, degree, and signature line on each copy. One New York printer even produces full-color backstage passes for rock concerts, each with a unique ID and bar code and the photo of the bearer.

Pro: Precision Printing. Another benefit of two of these presses is their precision when printing back-to-back images — a critical issue for some jobs. One Midwest printer utilizes a Xeikon to print standardized test pages, where the position of the little ovals on one side of a page cannot encroach on the position of those on the reverse. The Xeikon DCP and the Agfa Chromapress monitor back-to-back register to an extraordinary degree and are able to adjust register error in a fraction of a second.

Con: Different Color Quality May Require Extra Preparation Time. Digital printers, especially those that utilize toner, frequently create color that lacks the luster you expect from conventional printing inks. This isn't necessarily unattractive, but to avoid surprises, it's a good idea to prepare your files with the capabilities of the press in mind. Take a look at the "Presses at a Glance" table to find out what kind of ink finish you can expect from various machines, and be prepared to take some extra time with your files (see the "Tips for Trouble-Free Digital Printing" sidebar for details).

Con: Limited Spot-Color Capabilities. If your printing project requires spot colors, a digital press may be the incorrect choice. The Heidelberg GTO-DI and QuickMaster DI digital presses can be inked with special colors, and the Indigo E-print 1000 can print with four process plus two spot colors, but the Xeikon and Agfa printers can print only with cyan, magenta, yellow, and black toner. The toner-based Scitex printer also has no spot-color capabilities. If your job depends on spot colors or if you plan to employ fluorescents, metallic inks, or special varnishes, you'll probably be better off if you opt for conventional printing presses.

Pro or Con: Cost. The size of your print run will probably play the biggest part in your decision on whether to use direct-to-press technology. These machines are designed for very short press runs, quantities that are impractical on conventional printing machines. If your job is 1 to 500 impressions, direct-to-press systems are the most cost-effective

Presses at a Glance

Direct-to-press presses	Color capabilities (colors/colors printed at once)*	Paper dimensions (in inches)	Most cost-effective print run	Variable data capability	Ink finish
Agfa Chromapress	4/4	12 x 34	50 to 1,000 impressions	yes	cleaner and more-vibrant colors than those of conventional presses
Heidelberg GTO-DI	4-5/0	14 x 20	350 to 5,000 impressions	no	comparable to conventional offset printing
Heidelberg QuickMaster DI	4/0	13 x 18	150 to 3,000 impressions	no	comparable to conventional offset printing
Indigo E-print 1000	6/6	12 x 18	50 to 1,000 impressions	yes	flat ink quality unlike that of conventional printing
Scitex Spontane	4/4	12 x 18	1 to 1,000 impressions	no	flat toner quality
Xeikon DCP	4/4	12 x 34	50 to 1,000 impressions	yes	cleaner and more-vibrant colors than those of conventional presses

*4/4 means the press prints four colors of ink on both sides of the paper simultaneously. 4/0 means it prints four colors on one side, requiring the paper to be fed through the press a second time to print the back side. Usually this requires more time, because the ink must be allowed to dry between passes.

Tips for Trouble-Free Digital Printing

DIFFERENT TECHNOLOGIES REQUIRE different techniques, so we've rounded up some of the things you'll need to keep in mind as you design and prepare files for a digital press. Mistakes can cost a lot in lost time, so communicate early and often with your printer for recommendations.

• **Use a ColorSync Profile for Color Separations . . .** Digital printers that use toner often create color that looks significantly different from color made with printing inks. This can result in unpleasant surprises if you don't prepare your color separations with the machine you'll use in mind. If possible, get a ColorSync profile from your printer. It's easiest to use ColorSync profiles in Adobe PageMaker, but if you get the Helios ColorSync 2 Xtension ($498; available from the World-Wide Power Company, 800-940-8737; http://www.thepowerco.com/), you can make ColorSync work in QuarkXPress as well.

• **. . . Or Create a Custom Inks Setup in Adobe Photoshop.** If a ColorSync profile is not available, you can gather color data from the press on the nine "progressive colors," or CIExyY, and use this data to build a Custom Inks Setup in Photoshop. This will help Photoshop make separations in line with the press's capabilities.

If you're lucky, your print shop may be able to provide these values or a Photoshop Custom Inks Setup with the values already entered. To make a Custom Inks Setup yourself, start out by printing a series of color patches on the press you'll use: cyan, magenta, yellow, black, red, green, blue, and a combined CMY. Also take a reading of the plain paper itself. Measure the patches with a color instrument such as Light Source's Colortron II or X-Rite's Digital Swatchbook, gathering three values for each color patch (x, y, and Y). Then, in Photoshop, open the Printing Inks Setup menu (File: Preferences: Printing Inks Setup) and choose Custom from the pull-down menu. Enter all the measurements you've finished gathering, and finally save the Custom Inks Setup with the name of the printing system.

• **Print Neutral Grays with Black Ink.** Managing a good neutral gray or tint area that's made up of three or four colors is a challenge on any printing press, but it can be impossible on a digital press, since fine tint values are especially hard to control. In all cases, keep your color palettes simple and print gray with black ink only. Be tolerant of slight color shifts in light screen tints, since these will frequently stray slightly from intended values, especially on toner-based machines.

• **Ask About Appropriate Total Ink Coverage.** Setting the total ink coverage (also known as TIC, UCR value, or ink lay-down) at an appropriate amount is critical, because too much ink or toner can ruin a job. Total ink coverage is the cumulative percentage of the layers of ink — four solid layers of cyan, magenta, yellow, and black ink would be a total ink coverage of 400 percent if you were printing only in CMYK. On conventional presses, the TIC is usually between 240 and 360 percent. With most digital presses, the appropriate TIC will be lower.

On the toner-based machines, such as the Agfa Chromapress and the Xeikon DCP, TIC values higher than 300 percent will create areas of toner piled so high that you get a relief image on the paper. The TIC should be even lower on the Indigo press — 212 percent at most. Higher values can yield mottling in solids and dark tints. You can set total-ink-coverage values in Photoshop 3.0's Preferences or in 4.0's Color Settings.

• **Don't Print Solids Across a Fold.** Don't cross a fold with a solid on a toner-based machine. When the paper is folded, the toner may end up crushing or cracking.

• **Accept Flat Color from Some Machines.** The kind of gloss you can expect from your colors will depend on the press you pick (see the "Presses at a Glance" table). Both the Heidelberg GTO and QuickMaster DI machines are based on conventional presses and offer the vivid colors possible with offset printing. This is not the case with all the machines. Although many have a flat toner quality, the Xeikon DCP and Agfa Chromapress actually print colors that appear more vibrant.

• **Keep Your Art Simple.** When you use illustrations created in Adobe Illustrator, Macromedia FreeHand, or other drawing programs, make sure to simplify the paths. Very complex paths can slow down the RIP time. In general, don't use any new software or employ untested methods when your deadlines are short.

Best suited for
tightest deadlines, variable-data jobs
tight deadlines, real offset printing
tight deadlines
tightest deadlines, variable-data jobs
very tight deadlines, small jobs
tightest deadlines, variable-data jobs

choice. However, with runs any larger, you'll want to see a price quote to determine whether the job might be cheaper on a conventional press.

Despite the expenses that are involved in the *preparation* of conventional printing, the price per *impression* declines significantly once the press has started to run. One determining factor is the cost of consumables. The "electro-ink" of the Indigo press and the toner of the Xeikon and Agfa machines can cost up to 25¢ per letter-sized page, whereas the same coverage in regular printing ink would cost only 2¢ or 3¢. All of this begins to add up as you approach 2,900 impressions. At that point, running a job on a conventional press is cheaper than running it on a digital machine.

The exception to this rule is the two Heidelberg machines. These presses most closely mimic the workings of standard offset printing presses, using more-conventional inks and methods. As a result, the cost of their consumables is usually not as high as that of the other direct-to-press machines. Either of them can be a cost-effective choice if your job is medium-sized — 5,000 impressions at most with the Heidelberg GTO-DI. There is a disadvantage to their more traditional techniques, however — neither the GTO-DI nor the QuickMaster DI is capable of the flashier aspects of direct-to-press, such as variable data.

Final Impressions

In the past few years, direct-to-press machines have brought a whole new range of possibilities to the printing process, and they will continue to bring even more. It's time to rethink all those fast and furious full-color jobs you used to dismiss as being impossible. These days they probably have a chance to be affordable.

We're already seeing a blurring between digital and conventional printing. As more printers move to eliminate prepress film from production, they close the gap between art and the printed sheet. In the future, all printing will be digital, regardless of the size of the sheet or the length of the run, but for now, these machines are delivering that promise on a small scale.

Brian P. Lawler is a graphics and printing consultant in San Luis Obispo, California.

Make Your Portraits Pop

Susan LeVan's Painter secrets can help your projects twist and shout.

NOTHING'S MORE CHALLENGING than creating a unique but recognizable portrait. That's why we asked artist Susan LeVan, a partner in Boston's LeVan/Barbee studio, to share some of her secrets with us.

The art director of *Live!* magazine challenged LeVan to create portraits of the Beatles that were stylized but that still clearly resembled the Fab Four. Her strategy was to use many photo references — without scanning or copying a particular one — to home in on the band members' key facial features. Working in Fractal Design Painter, LeVan used a Matchprint-tested palette of colors and the playful and lively devices she often employs in her work: unexpected colors such as blue, green, and yellow instead of flesh tones; drop shadows, to give the illusion of lifted areas; and a variety of textures and strokes. She additionally broke the faces up into rectangular areas containing various color schemes and graphic techniques.

Here we follow LeVan's steps as she layers colors and techniques to create an illustration much like the Beatles' music itself — filled with a richness of detail, dynamic abstraction, and charm.

Janet Ashford is the coauthor of Start with a Scan: A Guide to Transforming Scanned Photos and Objects into High Quality Art *(Peachpit, 1996).*

STEP BY STEP

1. SKETCH FROM SEVERAL PHOTO REFERENCES. To avoid any chance of copyright infringement, do not use a scanned photo as a template. Instead, use your photo references to get your subject's features firmly in your mind. LeVan studied books and album covers before she drew her initial sketch directly in Painter, using a graphics tablet. She avoided color in order to concentrate on facial structure and composition. She's also found that grayscale works better when a client wants to see the sketch by fax.

2. ROUGH IN RELIABLE COLORS. After you've finished your initial sketch, begin experimenting with color. If you're outputting to four-color film, however, make sure to use a palette of colors you know can print. Turn on Painter's Printable Colors Only option, by going to the Color palette (Window: Art Materials: Color), choosing RGB Colors from the palette's pop-up menu, and clicking on the Printable Colors Only check box. If possible, do as LeVan does and test the colors with Matchprints at your prepress house.

3. GET A "LIKENESS" BY ACCENTUATING THE SUBJECT'S KEY FEATURES. Try to find and focus on your subject's essential facial features to make sure that person will be recognizable regardless of the wildness of your style. It took LeVan several drafts to find the key to each Beatle. Ringo's distinctive, droopy, hound-dog eyes and large nose were easy to spot, but Paul's small and regular features were more difficult to capture. LeVan

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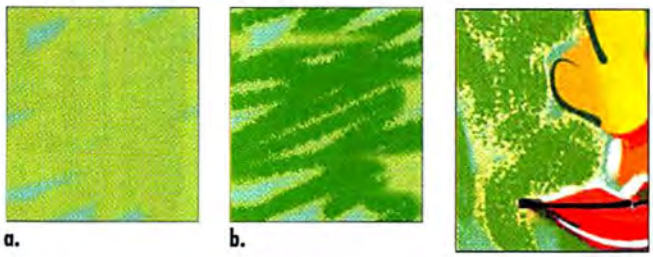
3. GET A "LIKENESS" BY ACCENTUATING THE SUBJECT'S KEY FEATURES.

4. BUILD TEXTURES WITH PAINTER'S COLOR MASKS.



a. b. c.

5. MAKE AREAS OF THE PORTRAIT POP BY ADDING DROP SHADOWS.

decided to zero in on Paul's slightly startled look by accentuating Paul's wide eyes, arched eyebrows, and pursed mouth (four versions of which are shown here).

4. BUILD TEXTURES WITH PAINTER'S COLOR MASKS. To add texture that resembles mottled layers of paint, take advantage of Painter's ability to create a mask based on a color range. When a color mask is cleared, a few pixels of the masked color are always left behind, creating a speckling effect. LeVan used this technique to gradually build up texture on the left side of George's face. She created a color mask (Edit: Mask: Color Mask), adjusted the sliders to control the broadness of the color range, and clicked on the turquoise of George's cheek to set the range's center. She then painted the area with a green chalk brush (a) and cleared the mask (Edit: Mask: Clear Mask). She repeated this process with various colors (b) until she'd built up a texture she liked (c). Notice that she used this technique only in certain areas.

5. MAKE AREAS OF THE PORTRAIT POP BY ADDING DROP SHADOWS. To add the final touches to your portrait — and "disrupt the picture plane," as LeVan says — you can select rectangular areas of the image and create drop shadows beneath them. Use the marquee tool to select an area. Convert the area into a floater (Edit: Float). Then create your drop shadow (Effects: Objects: Create Drop Shadow). When you're done, the areas will appear to pop out of the picture, as John's eye does here.

EXPERT TIPS / By Bob Schaffel and Chuck Weger

A Debugging Game Plan

Printing PostScript files can require special care. Here's how to troubleshoot them.

