Is E-Mail Dead? How the Internet has changed messaging forever

http://www.macuser.com/

MacUser

300-MHz

Fast

Two new Macs offer the best of both worlds

Hi-Tech

Flash
*Actually, we can't blame it all on the poor guy in forecasting. We never expected our growth to exceed Dell, Compaq and Gateway's first years' sales combined.

"THE POWERTOWER PRO SERIES SOARS ABOVE ALL MAC RIVALS...MAC POWERUSERS WILL SOON BECOME POWER COMPUTING USERS IN DROVES"— MacWEEK Magazine 7.22.96

We knew we made great products, but when we started getting the best reviews of any Mac OS system in the industry and offered our systems at the lowest prices, our sales went through the roof.

We've had our share of growing pains, but we've worked hard to iron them out. And you'll see continued steady improvement over the next couple of months. For example, if you order a PowerCenter™ 150MHz or PowerTower™ Pro 225MHz direct from Power Computing you can expect to get your system custom configured and exactly the way you want it in a couple of weeks.

A PowerCenter 604/150 starting at around two grand is an awesome buy. Especially when you start comparing features and price points to the other 150MHz Mac OS systems on the market. (While you're at it, why not compare it to machines in the PC market?

"IF YOU REQUIRE MAXIMUM PERFORMANCE, NO CURRENT APPLE SYSTEM CAN TOUCH THE POWERTOWERS." — MacWEEK Magazine 4.4.96
ESOME PRICES, KILLER SYSTEMS, BONEHEAD IN FORECASTING.*

The PowerTower Pro 225 is simply the best computer investment you can make. It's the fastest, most expandable and highest-overall performing Mac OS system you can buy. That's probably why it received "Best of Show" at MacWorld Expo and was the first machine in over three years to receive the coveted Five Mice from MacUser magazine. (FYI: Our PowerBase™ line was the second).

Give Power Computing a call and let one of our sales consultants help you custom configure your next system.

In the meantime, everyone at Power Computing sincerely thanks you for your continued patience and the overwhelming support. And whatever you do, never stop fighting back for the Mac.

"POWER COMPUTING HAS FIELDSD SOME KILLER MACHINES. APPLE WILL BE HARD PRESSED TO CATCH-UP."

— MacUser Magazine Jot, 1996

and get a glimpse of why the Mac is making a comeback). Our PowerCenter has everything you need in a mid-range system, including the upgradeability you need to ensure that it won't be sitting in a closet next to a IICX acting as a print server a year from now.

"POWER COMPUTING HAS THE CLEAR AND UNDISPUTED EDGE OVER APPLE IN BOTH PRICE & PERFORMANCE. YOU WANT A POWERTOWER PRO."

— MacUser Magazine SEPT '96

PowerComputing

CIRCLE 24 ON READER SERVICE CARD
## GUESS WHICH ONE IS BACK ORDERED?

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POWER COMPUTING</strong></td>
<td><strong>POWERCENTER™ 150</strong>&lt;br&gt;POWERPC™ 604 PROCESSOR&lt;br&gt;150MHZ&lt;br&gt;512K LEVEL 2 CACHE&lt;br&gt;2 MB VRAM ONBOARD VIDEO (UPGRADEABLE TO 4MB)&lt;br&gt;2 GB HARD DRIVE&lt;br&gt;24 MB RAM&lt;br&gt;8X CD-ROM DRIVE&lt;br&gt;15&quot; POWER COMPUTING MULTIMEDIA MONITOR W/SPEAKERS&lt;br&gt;GLOBAL VILLAGE 28.8 PLATINUM MODEM&lt;br&gt;MICROSOFT OFFICE 4.2.1&lt;br&gt;APPLE INTERNET CONNECTION KIT&lt;br&gt;EXTENDED KEYBOARD &amp; MOUSE&lt;br&gt;$1200 IN ADDITIONAL BUNDLED SOFTWARE&lt;br&gt;30 DAY MONEY BACK GUARANTEE</td>
<td>$2995</td>
</tr>
<tr>
<td><strong>APPLE</strong></td>
<td><strong>POWERMAC™ 8500/150</strong>&lt;br&gt;POWERPC 604 PROCESSOR&lt;br&gt;150MHZ&lt;br&gt;512K LEVEL 2 CACHE&lt;br&gt;2 MB PCI VIDEO CARD&lt;br&gt;1.2 GB HARD DRIVE&lt;br&gt;16 MB RAM&lt;br&gt;8X CD-ROM DRIVE</td>
<td>$2999</td>
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### PowerTower Pro: The Fastest, Most Expandable MacOS System