YOU'VE BEEN HANDED a PostScript file to print that has been created by someone else on (eek!) someone else's computer. How do you know whether it will print properly or even print at all? If you're lucky, the person who prepared that file read last month's column, in which we described how to create appropriate PostScript files (Expert Tips, March '97, page 116) and everything will be just ducky. But in case that person ignored our advice, you'll need to test the file before final output — it's mandatory if the file contains complex elements.

Recapping from last month: Service providers would rather print files directly from an application such as QuarkXPress. But because of compatibility issues with system configurations and such, service bureaus may ask that clients supply PostScript files instead of QuarkXPress files. Then there are clients who decide on their own that by supplying PostScript files, they will avoid service-bureau problems (read: human error). Unfortunately, if the PostScript file is made with the wrong print drivers or the wrong system parameters, then printing may go kablooey (read: kaput) anyhow.

If the job is only several pages of output, you can test the actual PostScript code. But if there are lots of pages — a book, for example — create a set of sample pages and include representative items from the entire cast of elements in the document — fonts (whether commercial or home-grown); illustrations (from each software package used), especially those with nifty effects; special graphics (with halftone screens at idiosyncratic values, for instance); and a photographic image.

Testing PostScript requires a game plan. This helps you not only organize the task but also avoid the embarrassment of telling a client the file won't print when, in actuality, nothing is wrong with it. Here are some starting points for your own test plan.

1. Make Copies of the File(s) Immediately. Never work on the original files. Copying them right away verifies that the client's media are sound. Nothing infuriates clients more than finding out three days after they thought testing was going to begin that you can't even read the files due to a media error.

2. Preflight the PostScript. This is one of the most important steps. All well-behaved PostScript files contain Document Structuring Convention (DSC) comments, which forward vital information to other applications. Preflight utilities read DSC comments and tell you things such as what colors are specified in the document, what graphics are included, which fonts are available or missing (some imposition software works better with no included fonts), and whether the correct PostScript Printer Description (PPD) file was used during creation. Our current favorite utility is Download Mechanic Pro, from Acquired Knowledge Software (619-587-4668), because it not only reports the DSC comments but also troubleshoots the PostScript code and previews files on-screen.

3. Produce a Soft Proof. If you own Adobe Acrobat, use Acrobat Distiller — which is actually a PostScript interpreter — to convert the code into Portable Document Format (PDF). In effect, this tests whether the PostScript works by producing a page that can be viewed on-screen with Acrobat Reader. Best of all, the PDF file can be archived for reference and accountability. If you're not going to impose the pages — putting them in the same order as the plates that will be used on the printing press — skip to step 6 below.

4. Impose the Pages. If the pages will be put in printing-plate order — a process known as imposition — then test this part of the final workflow by running them through the application in which the pages will be imposed. The imposition application will squawk if the PostScript code is defective. Many times, pages that output beautifully as single pages fail when combined with others for imposition.

5. Soft-Proof the Imposition. Imposed pages should be given a visual check to make sure that all elements are where they belong. You can do this by converting the imposition into PDF in Acrobat. If you're using a computer-to-plate technology, which doesn't have an intermediate step, soft proofing is even more important. Some computer-to-plate companies, such as Creo Products (604-451-2700), make software that enables an on-screen check of imposed files.

6. RIP the Files. Now process the files by sending them to your PostScript printer. If after steps 4 and 5, the output of the imposed pages fails, then try applying the RIP (raster-image processor) to the individual pages. If the output succeeds, compare it with the laser-printer proofs provided to you by the customer, made from the layout's original application. Obviously, the two should match.

7. Print proofs. Even the best eyes will miss things on film negatives that can be seen on positive prints.

Then what? Report your findings to the client. If you know some PostScript, you just might be able to fix some simple problems.

Finally, remember that fixing some problems allows hidden problems to surface. When in doubt, fix and test again.

Bob Schaffel is emerging-technologies consultant for R. R. Donnelley & Sons. Chuck Weger is a graphic-arts consultant and a partner in Genex Media, a company specializing in new media and Web design. Write to them at experttips@macuser.com.

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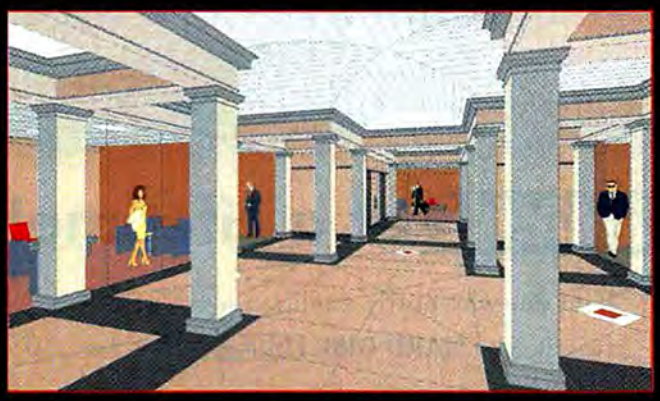
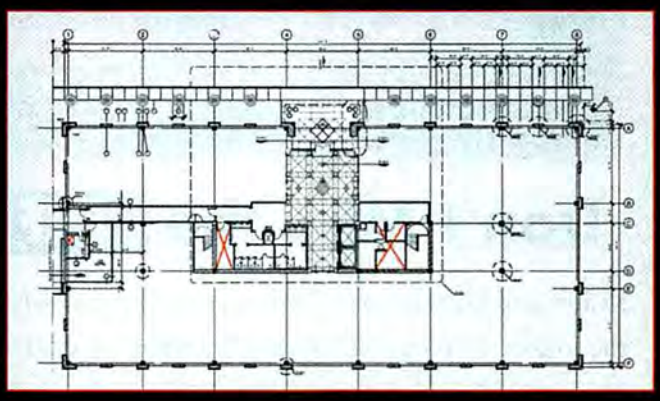
The Easiest, Most Cost-Effective





Way to Design

—Audience Vote at the Designers CAD Shoot-Out

The general-purpose MiniCad went toe-to-toe against industry-specific CAD programs nearly six times as expensive—and came out on top—at the first-ever Designers CAD Shoot-Out for Architectural CADD Systems. In this advent of "architecture as a spectator sport," the audience at Boston's World Trade Center awarded MiniCad 6, fittingly, six first-place awards:

- Most Cost Effective
- Easiest to Use
- Best at Cross-Platform Operation
- Best Floor Plans
- Best Elevations
- Best Sections

MiniCad also placed a close third in the Overall Winner category (garnering 21% of the audience vote compared to Arris' 25% and ArchiCad's 24%), beating out AutoArchitect, Microstation Triforma, AllPlan, Architrion, and DataCAD. Even more impressive: MiniCad was the only software program running on both a Macintosh and a Windows machine during the event. This recent success is not surprising. For years MiniCad has been the top-selling CAD program on the Macintosh, winning industry awards worldwide. And the reviews for the recently released Windows version have all been emphatic.

To find out more about the CAD Shoot-Out or how professionals in more than 80 countries have used MiniCad—designing everything from a guitar to a zero-gravity manufacturing device; building houses, luxury high rises, shopping centers, and hockey arenas; planning the stage set and lighting for worldwide Metallica tours; even helping reconstruct Shakespeare's historic Globe Theatre—check out our web page (www.diehlgraphsoft.com) or call 1-800-694-7318.

MiniCad has a suggested retail price of $795, and it comes with 18 months of free tech support and a 30-day money-back guarantee from participating dealers. MiniCad 6 supports Windows 95, NT, 3.1, and Macintosh OS.

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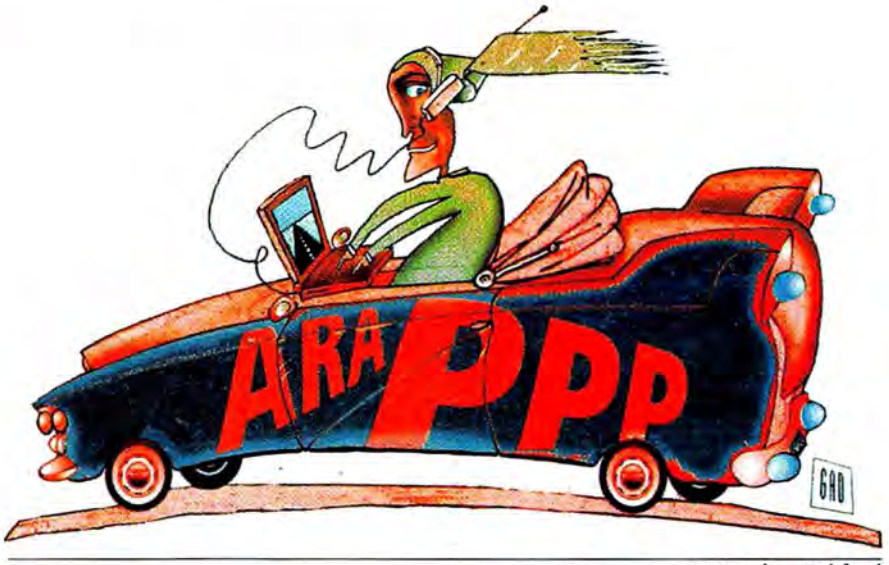
NETWORKING

Take the office and the Internet with you when you hit the road with your PowerBook.



By Carolyn Bickford

Going Mobile

WHEN APPLE REMOTE ACCESS debuted in 1992, it brought the office network right to your PowerBook's Chooser window, making exchanging files and checking e-mail a breeze for frequent travelers. Nowadays, though, remote access is a bit more complicated: You need to read Internet mail, connect to Web sites, and exchange files with PC users in the office. However, by applying a few creative strategies and using the right software and hardware in your mobile arsenal, you can stay in touch with your office *and* the world.

We've Come a Long Way . . .

When ARA first arrived, PowerBook owners used it to perform typical AppleTalk-network tasks (file sharing, reading LAN-based e-mail, and so on) while on the road. Since files and mail typically resided on AppleTalk networks, ARA was all you needed. Today, however, you need more than just ARA: To connect to the Net and to cross-platform servers and mail systems remotely, you need to be able to use TCP/IP too. And to get it, you must either add capabilities to your ARA setup or start using the Internet's favorite dial-up protocol, PPP.

A few lucky souls can reach the Internet and the office network from a single account and can dial up applications. The rest of us can wait for Apple and a few remote-access vendors to put the Internet and AppleTalk on the same wire later this year.

Building on ARA

If you work for a large company, chances are you'll be able to access AppleTalk and TCP/IP services from your desk. Away from the office, you'll need dial-up access to AppleTalk and TCP/IP networks in order to read mail or exchange files.

TCP/IP supports direct Internet access and connectivity with Windows- and UNIX-based servers, whereas AppleTalk supports printing and file sharing among Macs. Under normal circumstances, ARA handles AppleTalk exclusively, although the ARA protocol (ARAP) can be used to deliver data via TCP/IP if your office remote-access server supports both protocols (as does Shiva's LANRover server line). Multiprotocol servers connect remote users to an AppleTalk network directly via ARA and fulfill TCP/IP requests by routing them through an IP gateway.

Once you've configured the TCP/IP control panel properly on your PowerBook, you can dial into a LANRover or some other TCP/IP-compatible ARA server and use the connection just as you would an Internet connection: for retrieving e-mail and connecting to the Web. Of course, you can also use AppleTalk-based applications and servers.

Direct to Net

Accessing TCP/IP services through your office ARA server is a pretty good way to grab a few e-mail messages, but it's less than ideal for retrieving large files or querying corporate databases. For one thing, ARA connections are notoriously slow — ARAP disables your modem's built-in compression and substitutes its own. For another, system administrators in cross-platform environments often prefer (or require) that there be only one remote-access-server setup within the company. This often means that Macintosh users lose their ARA access and are left scrambling to keep a remote-access connection. Fortunately, there's a way out. And like so many other things these days, it involves the Internet.

If you don't have the luxury of corporate remote access or if your ARA server — like the Apple Remote Access MultiPort Server — doesn't support TCP/IP, you can "roll your

ILLUSTRATION / VICTOR GAD

own" by using a new or existing Internet account, available from Netcom, MindSpring, or one of the thousands of regional ISPs around the country (see "Choosing Your Internet Partner," February '97, page 117).

If you use a modem for connecting to the Net, you likely have either PPP (Point-to-Point Protocol) or SLIP (Serial Line Internet Protocol) software installed. Like ARA, PPP and SLIP software dial and maintain a modem connection between your computer and a remote server. SLIP, however, is an old protocol that's quickly fading from widespread use. In addition to its Internet dominance, PPP is widely used for PC-based remote access.

You see where we're going here: PPP is the standard for both the corporate world and the Net. And it allows your modem to take full advantage of its own compression hardware. To top it off, PPP is the only game in town for ISDN users: A version of the protocol, called Multilink PPP (MPPP), lets you transfer data at 128 kbps, using two ISDN B channels.

PPP Remote Access

Like ARAP, PPP requires client software on your PowerBook and an account on a remote-access or Internet server. No single vendor owns PPP, so you have a choice of software. Until recently, Mac-based Internet surfers had to make do with freeware PPP client software such as FreePPP and MacPPP (available online from MacUser Software Central at http://www.hotfiles.com/swbrowse/MC10/5/7/mac-MC10577.html). Although they worked, they were buggy and (in the case of MacPPP) in need of a face-lift to bring the interface up to date. Late last year, however, Apple finally released PPP client software designed to work with the company's new, modular networking architecture, Open Transport (also available from MacUser Software Central). Delightfully stable and easy to configure, Open Transport PPP is also PowerPC-native, unlike its predecessors. Like other Open Transport modules, the PPP client software makes it easy to create and save several configurations — for example, one to connect you to the office server and one for your personal Internet account. If you haven't converted to Open Transport yet, try FreePPP or MacPPP rather than making the big switch just to get Open Transport PPP. If your current networking and PPP setup are working, there's no need to switch.

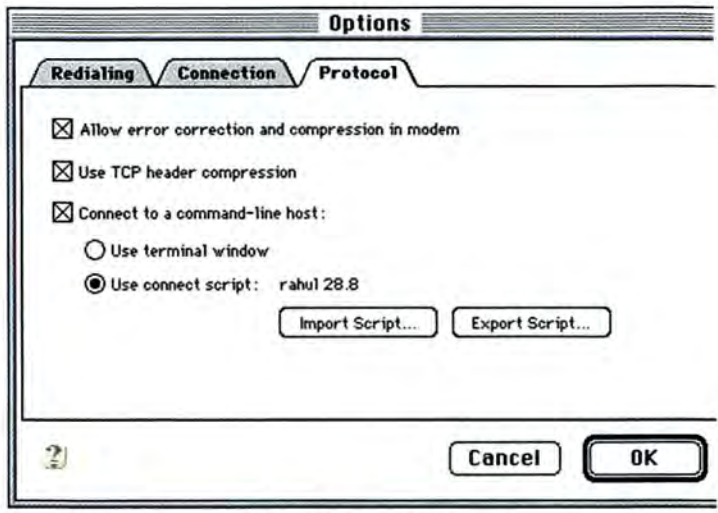


figure 1 / Open Transport PPP includes lots of configuration options. You can, for example, log into your PPP account by using a terminal window or a script. Creating a script is as simple as clicking on a check box, logging onto your account, and saving your configuration.

PPP Strategies

Often the easiest way to access TCP/IP-based applications when you're on the road is via an ISP. Your ISP account will let you direct your e-mail to the Internet account, surf the Web, and download files from FTP sites around the world. You can also use the PPP connection and Internet account to reach your company's mail system if it's TCP/IP-based and not protected by a fire wall (fire walls prevent anyone on the outside from connecting to internal TCP/IP services).

To reach TCP/IP services hidden behind a fire wall, you'll need access to a PPP-compatible remote-access server within the company. If you work for a large company that provides remote access for PC users, a PPP server is probably already installed, and there's a good chance you can connect to it from your Mac to achieve the same results you'd get from a personal Internet account: You can send mail, surf the Web, and transfer files via FTP. Just like the servers maintained by ISPs, corporate PPP servers don't know or care that you're using a Mac. Ask your network administrator for the same configuration information he or she provides to a PC user — typically a phone number, user name, password, IP address (or a method for obtaining one), and domain-name server address — and then configure (or have your administrator configure) your PPP client and Open Transport TCP/IP software (MacTCP under classic networking).

To get AppleTalk devices to show up in your PowerBook's Chooser, both the PPP server and your PPP client software must support *AppleTalk over PPP*. Current versions of Shiva's LANRover servers and Sonic Systems' QuickStream Pro Remote Access Server do. Sonic even provides its own PPP client software with the server. AppleTalk-compatible PPP servers

Road-Ready Remote Access / tips for better mobile computing

SOMETIMES IT JUST ISN'T POSSIBLE to move immediately to the bleeding edge of technology. If your chances of getting AppleTalk over PPP are nil, there are a few things you can do to smooth out the curves before you and your PowerBook head on down the road.

- **Get an account with a nationwide ISP.** Internet service providers such as Netcom, EarthLink, and MindSpring offer access numbers in most cities and towns. If you're on the road a lot, choose a nationwide provider and use its local numbers to save long-distance charges when retrieving e-mail, surfing the Web, or using TCP/IP to connect to the office.
- **Get your own FTP site.** If your office computers are connected to the Internet, you can create an FTP server on your desktop Mac (or on a file server) with Stairways Software's NetPresenz. It's as easy as setting up file sharing, and it lets you exchange files with the office machine via an Internet connection. However, you may not be able to use an FTP server if your Mac is behind a company fire wall.
- **Dial direct and save — time, that is.** If your desktop Mac has a modem attached, get a two-pack of Farallon's Timbuktu 3.0 and install a copy on your PowerBook and on your office Mac. Instead of dialing a remote-access server, set the desktop machine to answer calls with Timbuktu's Dial Direct feature. You can send and receive files without having to log into a remote-access server or use AppleTalk. Avoiding these intermediaries makes your transfers a bit faster and saves steps in the bargain.
- **Manage your e-mail.** Using Dial Direct is also a great way to wrangle lots of e-mail. Instead of downloading dozens of messages to your PowerBook each night while you travel, let your office Mac pick them up as usual. You can sort them out and reply to the important ones while controlling the desktop machine from your PowerBook. Keep in mind, however, that you'll want to use fast modems (at least 28.8 kbps) if you plan to control your remote Mac with Dial Direct.

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represent the best of both worlds: You get the efficiency of PPP and an easy connection to file sharing and other AppleTalk features.

There are, however, a couple of catches: Shiva and Sonic are currently the only vendors that offer PPP servers that support AppleTalk. If your company uses PPP for remote access and doesn't have an AppleTalk-compatible server, you can probably reach TCP/IP-based services but the Chooser will most likely be empty. The second fly in the ointment is that Apple's Open Transport PPP does not yet support AppleTalk over PPP, although both FreePPP and SonicPPP do. Apple will catch up later this year, when new versions of Open Transport and ARA are released.

Remote Possibilities

Apple pioneered remote access with ARA and then fell behind when it failed to back PPP. Now things are looking up again for PowerBook-toting travelers. Apple Remote Access 3.0, due later this year, will support both AppleTalk and TCP/IP via PPP as well as ARAP.

With ARA 3.0, Apple will supply client software that makes it possible to use any combination of ARAP, PPP, AppleTalk, and TCP/IP to make a connection — you won't require two pieces of remote-access client software and several accounts to reach both your network and the Internet. And server vendors such as Shiva and Sonic plan to support ARA 3.0, which you'll be able to get free as part of an upcoming Mac OS release.

As we went to press, InterCon Systems was preparing MacVPA (Virtual Private AppleTalk). This two-part software package provides access to an AppleTalk network via the Net; you don't need to dial into the network. A network administrator creates user accounts with the MacVPA host software, which resides on a Mac in your office. Using the MacVPA module for Open Transport (or an extension, under classic networking), users log onto the AppleTalk network over the Internet via either a PPP or a network connection.

If you use a dial-up or ISDN-based account to reach the Internet through an ISP, you can connect to the office AppleTalk network by using MacVPA, once you've made a PPP connection. If you're working at a client's site or branch office that has direct access to the Internet, connect your PowerBook to the LAN and fire up MacVPA for an AppleTalk connection to the home office that's faster than any dial-up link.

Whether you're interested in creative uses of your Internet account or the promise of ARA 3.0, now is a pretty good time to be on the road and in touch.

Carolyn Bickford is a geek who prefers surfing the Internet via PPP to waiting for ARA to transfer her files.

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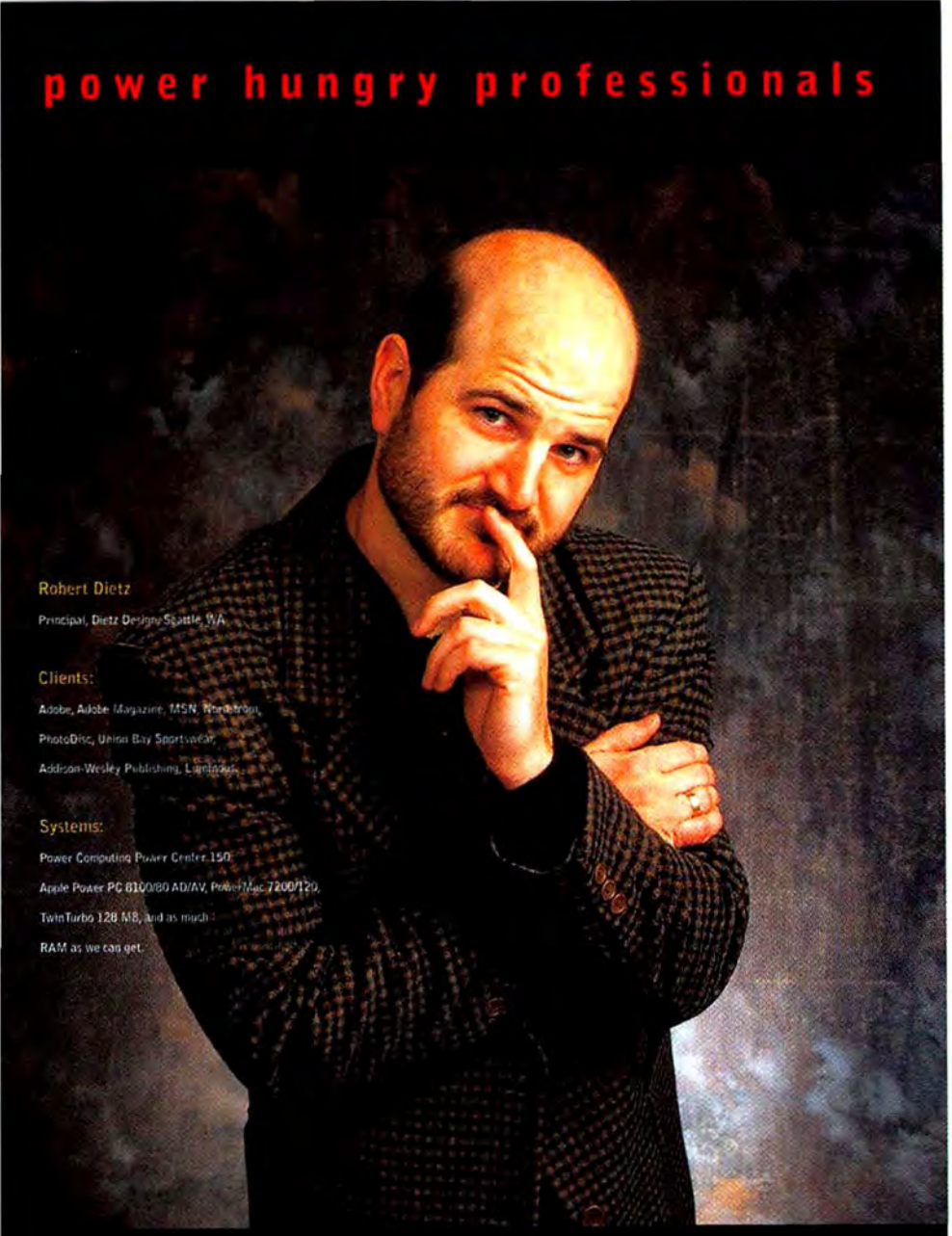

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NET.CETERA / By Jason Snell

Online Is Dead . . . Long Live AOL?

America Online needs to do more than flatten its pricing to stay in the online game.

AOL CREATED A BIG BUZZ in the online world in November by announcing plans to move most of its customers to a flat monthly rate. But the *real* news was another change to the pricing structure. In effect, AOL has admitted that the traditional online-service model has been utterly destroyed by the Internet.

AOL's startling announcement? For $9.95 a month, Internet users — whether their online accounts are with big Internet service providers such as Netcom or EarthLink or with small regional providers — can have unlimited access to AOL. In other words, you save ten bucks a month if you don't use AOL's modems to connect to the service.

This bold step points out just how different the businesses of providing dial-up access and publishing content online really are. One half of AOL brings you hour-long typefests with various *Melrose Place* cast members and serves up exclusive commercial content. The darker half is lurking in a phone closet somewhere, making sure there are modems and dial-up lines in most communities. By playing up the content it controls, AOL is taking aim at *all* of the Internet's users as potential customers and acknowledging that the days of the proprietary online service are over.

The Dark Half

AOL's come a long way in a short time. Being a member of AOL used to have nothing to do with the Internet — you used AOL's proprietary interface, and what limited Net access existed came only through AOL's own software. That's the way all the online services did it—if their software sucked (which it did, usually), you were trapped. Version 3.0 of the AOL client software changes that, transforming AOL into a really big Internet provider — you can now use any TCP/IP application to reach the Internet while you're connected to AOL. And the new flat monthly rate makes AOL competitive with other ISPs.

In the long term, however, providing Internet connections will probably be a job most commonly performed by cable-TV and telephone companies. AOL will have a hard time competing against the big boys. This reality has led AOL to separate connectivity from content, but the company needs to go further. In short, AOL needs to turn itself into just another part of the Web.

ILLUSTRATION / BARBARA POLLAK

AOL: The Web Site

So, as an information provider on the Internet, how does AOL stack up? Pretty well. Sure, AOL's a haven for 14-year-old boys who go into chat rooms and pretend to be 19-year-old girls. But AOL's dominance in the online-service world has given it a leg up on its Internet competition. *Newsweek, Consumer Reports,* and even *The Late Show with David Letterman* are on AOL but not on the Web. If AOL can retain such names exclusively, a $10 monthly subscription starts to become attractive. And although AOL's chat system and message boards *are* ugly, they are far better and more accessible than current Web-based alternatives.

There's just one big catch to the connection-independent AOL: You can't hyperlink. You've got to use the AOL client software. It's unclear whether folks who are reluctant to download and install browser plug-ins will be willing to launch the AOL client software just to chat or to peruse the *Late Show* forum.