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>RAM Options</th>
<th>Drive Options</th>
<th>Graphics Options</th>
<th>Base Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerTower Pro 225s Starter</td>
<td>225 MHz PowerPC 604e Processor</td>
<td>- 16 MB RAM (1 GB Max) &lt;br&gt; - 2 GB 7200 RPM AT Capable Hard Drive &lt;br&gt; - 8X CD-ROM Drive &lt;br&gt; - 1 MB Level 2 Cache &lt;br&gt; - 8MB Twin Turbo 128M graphics accelerator with 8MB VRAM &lt;br&gt; - 6 PCI Expansion Slots &lt;br&gt; - Interleaved Memory &lt;br&gt; - 9 Drive Bays &lt;br&gt; - Dual (Fast 10 MB/Sec) SCSI &lt;br&gt; - Connectix Speed Doubler &lt;br&gt; - Extended Keyboard and Mouse</td>
<td>- Add Story 20&quot; Trinitron 20-mill S1795</td>
<td>$4995</td>
<td></td>
</tr>
<tr>
<td>PowerTower Pro 200x Starter</td>
<td>200 MHz PowerPC 604e Processor</td>
<td>- 16 MB RAM (1 GB Max) &lt;br&gt; - 2 GB 7200 RPM AT Capable Hard Drive &lt;br&gt; - 8X CD-ROM Drive &lt;br&gt; - 1 MB Level 2 Cache &lt;br&gt; - 8MB Twin Turbo 128M graphics accelerator with 8MB VRAM &lt;br&gt; - 6 PCI Expansion Slots &lt;br&gt; - Interleaved Memory &lt;br&gt; - 9 Drive Bays &lt;br&gt; - Dual (Fast 10 MB/Sec) SCSI &lt;br&gt; - Extended Keyboard and Mouse</td>
<td>- Add Miro Motion JPEG Video</td>
<td>$4495</td>
<td></td>
</tr>
<tr>
<td>PowerTower Pro 180x Starter</td>
<td>180 MHz PowerPC 604e Processor</td>
<td>- 16 MB RAM (1 GB Max) &lt;br&gt; - 2 GB 7200 RPM AT Capable Hard Drive &lt;br&gt; - 8X CD-ROM Drive &lt;br&gt; - 1 MB Level 2 Cache &lt;br&gt; - 8MB Twin Turbo 128M graphics accelerator with 8MB VRAM &lt;br&gt; - 6 PCI Expansion Slots &lt;br&gt; - Interleaved Memory &lt;br&gt; - 9 Drive Bays &lt;br&gt; - Dual (Fast 10 MB/Sec) SCSI &lt;br&gt; - Extended Keyboard and Mouse</td>
<td>- Add Miro Motion JPEG Video</td>
<td>$4195</td>
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### PowerCenter: The Most Affordable 604: You Can Buy

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>RAM Options</th>
<th>Drive Options</th>
<th>Graphics Options</th>
<th>Base Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerCenter 166 Starter</td>
<td>166 MHz PowerPC 604 Processor</td>
<td>- 16 MB RAM (512 MB Max) &lt;br&gt; - 2 GB Hard Drive &lt;br&gt; - 8X CD-ROM Drive &lt;br&gt; - 512K Level 2 Cache &lt;br&gt; - 1 MB VRAM On-Board (4 MB Max) &lt;br&gt; - 3 PCI Expansion Slots &lt;br&gt; - Extended Keyboard and Mouse</td>
<td>- Mini-tower Enclosure &lt;br&gt; - Add Iomega Zip 100MB Drive for ‘95 &lt;br&gt; - Add Power 17” Display (vis. 16.2) for ‘695</td>
<td>$2395 (UPGRADE TO 100MB FOR $400 MORE)</td>
<td></td>
</tr>
<tr>
<td>PowerCenter 150 Starter</td>
<td>150 MHz PowerPC 604 Processor</td>
<td>- 16 MB RAM (512 MB Max) &lt;br&gt; - 1 GB Hard Drive &lt;br&gt; - 8X CD-ROM Drive &lt;br&gt; - 512K Level 2 Cache &lt;br&gt; - 1 MB VRAM On-Board (4 MB Max) &lt;br&gt; - 3 PCI Expansion Slots &lt;br&gt; - Extended Keyboard and Mouse</td>
<td>- Low-Profile Enclosure &lt;br&gt; - For Mini-tower enclosure add ‘100</td>
<td>$2095 (NEW LOW PRICE)</td>
<td></td>
</tr>
<tr>
<td>PowerCenter 132 Starter</td>
<td>132 MHz PowerPC 604 Processor</td>
<td>- 16 MB RAM (512 MB Max) &lt;br&gt; - 1 GB Hard Drive &lt;br&gt; - 8X CD-ROM Drive &lt;br&gt; - 512K Level 2 Cache &lt;br&gt; - 1 MB VRAM On-Board (4 MB Max) &lt;br&gt; - 3 PCI Expansion Slots &lt;br&gt; - Extended Keyboard and Mouse</td>
<td>- Low-Profile Enclosure &lt;br&gt; - For Mini-tower enclosure add ‘100</td>
<td>$1895 (NEW LOW PRICE)</td>
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### PowerBase: The Ultimate Entry Level System