This goes to show how smart the people at Microsoft can be. A few short years ago, the company conceived The Microsoft Network (MSN) as a proprietary online service. But the explosive growth of the Web led Microsoft to morph MSN into a completely Web-based service. As with AOL's new plan, any Web user can subscribe to MSN for a flat fee ($6.95 per month). No proprietary connection or client software is needed. MSN's service is an extremely well-designed Web site, but it's still just a Web site. There's something comforting about that.

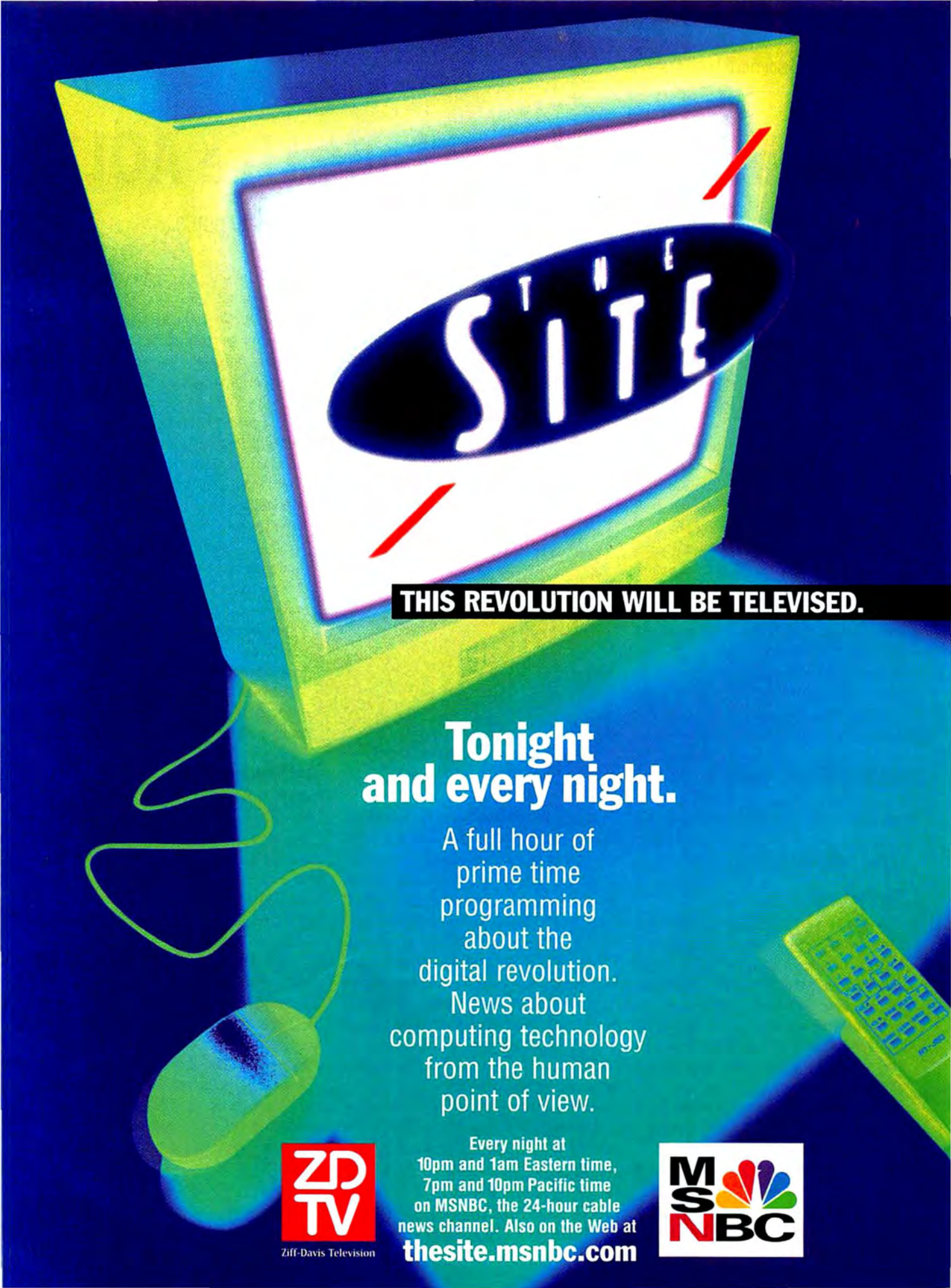
If AOL wants to appeal to experienced Internet users, it's going to have to improve access to its own content. Ideally, AOL should start moving whole chunks of its service onto the Web. At the very least, the company should consider turning a slimmed-down version of the AOL client software into a browser plug-in, so that users can reach AOL content from within their Web browsers.

The Other Shoe

Can AOL make it as a content-only business? Until now, most Net content has been free. The Web is littered with the wreckage of sites that restricted access to paying customers only; most were eclipsed by sites that gave the bulk of their information away. But that's changing, and not just via converted online services such as AOL and MSN. A great example of where the Web is going is ESPNet SportsZone. It gives away lots of information, including a Java-based sports ticker. Once there, you find pointers to the wealth of *additional* information that's available with a $4.95-per-month subscription to the service.

Yes, AOL's new flat rate sounds like a great story you might even read on SportsZone: The grizzled champion online service fights back against the young Internet upstart. There's just one catch. The fight is over. The Internet won. AOL has thrown in the towel.

Jason Snell is a MacUser *Senior Editor, Online.*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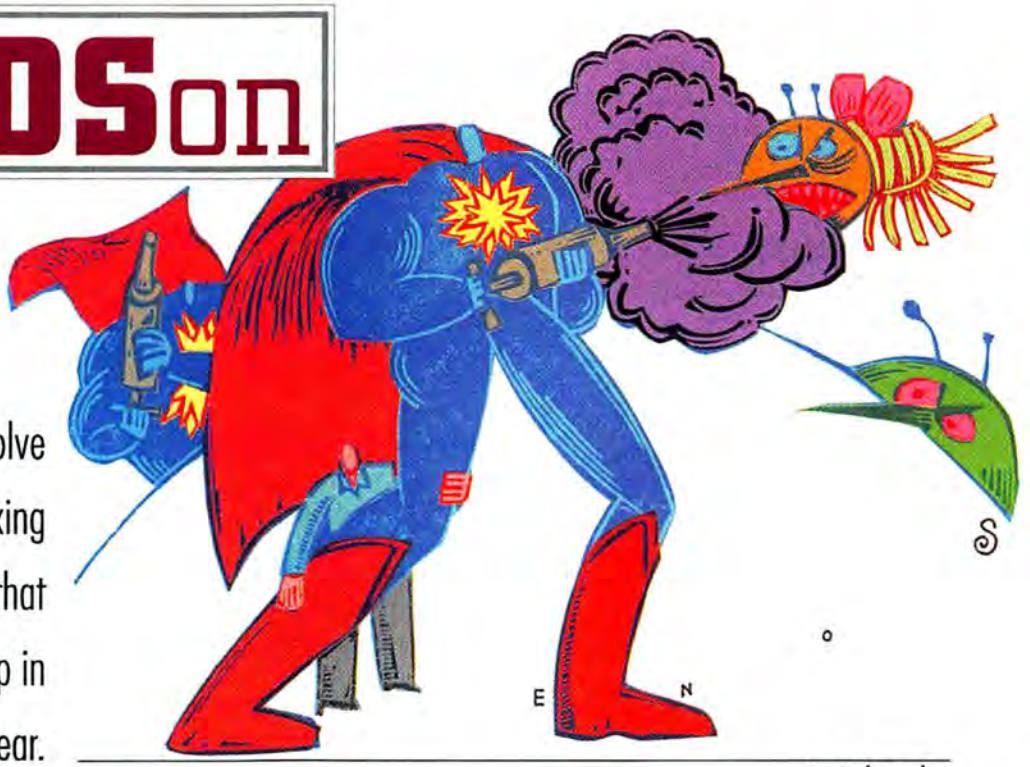

Here's how to solve several perplexing Mac problems that have sprung up in the past year.

By Ted Landau

Bug Extermination

IT'S AN ENDLESS CYCLE — your Mac gets a bug; you update the software that has the bug; that bug disappears, but a new one replaces it. So you get new updates and still newer bugs. Unfortunately, we can't help you stop this annoying cycle entirely, but we can help you squash some of the most recent bugs. In this article, we describe several problems that have appeared recently and how to get rid of them with some unique methods (see the "Misery of Type 11" sidebar).

Net-Surfing Wipeouts

PROBLEM: After upgrading to Open Transport 1.1.1 or later, you notice an increase in Type 1 and Type 11 errors when online, especially when using applications such as Netscape Navigator or Claris Emailer.

SOLUTION: Most of the people who report an increase in Type 1 and Type 11 errors in these circumstances are using FreePPP to connect online. Switching to Apple's Open Transport PPP (OT/PPP) eliminates the problem. However, if you prefer not to give up FreePPP, here's a workaround: From the Custom Install window of the OT/PPP Installer, install the two files OpenTpt Remote Access and OpenTpt Modem. Once you have installed them, you can use FreePPP without having to endure system crashes.

Open-Transport Traps

PROBLEM: After installing OT/PPP 1.0 or later, you get "unimplemented trap" errors every time you start up. A conflict with the shared library file OpenTpt Serial Arbitrator (installed as part of OT/PPP) is the cause of this problem.

SOLUTION: Trash the OpenTpt Serial Arbitrator file, if you don't need it, and restart. You need the Serial Arbitrator only if your fax software blocks the modem port, preventing you from getting online.

Moving-Window Errors

PROBLEM: You have windows from different applications overlapping each other. As you slide the top window to one side, you get a system crash (typically of Type 84).

What causes such crashes is that the code needed to redraw the hidden part of a window isn't in memory at the moment you try to uncover the window. Although the problem predates System 7.5.5, it started cropping up more often after the upgrade.

SOLUTION: One fix is to increase the preferred memory size, by 100K or more, for the applications that crash. Another solution directly attacks the problem that's really behind these crashes — a purgeable WDEF resource. (A WDEF resource is a set of window-drawing instructions for the Mac.) You can stop the crashes by making the WDEF resource nonpurgeable. To do so, use a shareware or freeware utility such as CrashLessOften or WDEF Leopard. Most users find that the fix works without a hitch, but there's always a risk that it will create new problems — we caution against altering the WDEF resource as a cure for miscellaneous crashes. Use this method only for crashes that occur when you move windows.

Replicating Printer Icons

PROBLEM: Your desktop printer icons multiply like bunnies. This problem initially popped up with LaserWriter 8.4 and the desktop-printing software included with it. The nightmare begins with a Type 15 error message that appears when you try to print a file. You click on OK in the alert box, and everything seems to return to normal. The requested document even prints. But now your troubles really begin — new desktop printer icons with Xs

ILLUSTRATION / RANDALL ENOS

through them appear on your desktop (see figure 1). They keep multiplying, eventually filling every nook and cranny of your desktop.
SOLUTION: Either make sure you have Apple's Finder Scripting Extension installed or disable desktop-printing extensions.

Replicating Launcher Aliases

PROBLEM: The folder called Duplicate Items inside your System Folder contains several dozen aliases to Apple's Launcher utility. Each time you restart, another alias shows up. Deleting the folder does no good, because it returns and aliases begin to pile up again.

This problem is due to a weird mix-up among the Launcher, the General Controls control panel, and Now Startup Manager. The problem starts if you have the "Show Launcher at system startup" item checked in the General Controls control panel. This creates an alias for the Launcher in the Startup Items folder. The alias gets the exact same name as the Launcher, which is in the Control Panels folder. Startup Manager assumes that you want only one of these files, so it moves the alias to the Duplicate Items folder. The next time you start up, General Controls creates a new alias and the whole process begins anew.
SOLUTION: Change the name of the Launcher alias so it no longer exactly matches the name of the original.

Misery of Type 11

IF YOU'VE BEEN MADE miserable by Type 11 system crashes, take heart — you have lots of company. If that's not enough comfort, maybe these common fixes for this common error will do the trick:

- **Restart your Mac.**
- **Upgrade the software that's crashing.**
- **Upgrade to the latest version of Apple's system software.**
- **Check for an extension conflict:** Use a utility such as Casady & Greene's Conflict Catcher or Now Software's Now Startup Manager.
- **Zap the PRAM.** Ideally, use MicroMat's TechTool to do this. Otherwise, hold down the Command-Option-P-R keys at startup and let the Mac restart a couple of times.
- **Check for a corrupted font file.** To do so, either use a utility such as Font Box or remove the Fonts folder from the System Folder and see if the error disappears.
- **Increase the size of your system heap.** Both Now Startup Manager and Conflict Catcher provide options to let you do this.
- **Check for defective RAM chips.** Remove them one at a time to see if the problem goes away.
- **Remove or replace the L2 RAM cache.** On Power Mac 7500s, there may be a conflict.

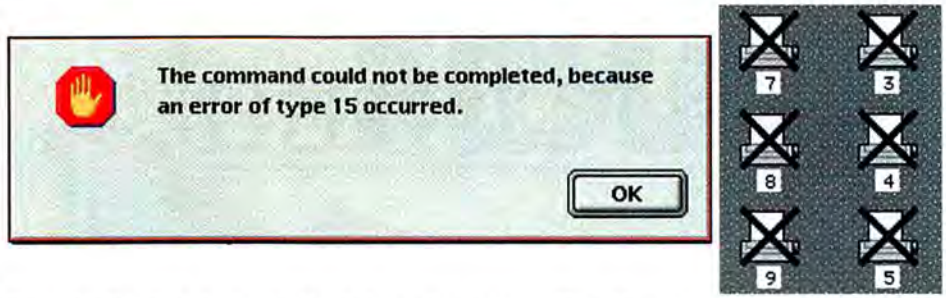

figure 1 / If you're being invaded by desktop printer icons and Type 15 errors, you can fix the problem simply by installing the correct extension or by disabling desktop printing.

Repressed-Memory Disorder

PROBLEM: Out-of-memory messages appear on a regular basis, usually when you launch certain programs. You may even get them when working in the Finder. What seems odd is that you have plenty of RAM available and that you never had any of these problems before updating to System 7.5.5.
SOLUTION: Apple's suggested solution is to add 23K to the Preferred Memory in the problem application's Get Info window. That's simple, but what Apple apparently didn't anticipate was that programs other than applications — such as DAs, control panels, and even the Finder — might also need this increase. The dilemma here is that the Get Info windows for these files don't display the Memory Requirements box, so you can't adjust the memory allocation there. But you can adjust it by using Apple's ResEdit. Locate the Size resource of the problem file, and increase the amount of memory.

Another method for getting rid of the misleading memory error messages is to force the Memory Requirements box to temporarily appear in the problem file's Get Info window. To do so, use ResEdit's Get File/Folder Info command to change the file's Type to APPL (you can also use another utility, such as Snitch or File Buddy, to change the file's Type). This change fools the Mac into thinking that the file is an application, so a Memory Requirements box appears in the Get Info box. After you've increased the memory allocation, be sure to change the file's Type back to its original code.

For safety's sake: Always work on a copy of a file rather than the original when making adjustments with a resource-editing program such as ResEdit. Make sure the copy works properly before replacing the original with it.

It's even simpler to increase the Finder's memory; use the freeware utility Finder Heap Fix — go to online sites such as MacFixIt (http://www.macfixit.com/) or Software Central on *MacUser*'s Web site (http://www.macuser.com/software/) for this utility.

Games That Hang

PROBLEM: Since you updated to System 7.5.5 (on PowerPC systems only), your Mac locks up while you're using certain applications — especially games. Before the update, you didn't have the problem.

This one's caused by a bug in the system software that allows non-PowerPC-native programs to run on PowerPC systems.
SOLUTION: Get the patch called PowerPC Interrupt Extension, from Apple, to eradicate the bug. Unfortunately, you may find that after installing this extension, you get new freezes, even when you're not playing games. To defrost these freezes, move Interrupt Extension to the end of the loading order (you will need to type ~~ in front of its name or use a program such as Casady & Greene's Conflict Catcher). This patch may be built into System 7.6.

The Next Infestation

The preceding fixes attack some of the bugs that Mac users have reported on my MacFixIt Web site (http://www.macfixit.com/). Regularly visiting it, or any of several other Web sites where Mac problems are discussed, is a good way to keep abreast of bugs that inevitably spring up whenever you upgrade to or add new software.

MacUser *contributing editor Ted Landau is the author of the recently released third edition of* Sad Macs, Bombs, & Other Disasters *(1997). Now he's worried about what will happen NeXT.*

You can find the shareware and freeware programs referenced in this article at *MacUser*'s Software Central (http://www.zdnet.com/macuser/software/). You can also find them in the *MacUser* area on CompuServe (GO ZMC:MACUSER).

By Bob LeVitus and Christopher Breen

Help Folder

The speed of PowerPC processors, and what video RAM can do for you.

Which Processor, Precisely?

Q. What are the differences between the new Mac processors? How much faster is a 604e/180 than a 603e/180?

Russ Reabold
via the Internet

CHRIS: Let's start with the chronology. On the first day, Motorola created the 601, plunked it into the first generation of Power Macs, and saw that it was good. Then came the 603, a cheaper and more energy-efficient PowerPC processor. Finally, the 604 appeared — a much faster chip than either the 601 or 603. A 602 PowerPC processor exists as well — it's intended for PDAs and game machines and is less than half as powerful as the 601.

The PowerPC 603 and 604 have been largely supplanted by their faster cousins, the 603e and 604e. Whereas the original 603 was about as fast as a comparable 601 (meaning they both ran at an identical clock speed), the 603e is about 14 percent faster than the 601, and the 604e is about 33 percent faster than the 603e.

BOB: To put this in real-world terms, if you compare a Performa 6400/180 (which has a 603e chip) with a Power Mac 8500/180 (which has a 604e), you should find that the 8500 is about a third faster than the Performa. Of course, factors besides the processor can affect a machine's speed — for instance, memory interleaving, system-bus speed, and so on. All things being equal, however, that one-third difference is about right.

Cram in the VRAM

Q. I've been wanting to upgrade to a larger monitor, but I'm not sure if I'll also need to upgrade my VRAM. How can I find out if I need more VRAM to run a larger monitor at 256 colors?

Christina Stokes
via AOL

CHRIS: It depends on your Mac model, your monitor size, and the pixel resolution you want to display on that monitor. Had you provided us with all that information, we could have spelled out in Technicolor detail what video RAM could do for you and the other 638 readers who share your setup. But that would have made for a terribly short answer. Instead, we get to give you the longer version, which applies to every Mac owner.

BOB: The different Mac models vary widely in how they handle video. For instance, most Power Macs with 1 MB of VRAM can get the hundreds of colors you desire on a 20-inch monitor at the maximum resolution of 832 x 624 pixels. However, there are exceptions: Some Power Macs, such as the 9500, use add-on video cards instead of VRAM, for instance. The best way to figure out what your Mac requires is to check its manual. Or, if you have an online connection . . .

I said, IF YOU HAVE AN ONLINE CONNECTION . . . Pssst, that's your cue!

CHRIS: Oh, yes! If you have an online connection, you can get the inside skinny on video configurations for every Mac that's ever been made.

Your first stop should be *MacUser*'s own Mac Catalog Database (it's available from *MacUser*'s Software Central on the Internet). It lists not only the VRAM configurations for Mac and Mac-compatible models but also such esoterica as the kind of microphone that goes with each Mac, the required size and speed of SIMMs for each model, and the dates on which each Macintosh was introduced and discontinued.

Another source of reliable information is Newer Technology's GURU (GUide to RAM Upgrades, also available at various online sites, including *MacUser*'s own). This handy stand-alone application provides some of the same information as the Mac Catalog Database. Although GURU lacks the minutiae found in the Mac Catalog (and contains several annoying plugs for Newer products), it includes a memory tester and a glossary of common memory-related terms that's far funnier than any glossary has a right to be.

Finally, Apple released the Apple Spec Database late last year. This FileMaker Pro database (also available as a stand-alone application) lists the specs for every Apple Macintosh ever made. You can find it in any of the Apple online areas.

Slim PIM

Q. I'm looking for a simple personal information manager — all I want it to do is remind me of upcoming birthdays when I start

Tips / Browsers

Reduce Redundant Plug-ins

Suppose you use both Netscape Navigator and Microsoft Internet Explorer. Because you want a fully functional browser, you've saddled these applications with loads of plug-ins. Regrettably, these high-powered plug-ins eat up hard-disk space. So why keep multiple copies?

Rather than duplicate your plug-ins from browser to browser, simply keep one set of plug-ins (in the Netscape Plug-Ins folder, for example) and create aliases of them to drop into the other browser's plug-in folder. That browser will use the aliases as if they were the real thing.

Carl Horton
via the Internet

WRITE TO HELP FOLDER/TIPS

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Don't want to wait for an answer? Post your question on the MacUser Forum on either America Online or CompuServe, or send e-mail to helpfolder@macuser.com or tips@macuser.com. We pay $25 to $100 for any undocumented tips we publish.

ILLUSTRATION / BOB STAAKE

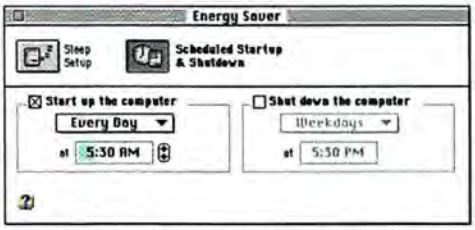

figure 1 / Put your Mac to work before you wake, using this control panel and automated software.

my Mac. Is there anything out there that will do this without including all the other daily-planner bulk?

Steve McNutt
via AOL

CHRIS: Sure, Steve. We depend on Now Up-to-Date to prevent those embarrassing "Whoops, forgot the anniversary" moments . . .

BOB: Yes, we do.

CHRIS: . . . but there are less complex alternatives, not to speak of other fine commercial PIMs, such as Prairie Group's DateView, DayTime Technologies' Day-Timer, and Claris Organizer.

BOB: For example, there's Ron Lichty's Birthdays and Such, which works quite simply: Just enter the events you want to be reminded of into the Reminders text file and drop the Birthdays and Such application into your Startup Items folder. Now whenever you start your Mac, up pops a list of upcoming events. If there are no upcoming events, Birthdays and Such quits. Ron considers his little app to be WhatsItWorthWare — pay whatever you consider a fair price for saving your marriage.

CHRIS: Those of you with an aural fixation should check out Afshin Latifi's Focus VoiceCalendar. This $32 shareware program lets you record digital-audio reminders that fire off at particular dates and times. VoiceCalendar has a cool interface and is quite easy to use. It even contains an option that places the program in the Startup Items folder for you. Like Birthdays and Such, VoiceCalendar must be running in order to issue its reminders.

BOB: More automatic is Kishore Tipirneni's $10 Just a Reminder. This one's a control panel that pops a short reminder onto your screen.

CHRIS: Last but hardly least is my personal favorite — ReminderPro, from Crystal Software. This $18 shareware package is professional-quality software in everything but price. Like Just a Reminder, ReminderPro doesn't need to be running to display a reminder — thanks to ReminderPro Init, your reminders appear when they're scheduled to. You can also use ReminderPro to automatically launch an application or open a file. In addition, the program comes with a Control Strip module so that you can enter reminders without launching the application.

The Automated Mac

Q. The two of us fight to use the computer in the morning. Is there any way to automatically turn on the computer and retrieve mail so that one of us can sneak in early and check it?

Al and Maggie Wickel
via the Internet

BOB: You can do it with third-party hardware and software, but Chris has another method that tastes great, is less filling, and won't cost you a dime (assuming that you own Claris Emailer or another e-mail program that can be automated).

CHRIS: First, a couple of prerequisites: You need to be running System 7.5 or later on a Mac that supports the Energy Saver control panel. And just so we can avoid the hundreds of "I don't have the Energy Saver control panel. Where can I get it?" letters, let me point out that not all Macs support Energy Saver; it's meant only for PCI Macs. And you won't find Energy Saver floating around online all by its lonesome. It's supposed to be included in System 7.5.2 and beyond, but I can testify without fear of contradiction that it wasn't included on my Power Computing machine. I found my copy in Apple's System 7.5 Update 2.0, which you can get at Apple's Web site.

Now that we've cleared up that issue, let's rejoin your answer-in-progress. Your e-mail program must offer automated (timed) logons, as do Claris Emailer and AOL (with its FlashSession feature).

If your system meets the above requirements, follow these steps: Open the Energy Saver control panel. Click on the Scheduled Startup and Shutdown button. Check the "Start up the computer" check box. Set the startup time (see figure 1). Close the Energy Saver control panel. Open your e-mail program and schedule a session for sometime between the time your computer wakes up and the time you wake up. (In Claris Emailer, you'll find the scheduling stuff on the Setup menu under Schedules; in AOL, you'll find it on the Mail menu under FlashSessions.) Finally, make an alias of your e-mail program and place it in your Startup Items folder.

That's all there is to it. When you walk into your computer room tomorrow morning, your mail will await you.

BOB: That leaves one question unanswered, though: To wit: How do I automatically turn on my modem, external storage devices, and the like in the morning when none of them offer an Energy Saver control panel?

My solution will cost you around $100, but it's well worth it. Buy yourself a Sophisticated Circuits PowerKey or PowerKey Pro. You can program these nifty devices and their software to simultaneously turn a plethora of peripherals on or off.

You can also use these devices to do more than just start up your Macintosh and retrieve e-mail. My favorite trick is to have PowerKey perform a complete backup to DAT at 2 A.M. Frankly, I'd rather chew my leg off than be without my PowerKey.

Boilerplate Bonanza

Q. I really dislike repetitive typing. Is there an alternative to cutting and pasting often-used text — such as e-mail addresses, passwords, and certificate numbers — into the Clipboard?

Albert C. Wickel
via the Internet

BOB: Are you the same Al Wickel who asked about automated e-mail?

CHRIS: Something's got to be done about this obscene proliferation of Al Wickels. Everywhere you turn it's Al Wickel, Al Wickel, Al Wickel! Don't we have a policy that limits Al Wickel to one appearance per column?

BOB: Sigh. We do, but we're going to let it slide this time, because it's a good question with multiple answers.

CHRIS: OK. Let's start with the easy, free method for creating boilerplate text. If you're using System 7 or later, you can drag text from any drag-enabled app (SimpleText, NisusWriter, ClarisWorks, TexEdit Plus, and WordPerfect, but of course *not* Microsoft Word) to the desktop to create a clipping file. Rename the clipping file

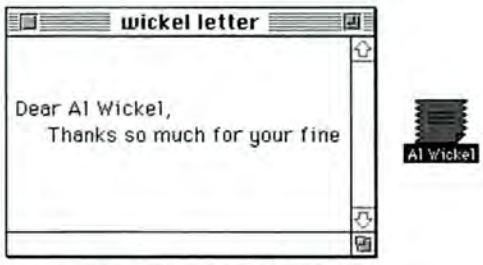

figure 2 / Tired of retyping? You can create boilerplate text that you insert by simply dragging a clipping file into a document. That's what we did for this name that kept popping up in Help Folder this month.

something descriptive. Now whenever you need that particular chunk of boilerplate text, just drag this clipping file onto your document. As a matter of fact, I made Al Wickel's name into a clipping just in case I need to insert it again (see figure 2).