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>RAM Options</th>
<th>Drive Options</th>
<th>Graphics Options</th>
<th>Base Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerBase 240 Starter</td>
<td>240 MHz PowerPC 603e Processor</td>
<td>- 16 MB RAM (160 MB Max) &lt;br&gt; - 1.2 GB EIDE Hard Drive &lt;br&gt; - 8X CD-ROM Drive &lt;br&gt; - 256K Level 2 Cache &lt;br&gt; - 3D Graphics Acceleration &lt;br&gt; - 2 MB DRAM based video (4 MB Max) &lt;br&gt; - 3 PCI Expansion Slots &lt;br&gt; - Extended Keyboard and Mouse</td>
<td>- For mini-tower enclosure add ‘100</td>
<td>$2195</td>
<td></td>
</tr>
<tr>
<td>PowerBase 200 Starter</td>
<td>200 MHz PowerPC 603e Processor</td>
<td>- 16 MB RAM (160 MB Max) &lt;br&gt; - 1.2 GB EIDE Hard Drive &lt;br&gt; - 8X CD-ROM Drive &lt;br&gt; - 256K Level 2 Cache &lt;br&gt; - 3D Graphics Acceleration &lt;br&gt; - 2 MB DRAM based video (4 MB Max) &lt;br&gt; - 3 PCI Expansion Slots &lt;br&gt; - Extended Keyboard and Mouse</td>
<td>- Low-Profile Enclosure &lt;br&gt; - For mini-tower enclosure add ‘100</td>
<td>$1795</td>
<td></td>
</tr>
<tr>
<td>PowerBase 180 Starter</td>
<td>180 MHz PowerPC 603e Processor</td>
<td>- 16 MB RAM (160 MB Max) &lt;br&gt; - 1.2 GB EIDE Hard Drive &lt;br&gt; - 8X CD-ROM Drive &lt;br&gt; - 256K Level 2 Cache &lt;br&gt; - 3D Graphics Acceleration &lt;br&gt; - 2 MB DRAM based video (4 MB Max) &lt;br&gt; - 3 PCI Expansion Slots &lt;br&gt; - Extended Keyboard and Mouse</td>
<td>- Low-Profile Enclosure &lt;br&gt; - For mini-tower enclosure add ‘100</td>
<td>$1495</td>
<td></td>
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SOUND + VISION: THE 20TH-ANNIVERSARY MACINTOSH

Get a sneak peek at the Macintosh of the future. From the best sound system ever to ship in a computer to its sleek styling and flexible design, this limited-edition Macintosh is the one we've been waiting for.

By Andrew Gore / 56

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The Spirit of 7.6
The Mac OS 7.6 is no revolution. But we're happy it's here. The good news: Apple's Mac OS 7.6 is evidence that the company is committed to its OS component-release schedule. The bad news: It doesn't include everything we'd like to have seen — and it's a far cry from the sorely needed OS overhaul.

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—Allan Ommerli, Interior Designer

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Practical PowerBooks, Please

MUCH ADO HAS BEEN MADE about the PowerBook 1400’s highly desirable features, such as Book Covers, and Apple’s failure to keep up with the “speed” of the market (“Road Test: The Apple PowerBook 1400,” December ’96, page 70). Yet, there has been almost no dialogue on the absence of what really makes a laptop is that it have dial-in communications capabilities (in other words, a modem). Since none of the literature on the 1400 speaks to dial-in or modem capabilities, I’m having a hard time with this justification.