BOB: Numerous commercial products let you store and instantly recall boilerplate text. Among them: Binary Software's KeyQuencer, Casady & Greene's SpellCatcher, CE Software's QuicKeys, Mainstay's Captivate, and WestCode Software's OneClick. I've used all five, and they all work fine.

CHRIS: And finally, there's TypeIt4Me, powerful $30 shareware from Riccardo Ettore that stores and recalls boilerplate text and much more. Al Wickel would love it.

Backup Nice and EZ

Q. Is there any program that will automatically update a file's backup to my SyQuest EZ135 drive? I don't want to manually drag and drop the file onto the EZ135 icon each time I make a change.

D. Wilson
via the Internet

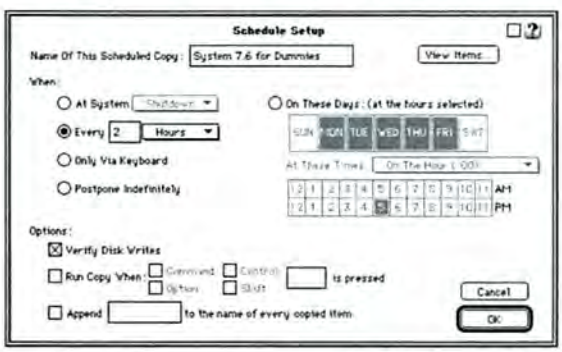

figure 3 / Automatic backups are highly customizable with programs such as CopyDoubler.

BOB: Just call this month's column The Automation Help Folder.

The product I use every day for automatic backups is CopyDoubler, part of Symantec's DiskDoubler Pro ($109 list). Of all the backup software around, I've found this package to be the easiest to use. To automatically back up files, simply hold down the Control key and drag the file or folder you want backed up from your hard disk to the EZ135 icon. This will bring up CopyDoubler's Scheduled Copies dialog box (see figure 3). You can then schedule CopyDoubler to copy the file or folder at whatever interval you wish (for example, every two hours) as well as when you shut down your machine.

To make this technique even sweeter, use CopyDoubler's Fast Replace feature to replace only those files that have been changed since the last copy occurred — it's fast as well as sweet.

CHRIS: You could also upgrade to the full version of Diskfit Pro (upgrade, $29.95) or Retrospect Remote (upgrade, $99.95). You need only pay the upgrade price, because the EZ135 (as well as the Jaz and Zip drives) comes with a lite version of Diskfit. Both of these programs will provide the automatic updates you want, and Retrospect Remote is especially useful if you're planning to update remotely or over a network.

CopyDoubler Conundrum

Q. My CopyDoubler worked just fine until I upgraded to System 7.5.3. Now whenever I copy a file compressed by DiskDoubler (part of CopyDoubler), I get an error message — but nothing's wrong with my hard disk. What's wrong, and how do I fix it?

Anonymous
via the Internet

BOB: OK, OK. So we just suggested using CopyDoubler, and already someone's having trouble with it. Even great products aren't exempt from a conflict or two. In this case, the conflict is with System 7.5.3.

I experienced the same problem, so I RTFM (read the "fine" manual) and noticed that Symantec maintains a forum on CompuServe (Go Symantec). I checked the file library of said CompuServe forum and found CopyDoubler 2.0.7 Updater, which resolves the conflict between CopyDoubler and Apple's System 7.5.3.

CHRIS: Symantec also has a forum on AOL and has its own (not toll-free) bulletin board. If you don't have a modem, you can call tech support and have a live human send you the updater. You'll find the appropriate phone number (where else?) in the back of the "fine" manual.

BOB: I think the moral of this story is to check out vendors' online forums for updates every so often. It's faster than calling tech support, being put on hold, and then waiting several days or more for the disk to show up.

Data Recovery? Oh, No!

Q. Should I take my dead drive to a data-recovery specialist? It cannot be resurrected via normal means, but the data on the disk is invaluable. Can you tell me where to find a data-recovery company or, better yet, recommend a good one?

Peter McIsaac
via the Internet

BOB: In the back of this magazine, you'll find (nestled among the mouse-pad promos) advertisements for the very data-recovery specialists of which you speak (I counted at least three in the October issue).

CHRIS: I know we've said it 147 times before, but good backup habits pay off: These data-recovery guys can charge hundreds or thousands of dollars to get your data back (and if you or your company's future depends on having that data intact, you'll be glad to pay whatever they ask). I don't mean to rub your nose in it, but had you backed up, you'd have saved that dough and be working now rather than writing to us.

BOB: If I had to trust anyone with my data, it would be DriveSavers (800-440-1904 or 415-382-2000), which has more than 11 years of data-recovery experience.

CHRIS: The folks there are experienced *and* humanitarian. They offered their services for free to those who lost data in January's disastrous floods in northern California.

Bob LeVitus is the author of many computer books and the Mac columnist for the Houston Chronicle. *Christopher Breen heads the* MacUser *forum on America Online and has a book credit or two to his name as well.*

Tips / Offline Web Pages

Print2Pict

Among the tips in the December '96 issue, you suggested using Adobe Acrobat, WebBuddy, or WebWhacker to read Web pages offline (page 154). A slightly less elegant but much less expensive alternative is to use Baudouin Raoult's $10 shareware program Print2Pict.

As with Adobe Acrobat, you just select the Print2Pict driver in the Chooser and then choose Print from the browser's File menu to save an image of the Web page. Sure, you won't be able to save background GIFs and background colors, but you gain such options as the ability to scale the page size, save the file in a variety of resolutions (from 72 x 72 to 600 x 600 dpi), and save the file to one of several formats.

Of course, Print2Pict can be used with any application that has a Print command.

Thomas Longstaff
via the Internet

You can find the shareware and freeware programs referenced in this article at *MacUser*'s Software Central (http://www.zdnet.com/macuser/software/). You can also find them in the *MacUser* area on CompuServe (GO ZMC:MACUSER).

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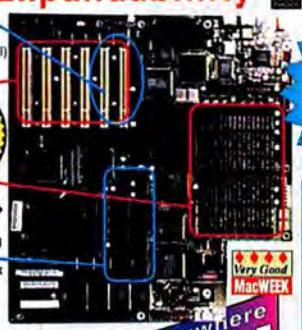

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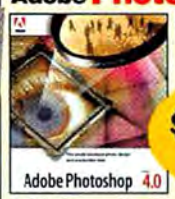

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Xerox Corporation 800-ASK-XEROX 73

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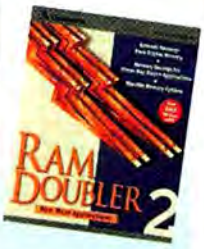

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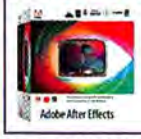

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Advertiser Index

RS#	ADVERTISER	PHONE NUMBER	PAGE
15	AEC Software	800-450-1983	12
103	Apple Computer, Inc.	800-522-0990 ext. 300	16
*	Apple Software, Claris	800-950-5382, ext. 784	76
*	Apple Software, Claris	800-950-5382, ext. 1401	156-157
148	APS Technologies	800-235-3707	106-107
133	Binuscan	800-881-2352	9
19	Bottom Line Distribution	800-990-5699	128
120	ClubMac	800-258-2622	112-113
136	Computer Discount Warehouse	800-291-4239	117-119
77	Corel Systems Corporation	800-222-2808	18
50	CRA Systems	800-375-9000	114-115
163, 164	DataViz	800-270-0030 ext. 126	49
19	DGR Technologies	800-990-5699	128
10	Diehl Graphsoft	410-290-5114	83
33	Digital Graphix	800-680-9062	126
90	EarthLink Network	800-395-8425	51
73	Engineered Software	910-299-4843	6
123	Epson America	800-GO-EPSON	15
71	FWB Software	http://www.fwb.com	84
43	Integrated Micro Solutions	888-IMS-8282	89
23	LLB Company, Inc.	800-848-8967	104-105
108	Mac Bargains	800-407-7404	110-111
146	Mac Xtra	800-553-4230	127
147	MacConnection	800-998-0065	100-101
18	MacMall	800-217-9498	108-109
117	MacMarket	888-202-1132	99
19	MacProducts, USA	800-990-5699	128
157	MacWarehouse	800-344-9320	124-125
135	MacZone	800-436-8000	102-103
*	Microsoft Corporation	800-967-5363 ext. 433	2-3
85	Motorola Computer Group	800-759-1107 ext. MCU	20-21
*	NetBuyer	www.netbuyer.com	90
130	Orange Micro	714-779-2772	88
*	Portrait Display Labs	800-858-7744	43
24	Power Computing	800-405-7693	Cover 2-4, 1
24	Power Computing	800-405-7693	Cover 5-8
75	ProDirect	800-555-1256	123
5	Quark Inc.	800-788-7835	10-11
66	Radius, Inc.	800-5RADIUS	62
*	Ricoh System Corporation	800-957-FIDO	33-36
*	Seybold Seminars	888-800-8922	154
110	Strata	800-STRATA-3D	7
124	Tektronix	800-835-6100	44
126	XANTÉ Corporation	800-926-8839	87
68	Xerox Corporation	800-ASK-XEROX	73
*	ZDTV	thesite.msnbc.com	92
*	Ziff-Davis Benchmark Operation	http://www.zdnet.com/zdbop	45
*	Ziff-Davis Reprints	800-825-4237	48

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4.3GB	IBM 34320	7.9ms	Fast & WideUltra SCSI 3	1055	1155
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Transfer Rates Qualifier All drives were tested utilizing a UMAX 150 Mhz CPU with 32 Megabytes RAM, Adaptec 2940 Ultra SCSI Accelerator and MacBench software. Sustained transfer rates will vary depending on system type, memory, PCI cards and software. All drives were formatted and configured with FWB Toolkit and Speed-Tuned according to Manufacturer documented guidelines.

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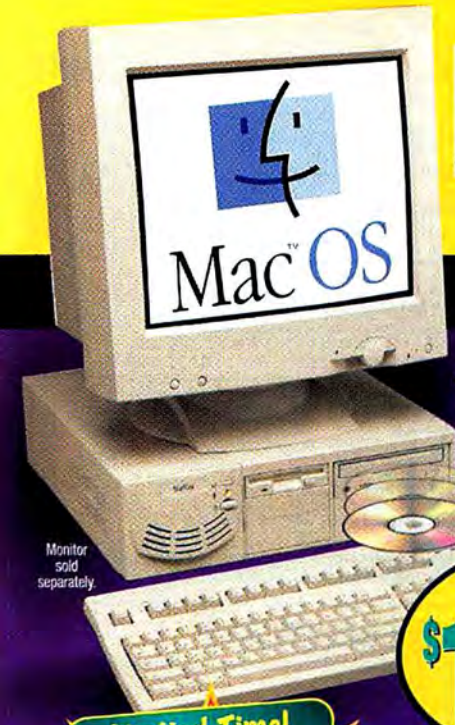

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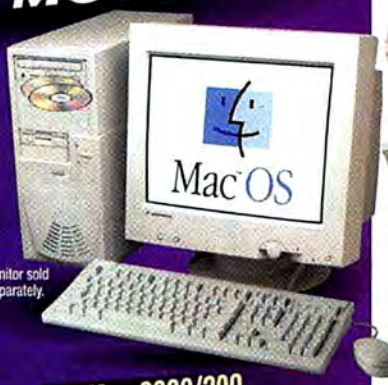

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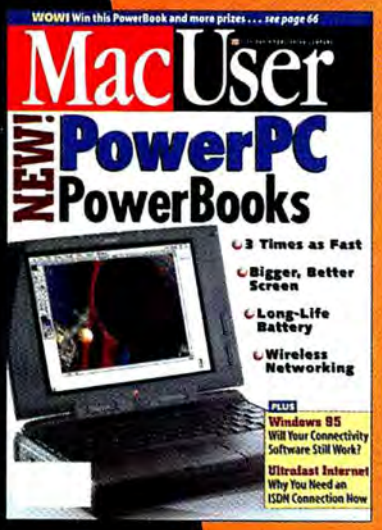

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130-138

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139-152

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A forum for innovative, unique, low-cost and hard-to-find Macintosh hardware, software, and miscellaneous products and services.

153

	Premier	Classified
HARDWARE		
Accelerator Boards		
Bar Coding		139
Boards/Components/Chips	131	139
Computer Systems	130	141
Disk Drives	132	
General		
Input/Output Devices		
Multi-Media		
Peripherals	130	
Powerbook Products	134	
SOFTWARE		
Bar Coding	130	148
Business		
CAD/ CAM		
CD-Rom		
Communications/Networking	135	
Education	137	150
Entertainment/Games		
Foreign Languages/Translation		
General	137	152
Graphics/Fonts		152
Medical/Dental		
Music/Midi	131	
Programming Tools/Languages		
Scientific/Engineering	130	
Security		
Adult		152
SERVICES		
Consulting/Programming		
Data Conversion/Data Recovery		149
Desktop Publishing	137	
Digital Output		
Online Services	137	
Repair Services		149
MISCELLANEOUS		
Accessories	181	
Supplies		

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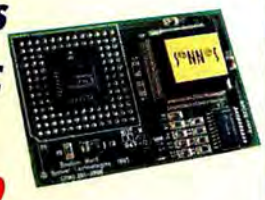

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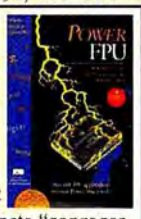

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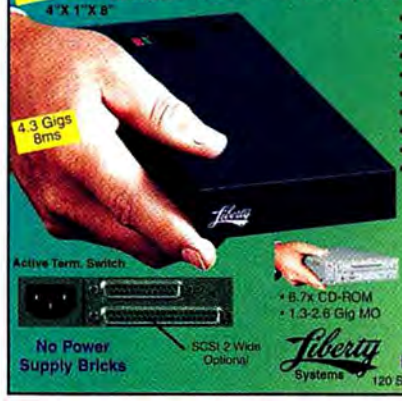

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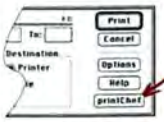

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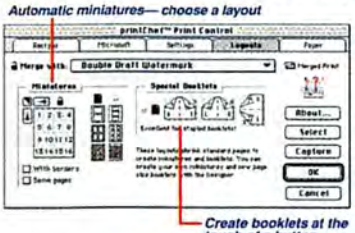

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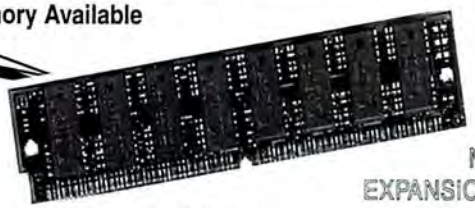

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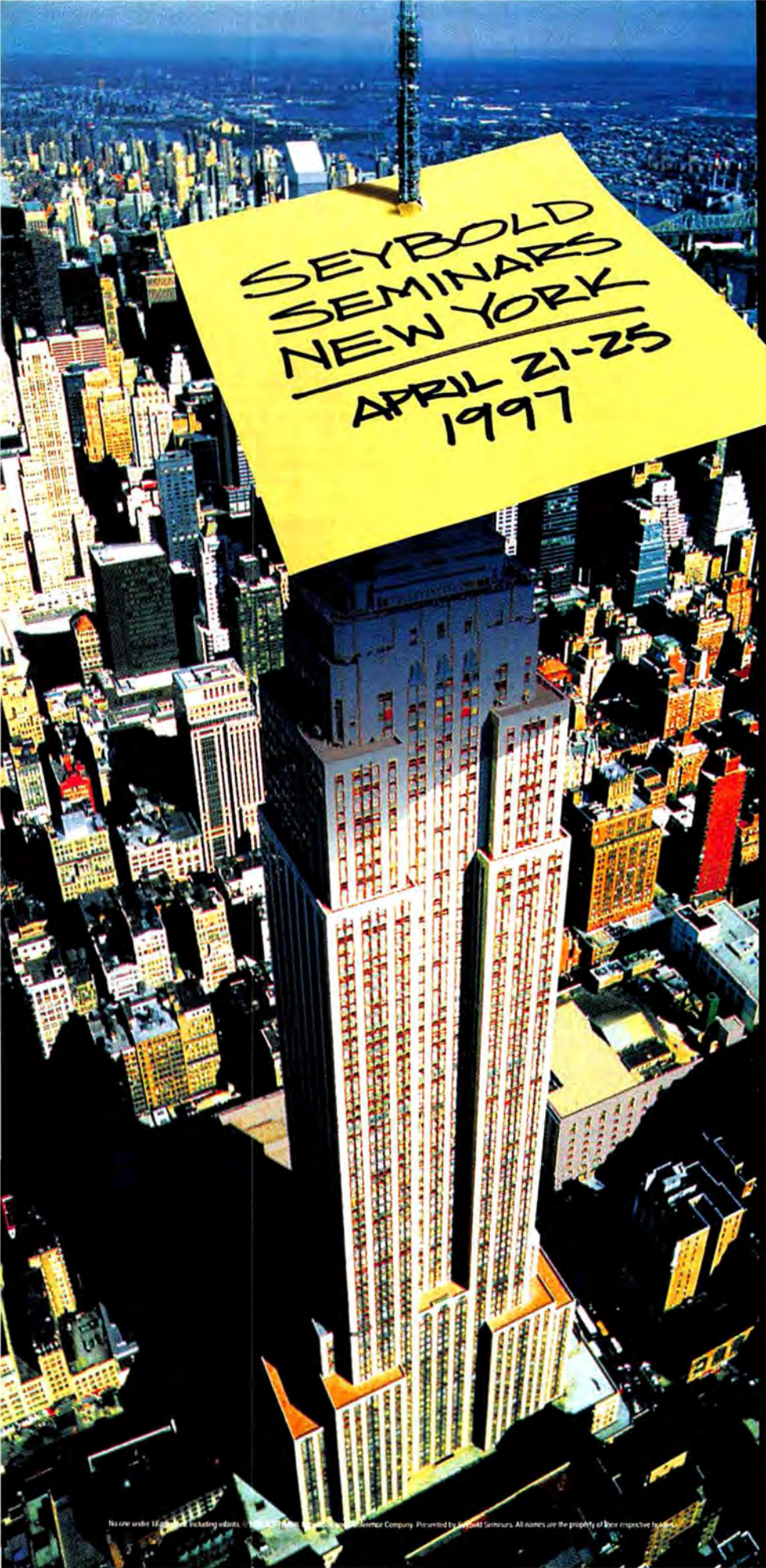

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Life getting you down? Feeling pressured? Take a deep breath, and let your Mac calm those troubled nerves.

By Christopher Breen

The Laid-Back Mac

I LOVE MY JOB — REALLY, I DO. But lately the deadlines have been tumbling all over one another and I've found myself getting just the teensiest bit stressed. Because I'm a "paid by the word" freelancer and motivated solely by avarice, I've determined that it's far more important for me to wrangle with the stress than to cut back on my workload. And because I'm so self-serving, I've found a way to kill the proverbial two birds: Gather together stress-relieving Mac software and get paid to write about it.

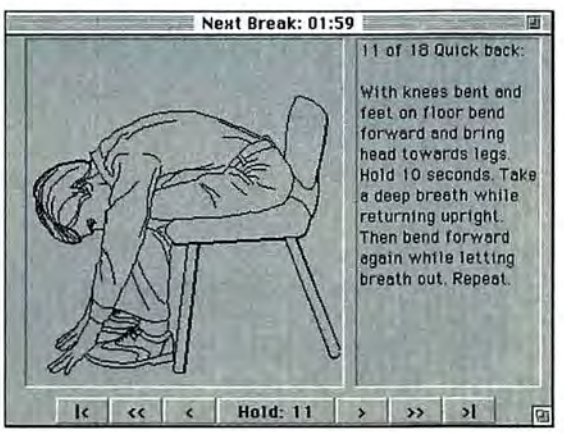
Perhaps your life is likewise stressful. If so, ease back into your chair and let's begin.

Breathe

Breathing is something I attempt to do every single day, and I'll venture a guess that you do as well. Although my shallow huffing and puffing helps me maintain my tenuous grip on the mortal plane, it apparently does nothing to calm the nerves — at least according to two relaxation products: **Natural Stress Relief** (♦♦♦; $79.95 list), from innerFlow software (800-928-9868 or 617-935-3494), and **Take Five** (♦♦♦½; $29.95 list), from Voyager (800-446-2001 or 212-431-5199).

Because I was in need of strong medicine, I made a beeline for Natural Stress Relief. In addition to prescribing the requisite breathing exercises, this CD-ROM guides you through various relaxation techniques and numerous strategies to help you cope with the stress of daily life.

I installed the CD-ROM and listened to gentle waves; birdcalls; and the soothing voice of my guide, Geoffrey D'Arcy, as he led me through a tightening and releasing exercise. I tightened and released like nobody's business, until D'Arcy uttered the phrase "experiential reality." Internal alarms began to blare — Tight! Tight! WARNING! WARNING! NEW-AGE MUMBO JUMBO! That ubiquitous tweeting bird was starting to get on my nerves as well.



If such New Age buzzwords as "feeling states" don't affect your system like a cattle prod applied to the buttocks, you might get a lot out of the Natural Stress Relief CD-ROM. It's well organized, and the exercises should prove beneficial to many users.

Bend and Stretch

By now I was riled enough that it was time to Take Five. This CD-ROM contains 45 QuickTime stretching exercises, a group of guided visualization/meditation techniques (OK, it's time to get ready to breathe again), ten soothing soundtracks, and a gallery of awe-inspiring nature pictures.

For the most part, I was taken with Take Five. The guided-exercise section is a bit overly groovy — the advice to imagine your problem and then simply let it go, although expedient, is a little simplistic — and I'm still not clear on the value of a CD-ROM that works best when you close your eyes. But I found some of the visualizations relaxing. More helpful were the stretching exercises, which relieved tension without injuring any ligaments.

Speaking of simplicity and stretching, I rather enjoyed ◀ **Exercise Break** (♦♦♦½; $39.95

ILLUSTRATION / DAVID RICCERI

list), from Hopkins Technology (800-397-9211 or 612-931-9376). This application dispenses with healing the inner self and instead focuses strictly on the physical stress you are bound to accumulate when you're hunched over a computer keyboard the entire day. The CD-ROM's setup is simplicity itself: You choose from a collection of stretching exercises to watch on-screen as you follow along, and you also let the program know how frequently you would like to be interrupted for your calisthenics. You can set Exercise Break's interruptions either by timer — say, every two hours — or to occur at a specific time of day.

Let Your Mind Drift

Now that my body was a bit less tense, it was time for me to readdress my mental and emotional state. And, as my ill-spent youth taught me, what better way to do so than to zone out by staring at shifting psychedelic hues? If you long for the forbidden thrills of the '60s — now packaged in a legal, digital form — you'll want to check out **Kaleidoscope** (♦♦♦½; $29 list), from Abbott Systems (800-552-9157). This little gem of a program generates a Mandelbrot set, which contains an infinite level of detail. You simply zoom in on an area that looks intriguing, select the special effect and the level of resolution you want, and watch the gently shifting colors.

Releasing myself from Kaleidoscope's mesmerizing grip wasn't easy, but I needed to do so in order to examine a CD-ROM that speaks to the Now and Zen in us all — ▲ **Shining Flower** (♦♦♦½; $39.95 list), from Voyager.

This wordless, animated story of a man, his flower, and his search for enlightenment is chock-full of meaning. What that meaning is, exactly, I'm not entirely certain — I'm probably still just a little too stressed to figure it out. It doesn't much matter anyway. Shining Flower is a visual and auditory treat that takes you on a journey to such surreal scenes as a gathering of walking trees that disappear through a hole in the earth. If you can manage to gain something other than visceral pleasure from this product, I say more power to you.

Stressed and Confused

I now needed a strong dose of reality to calm my bewildered being. Thankfully I'd found it: **Kyoto Gardens** ▶ (♦♦♦♦½; $49.95 list), from Lunaflora (714-985-1350), and **Origami: The Secret Life of Paper** (♦♦♦♦; $39.95 street), from CloudRunner Software, which is published by Casady & Greene (800-359-4920 or 408-484-9228). Although these top-notch CD-ROMs did nothing to specifically address my anxieties, they did make me forget about some of my problems and even smile in admiration.

Kyoto Gardens takes you on a QuickTime VR stroll through 24 Japanese Zen gardens. In addition to the QTVR strolls, you're treated to a photograph album of exquisite high-resolution images of the gardens as well as a virtual bookshelf that includes information on Japanese garden design, Zen in

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Buddhist history, the spirit of Zen Buddhism, and details of the Japanese tea ceremony. To get the most from this wondrous CD-ROM, you will need a fast Power Macintosh (with a 603 or 604 processor), at least 16 MB of RAM, enough VRAM to supply 16-bit color, and a quad-speed CD-ROM player.

CloudRunner Software's Origami: The Secret Life of Paper is as carefully thought-out a product as Kyoto Gardens. It not only teaches you how to fold the included origami paper into such objects as cranes, octahedrons, and frogs but it additionally presents an exhaustive overview of origami, accompanied by numerous examples of the finest the craft has to offer from the ranks of international artists. The program's interface is a delight. You navigate through a traditional Japanese house and click on pictures of origami artwork to learn about particular artists and view other examples of their delicate craft. There's even an area that teaches you how to make your own paper out of junk mail. Brilliant!

Web Rest

You'll discover that you can also get the alpha waves flowing by visiting the right sites on the World Wide Web. Among the most efficacious ones I was able to locate was How to Meditate (http://janus.saturn.net/~entropy/meditation.print.html), which features a step-by-step guide for mantra-style meditation.

For a veritable bonanza of relaxation resources, visit Noodles' Panic-Anxiety Page (http://www.algy.com/anxiety/relax.html). It lists tons of Web sites that are dedicated to reducing stress through techniques ranging from doing yoga to gauging your anxiety levels.

The Old Reliable

Although the preceding products and Web sites had indeed helped me relieve some tension, they proved to be simultaneously stimulating. The heck with software. I'd given it my best shot, and nothing seemed to work as well as what I like to call "relaxation in a bottle." That's right, it was time for a brewski.

And where better to determine which variety of beer I desired than **The Beer Hunter** ▼ (♦♦♦½; $39.95 list) and **World Beer**

Hunter (♦♦♦♦; $39.95 list), by Michael Jackson (no, not *that* Michael Jackson)? These CD-ROMs from the Discovery Channel (800-678-3343 or 317-579-0413) provide just about all the information any beer-sucking body could possibly want.