Rod Gossman
via the Internet

/ The 1400 can use any Hayes-compatible PC Card modem. By not including a modem, Apple gives you the freedom to choose from dozens of inexpensive modems, which will probably save you money over what a bundled modem would cost. / AG

Dare to Buy a PB 5300?

IN YOUR REPORT on Apple’s new PowerBook 1400, you said the 5300 crashed with various apps. Because I’m considering buying a reworked 5300, I contacted Apple to see if these problems had been addressed. Company reps had no information on application problems specific to the 5300 and thought you may have been referring to problems these apps had on all PowerPC platforms.

Apple did mention the logic-board “freezing” problem in the 5300, which has apparently been remedied in reworked models. Were the problems you mentioned caused by the logic board and/or some generic PowerPC problem or by some problem that’s specific to the 5300?

Stephen McAlish
stephen@colquhoun.co.uk

/ Application crashing on the 5300 series has been extensively documented, and no, the problem has nothing to do with running on a PowerPC. (If that was the problem, Photoshop wouldn’t run on any shipping Mac.) Crashing has generally been caused by either bugs in the logic board or bugs in the version of the OS the 5300 uses. Apple claims to have resolved both these problems. However, we continue to see application crashing with several 5300 machines in our labs, all of which have been “reworked.” There certainly are 5300 systems out there that function just fine. However, if you plan to buy one of these reworked systems, all we can say is, caveat emptor. / AG

Open Folder

Volvo used to tout the safety of its cars with ads that showed one of its models looking very much like a crushed soda can (the car’s rear end and hood were both crumpled in, but its cab was thoroughly unmolessted). After MacUser Editor Andrew Gore compared Apple’s PowerBook 1400 to a Volvo by saying that both are solid and reliable but “not likely to set young hearts racing,” several readers proceeded to give his head and rear end the same treatment as the impact-absorption zones on that Volvo in the ads. These readers asserted that the Volvo 850 Turbo is the fastest, safest, most reliable, and sexiest ride on either side of the Atlantic and stopped just short of suggesting that the Caped Crusader himself toss aside the keys to the Batmobile and visit Gotham Motors for a deal on a Swedish wagon. This apparently isn’t your soccer mom’s Volvo.

Soccer moms who are neither turbocharged speed queens nor mobile computer users nor technophiles of any shade are nonetheless encouraged to hit the Infobahn and visit Peggy Goldman’s MacMom Web site, which aims to help mothers, grandmothers, and all analog women digitize their kids and their daily doings. Peggy preaches the Mac gospel, offers household tips, and provides links to other helpful sites. To pay Peggy a call, point your browser to: http://home.earthlink.net/~sq Peg/macmom/. Mac users looking for more-terrestrial destinations will get no help from the American Automobile Association (AAA). David C. Williams brought to our attention (as well as to that of AAA’s CEO, Donald R. Gagnon) that AAA’s Map’n’Go software is compatible only with Windows. Williams pointed out that there are 53 million Mac users in the world and that AAs’s offering of such software only to Windows users was akin to AAA providing services “solely to owners of Big Three autos.” Take it from our own Andy Gore, Mr. Gagnon. If you don’t appease these Mac-based motorists, you’ll need the jaws of life just to pry that comb out of your back pocket.
angry that I’m actually trembling slightly as I type this.

Having something forbidden to a child, or an adult even, makes them covet it all the more. No program, no law, no bill can keep something from a determined child who knows how to use the Net. The only way to keep children out of “danger” is to educate them on a subject and give them alternatives.

You failed to mention that Cyber Patrol and other such programs block out the White House’s whole site because it contained the word couple (pertaining to Hillary and Bill). It makes you wonder what IDIOT thought the word couple was too promiscuous for small eyes and ears! In that rating system, almost ALL of Disney’s movies would be blocked for content. My GOSH! They’re KISSING! That’s TOO EXTREME for young eyes!

Sheesh, when will you adults learn? Ironic, isn’t it, that all this started with the White House and now it’s blocked? They also block words such as breast and names of drugs, hate groups, racial slurs, and many more things pertaining to such subjects. What of the child doing research on alcoholism, breast cancer, drug addiction, racial tension, or other similar topics? Aww, too bad. Really, if a child is intelligent enough to utilize the Internet, they are intelligent enough to know what is offensive to them.