The Beer Hunter examines microbrewed beers that are made in the United States, whereas World Beer Hunter ranges far and wide across the globe to ferret out the finest hops-based beverages anywhere. Accompanied by descriptive text and sound bites, Jackson's narrative is continually sparkling and — having sipped a few of his favorite brews myself — I find his recommendations difficult to argue with (particularly if you go for English-style brews). Those who are interested in the more technical side of beer will find useful information regarding ingredients and the brewing process.

Better . . . Finally

With a healing brew comfortably under my belt, I was feeling ever so much better. So much better, in point of fact, that I thought I might give that breathing stuff another try. *Inhale. Exhale, inhale, exhale, inhale . . . exhale . . . BURP!*

Ahhhhh . . . .

MacUser contributing editor Christopher Breen freely admits that he is not above using any fatuous literary device — such as being overworked — in an effort to tie a story together.

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ANDY IHNATKO

The Final Frontier

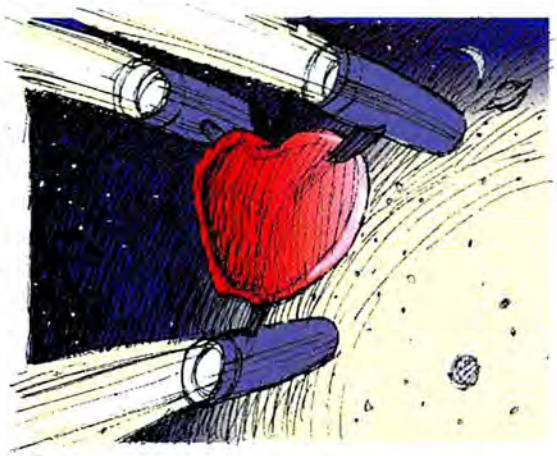
THE NEWS ABOUT APPLE and NeXT came to me in a steady stream of e-mails throughout the day, mostly from Apple employees intimating things such as that all the vice presidents and managers had received a memo and were busy at their whiteboards writing "John Sculley Is a Big Doughhead" a hundred times each, that a press conference had been called for later in the day, and so on. When word officially came, my reaction was spontaneous, although profoundly geeky:

It . . . will . . . be . . . *glorious!*

And if you could hear the teeth-gritting basso with which I delivered it, you would recognize this as a catchphrase of Commander Worf's, from the various *Star Trek* franchises. Immediately, though, I got a bit of a chill as I realized how completely appropriate a reaction that was, considering the situation Apple's in. Because as any *Trek* fan knows, Worf says this only when he's either describing a plan that will completely restore the honor and former glory of the Empire or when he's about to go do something unbelievably stupid. ("My plan is this: Commander Data will load me into Torpedo Bay Three and then fire me at the Borg Collective. My massive bony forehead will tear through at least eleven decks of their ship, after which I will engage each of the ninety-thousand Borg in single combat. *It . . . will . . . be . . .*")

I mean, how could I *not* be excited by the news? NeXTstep set off my Spidey-Sense the first moment I tried it, eons ago. Then, as now, it looked, felt, and almost *smelled* like an OS with a lot of wonderful ideas in it. The Mac OS can have NeXT's thoroughly modern memory and processor management, UNIX-studliness, and megaspiffy user-interface elements.

At this writing, Apple is being mighty vague about its future plans for NeXTstep, a situation that has kicked over a major anthill in the press and online. At one extreme are those who claim that Apple is declaring the Mac OS an utter failure and will replace it outright with NeXTstep and a lashed-together Mac OS emulator. At the other end are the cheerleaders who believe that Apple will raise the Mac OS' hood, toss in NeXTstep, and then slam it down, resulting in a 1997 Mac OS just as familiar and 12 times as powerful as Copland ever could have been.



Here is my shocking and highly technical analysis: *It just doesn't matter.* It really doesn't. The mythical new Thoroughly Modern Mac OS isn't a product; it's a process. It's not a destination; it's a journey. For the past seven years, we've all been stuck in the driveway, not wanting to start the car until we had every single detail charted to perfection, worrying about all the Transitions along the way. Meanwhile, we're stuck with a memory system that was leapfrogged two Olympics ago and a processor methodology for running and managing applications that just can't take advantage of the way hardware and people work in 1997.

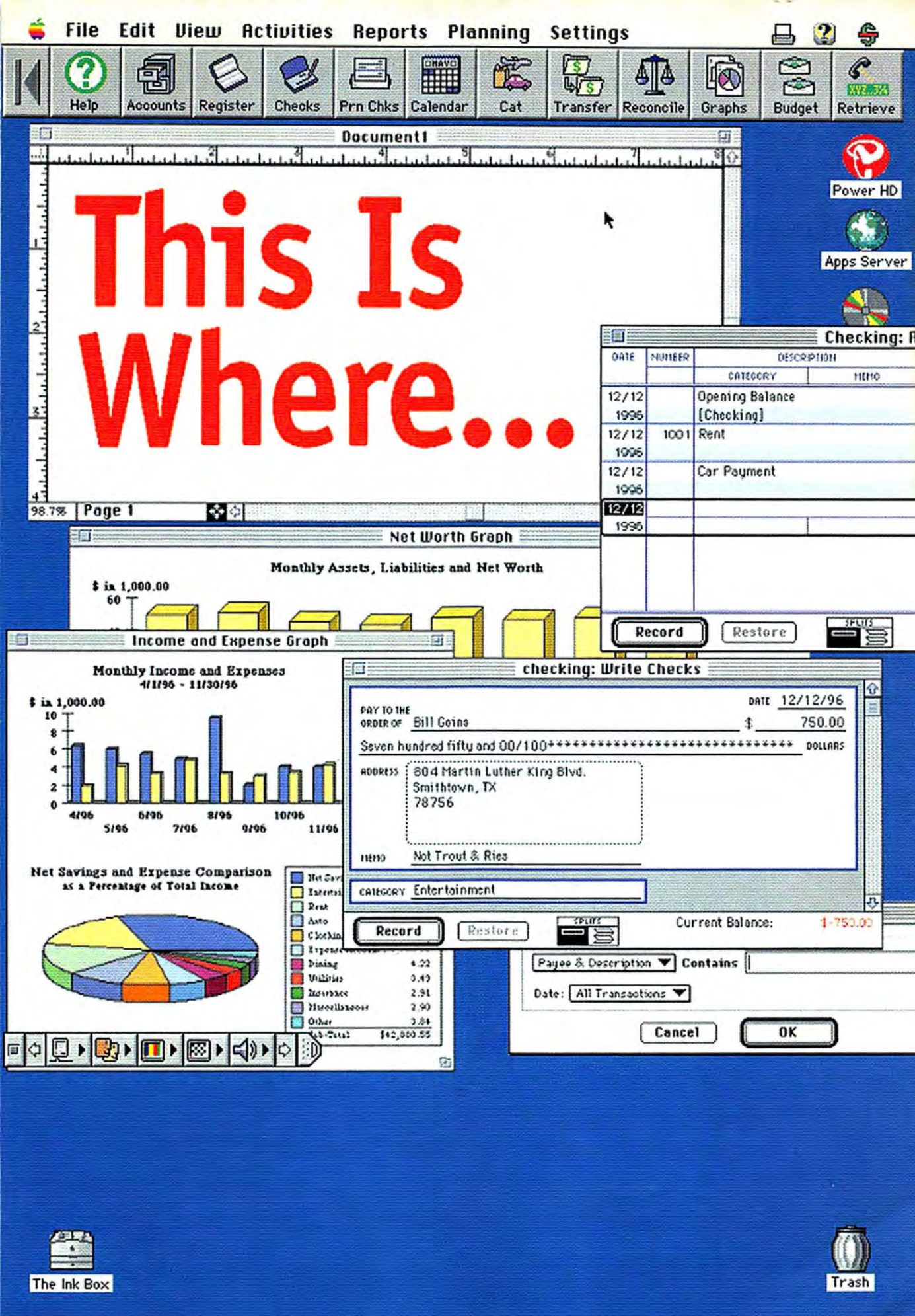
Folks, the hard truth is that no matter how the transition to a new Mac OS is done, it's going to really, really sting. You're going to lose cherished and dependable apps and features. You'll gain *new* ones that are just as good if not even better, but nonetheless the entire Mac community is going to be ripping a big Band-Aid off its hairy arm with this one. Let's accept that. We all want a transition to be perfect, but that's impossible; we should just be happy that it *happens.* Let's have a new, modern OS. Then we can complain about how utterly inadequate it is and work on improving it, but the crucial item here is that we *need* a new OS under the hood. You can't fix what you don't have, and if the Mac OS isn't updated soon, people who want the OS to be just like System 7.5.5 forever will get their wish.

The Coming of Shadows

I opened this column with a *Star Trek* reference. I'll end it with a comparison to another SF show, *Babylon 5.* It's so much more satisfying than *Star Trek* in every way. In *Trek,* there are little events that never really add up to much and never change any of the fundamentals of the show. If someone gets shot or gets taken over by a malevolent alien entity, or if the entire crew is turned into marmosets, not to worry: Things will be fine and forgotten by the start of next week's episode, which is why it's impossible to tell a second-season episode from a seventh-season one. *Babylon 5*'s creator, J. Michael Straczynski, has a different attitude. We, the show's viewers, are allowed our moments of happiness and security, but just when we've become happy watching JMS pull rabbits out of hats, he pulls out a snapping, hissing crocodile and forces us to cuddle it. Just when the unstoppable, ungodly, and hitherto unseen ancient menace our heroes have been preparing to battle for three seasons appears poised to strike its final blow against the galaxy, it invites Babylon 5's commander over for tea to explain its side of the story, and it begins to appear that B5's unstoppable, godly, and hard-won ancient ally isn't fighting on the side of Good so much as Self-Interest.

It's called Change. Change sucks, but as your dad told you just after declaring that you were old enough to get a job during summer vacation, Change leads to Growth.

ILLUSTRATION / STEPHEN FOSTER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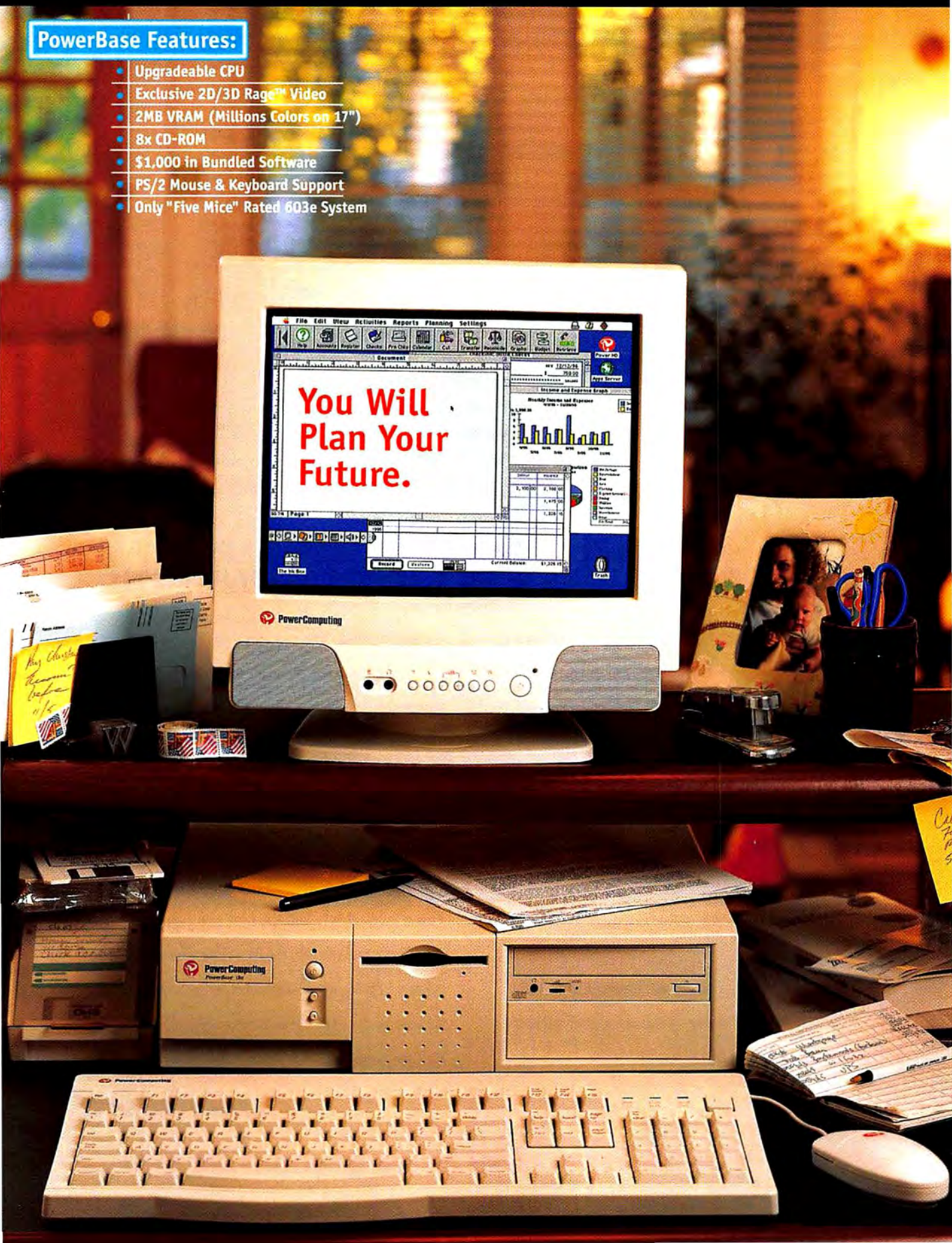
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