Please do a little more research on your subject before delving in and saying things you don’t know much about. While you’re at it, check out my Web site, Kids On the Internet; at http://www.the-hermes.net/~ljh/.

Loyal customer and outraged kid,

Amy Hoy
ljh@the-hermes.net

/ Well said, Amy. I was viewing Cyber Patrol and its ilk as tolerable alternatives to draconian measures such as the Communications Decency Act. Thanks for reminding me that tolerable censorship is an oxymoron. Nice site! / MS

Can’t See the Forest for the PCs

PAMELA PFIFFNER REALLY needs to pull her head out of the apple core (“Dangerous Minds,” December ’96, page 21).

My school district is in the process of switching over from Macs to PCs. Why? Money, and the fact that some very vocal members of the local business community have convinced the school board that Apple is dead or dying. No amount of proselytizing or evangelizing will convince them otherwise.

My high school set up a 22-station Wintel lab this fall. Each machine runs at 100 MHz, has an 8x CD-ROM drive, a 1-GB hard drive, and 16 MB of RAM. Cost per machine, including monitor and keyboard, was $1,100. Tough price to beat.

I love my Mac, but my school is convinced beyond a doubt that Apple is history. They control the money, not me. Sure, Macs are easier and more fun to use, but schools adopt a bottom-line approach. PCs are cheaper. End of discussion. I know it hurts, but if Apple doesn’t help by offering a similarly equipped, cheap Mac to schools, why should we continue to support the company?

Spence Cutting
Woodland Park, CO

RICK VOGEL ASKS WHY he would want to buy a Mac unless he had lots of extra money to throw around (Letters, December ’96, page 14). Look at the big picture, Rick!

The company where I maintain the computer network is presently researching and pricing new PCs to replace a few old 486s. PC pricing is a nightmare. Look at any ad in a PC magazine for a “system,” and then call the company to find out what is missing from that system (a high-speed modem, a quality sound card, a reasonable amount of RAM) and how much it will cost you to add what you need.

Next, add in the cost for hours of setup and configuration. I have yet to plug in a new PC, turn it on, and begin using it without major fussing over one thing or another. Add to that the work stoppage from the countless system crashes, freezes, and memory errors that Windows 95 presents our business with on a daily basis.

When I go home and turn on my Mac, it works, every time, all the time. I bought my first Mac five years ago and have had so few problems that I can’t even think of anything to list.

I may pay a little less for a PC up front, but adding in the cost of keeping that PC running quickly eats up the difference.

Millie Francis
New York, NY

Dropping the Ball

YOUR REVIEW OF MasterJuggler Pro 2.0 (December ’96, page 54) was a bit off the mark. Your comment that “clicking on the Temporary or In Startup Set buttons doesn’t control whether you create a temporary or startup set” is completely wrong! If you had even glanced at the manual, you would know that these aren’t even buttons! They are, instead, a simple icon key showing you what each icon that might appear in the window means. You also missed several key features, including drag-and-drop opening of fonts and sets, drag-and-drop creation of sets, and the best pop-up application menu in the business (for starters). And what about MasterJuggler’s rock-solid stability?

Richard J. Sinclair, rjs@magicnet.net

Macintosh Independent Consultants Association

/ Although clever, MasterJuggler’s drag-and-drop functions aren’t very useful if you routinely switch among multiple font sets. MJ’s nonstandard, button-like icons are confusing. Font-management utilities rarely pose stability problems, so MJ’s crash resistance isn’t a big advantage. / KT

John C. Ihnatko?

PLEASE DON’T TAKE THIS the wrong way, but when I read Andy’s column in a recent issue, I had to check to make sure it wasn’t the work of our old friend John C. Dvorak. Yes, it was that bad.

Please, Andy, I implore you: Tell me what is new, what is cool, how things could be better if you were King, and what I can do that makes my system unique or compatible or just plain silly.

Robert Wiebe
wiebe_robert@credit.ca

The Comeback Mac

WHO AMONG US would have thought that Gil and the boys in Cupertino would’ve brought back the Mac so quickly? With Apple surprisingly showing quarter gains, Gil gets my vote for CEO of the Year. With Power Computing, UMAX, Motorola, and several others now joining the push for Mac supremacy, Windows-based technology is finally being given a true test. I look forward to the upcoming months.

Gordon Bell
gbell@mscyber.com

Corrections

Due to an editing error, we neglected to mention that we were referring to the Power Mac 9500/120 and 8500/120 when we wrote that the Mac’s system bus runs at 40 MHz (“Newer Accelerates Everything,” December ’96, page 24).


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Yeah, that’s right. Photo Tools lets you do all kinds of killer stuff in Adobe Photoshop in just one step. Like how all the bevels, drop shadows and glows in this ad were done. Even this text block and the ones down there in the cool bevels were done in Adobe Photoshop.

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CIRCLE 153 ON READER SERVICE CARD © Source: 1200
WHAT DO YOU WANT? That seems like a pretty simple question, but in the Mac market these days, the answer is getting more complicated by the day. There's a battle raging for the hearts, minds, and pockets of Apple's customers, and the winner is going to be whoever best answers the big question: What do Mac users want?

Take a look at our two cover stories this month, and it will be obvious what this confusion about the wishes of Mac buyers has done; the Mac's split personality has never been more apparent. On the one hand, the Mac is struggling to compete with Wintel PCs in terms of cost and performance. On the other, it seeks to rise above the common rabble by maintaining a snooty profile. It's like The Patty Duke Show, with the clone manufacturers playing Patty to Apple Computer's Cathy. We liked Patty better, but we secretly wanted to be more like Cathy.

The Swift . . .

In one corner, we have the latest offering from Power Computing, the company that doesn't mind likening itself to a Dead-End Kid, ready to "fight back for Mac." Power's swift 300-MHz prototype represents one direction for the Mac: Attract users by combining industry-standard parts with sophisticated engineering and aggressive pricing. Beat the Wintel platform at its own game, in other words.

This side of the Mac's personality has emerged relatively recently, and Apple itself still seems uncomfortable with it. It was Apple, after all, that let the Mac lag behind Intel-based PCs in both price and performance.

Not that Apple deserves all the blame. Its technology partner Motorola hasn't done much to promote the advantages of the PowerPC chip either. There's no PowerPC marketing program to compete with the ubiquitous "Intel Inside" label that peppers everything from packing boxes to television commercials to T-shirts that champion the cause.

So, as in the early days of the PC market, the cloners are picking up the slack. And not just Power Computing either, although it's certainly the most vocal about it. The 300-MHz machine we tested for this issue is but one of the high-speed, moderately priced Mac clones we've heard about (Power was just the first to let us go on the record).

Fast, yes, but no one's going to accuse these machines of being overly elegant. Power Computing's boxes are chunky, sharp-edged things. UMAX's SuperMac models, on the other hand, are considerably more attractive, with curves and swoops that suggest more than a passing acquaintance with industrial design. Mac users are accustomed to high design standards, both inside and outside the box. In their quest for speed, though, are they ready to forsake the designer cachet that's synonymous with the Mac?

... and the Swank

Apple's swank Spartacus — also known as the 20th-anniversary Macintosh — represents the other side of the Mac's personality, the side we've known all along. Elegant industrial design, flashy features, a supersuave image — and a premium price.

Let me say this right off the bat: When I first saw this machine, I wanted one. Unlike some flashy design prototypes I've seen, this limited-edition Mac makes sense, from both a design perspective and a usability perspective. Just sitting in front of it made me feel cool. It's more than an executive toy, however. It boasts a powerful processor, a crystal-clear LCD screen, a sophisticated sound system, and a modular keyboard. And the coolness factor multiplies when you learn that only 10,000 will be made.

But is it worth $9,000 to sit in front of the coolest Mac on the block? I doubt it. What's really the message here?

Once again, Apple is banking on image to sell machines. I'm not suggesting that Spartacus-like machines are the norm at Apple or that Apple sees this as anything more than a promotional gimmick, at least for the time being. But the Spartacus represents the same thinking that resulted in Apple's announcement that it will license its name to a chain of cybercafes. This may seem like a harmless effort to build brand awareness and attract technehipsters, but is latel-and really where Apple should be spending its energy?

If you ask me, Apple's got a surfeit of image. In fact, I sometimes think it holds the company back. Sure, I'm glad PowerBooks saved the world in Independence Day, but that's Hollywood. I think Mac users today would prefer real-life solutions. For some that may be a Spartacus. But faced with buying a $9,000 Mac for myself or three $3,000 clones for myself and two of my staff members, I know what I'd do.

Don't get me wrong. There's a market for cool, even more so now that the Internet has become a favorite topic at cocktail parties. But I'd wager that the market for fast and cheap Macs is much bigger. The biggest market of all? Fast, cheap, and cool. And that's very achievable. The questions are, Who will make it, and will you buy it? Let me know.
The PanaSync S17 has been winning a lot of awards lately. And that’s because just about everyone who has taken a look at it rates it nearly perfect. The S17 is also backed by the best warranty program in the industry—3-years on parts, labor and the CRT, an On-Site Exchange program during the first year of ownership, and a 24-hour, 7-day-a-week Customer Support Hotline.

To find out more about the PanaSync S17 and our complete line of Panasonic PanaSync Display Monitors, visit our Web-site at www.panasonic.com/alive or call us at 1-800-742-8086, Ext. MN14.
QuickTime Set to Fast-Forward

New QuickTime Media Layer moves Apple's media technology ahead.

APPLE'S NEWLY REINVIGORATED Interactive Media Group hasn't been resting on its QuickTime laurels — it's been moving forward aggressively with plans to update many components of the QuickTime Media Layer.

QUICKTIME VR. Version 2.0 will — at last — include an API (application programming interface), an addition that will make it far easier for developers to support QuickTime VR, especially in the C-based 3-D engines used by many video games. As a result, the next Doom clone to hit the Mac may well have its reality augmented by QuickTime VR-based photographic panoramas.

Another key advance is QuickTime VR 2.0's ability to integrate other kinds of content into a VR scene. For example, an actor could be filmed in front of a blue screen, with the resulting movie added as an object superimposed over a QuickTime VR panorama — a user could click on the actor to see the movie play. QuickTime movies as well as QuickDraw 3D objects can be added to a QuickTime VR panorama. The ability to zoom in on a QuickTime VR object is also supported in 2.0.

And objects can have hot spots — clicking on a VR movie of an engine, for example, could reveal moving pistons and crankshaft.

Unfortunately, QuickTime VR will still require a combination of MPW scripting and HyperCard for scene creation — although Apple plans to release easier-to-use tools later this spring. The company is also planning to add support by midyear for progressive downloading of VR scenes, a current feature of QuickTime Fast Start. The QuickTime VR 2.0 Authoring Tool Suite will sell for $395. The Mac version will ship in January, Windows 95 and NT versions in March. For more information on QuickTime VR 2.0, go to http://quicktimevr.apple.com/.

QUICKDRAW 3D. Version 1.5 of Apple's popular standard for 3-D data adds support for rendering plug-ins, allowing users to select third-party rendering engines when displaying 3-D objects. For example, LightWork Design will offer LightWork Classic Renderer, which supports reflections and anti-aliasing, providing a more photo-realistic look.

Version 1.5 also supports surface picking, which will enable applications that support QuickDraw 3D to paint on a 3-D object. Support for trimesh geometry will allow applications to double or triple rendering speed and will increase the speed of QuickDraw 3D hardware accelerators.

To get your copy of QuickDraw 3D 1.5, which should be available by the time you read this, go to http://quickdraw3d.apple.com/.

QUICKTIME CONFERENCING. Version 1.5 delivers a significant speed increase and now supports audio and even limited videoconferencing over 28.8-kbps modems. If you're using a faster connection, such as ISDN, Apple claims that you will get video throughput of up to 25 frames per second with this version.

To help accelerate its admittedly sluggish acceptance rate, QuickTime Conferencing 1.5 comes with Netscape's CoolTalk for Mac 1.0, which enables a QuickTime Conferencing user to talk with anyone using any videoconferencing software on any platform — as long as it also supports CoolTalk.

QuickTime Conferencing 1.5 should be available for downloading by the time you read this; go to http://qtc.quicktime.apple.com/.

FUTURE TECH

Future Version of Mac OS to Run System 7.5 Apps in Virtual Machine

APPLE WILL CREATE a System 7.5 "compatibility box" for its next-generation operating system, sources said. The upshot is that whatever OS replaces Copland may be more compatible with current software than the previous Mac OS 8 design.

The company reportedly has committed to making a so-called virtual machine — software that will run the entire System 7.5 environment — within its new OS. As a result, sources said, System extensions that would have broken under the previously announced Mac OS 8 are likely to work. Apple had earlier told developers that Mac OS 8 would be incompatible with extensions.

Apple already possesses a Mac OS virtual machine, Macintosh Application Environment 3.0, which was announced at Comdex/Fall '96 in November, runs System 7.5 plus most Mac programs and extensions on UNIX workstations. However, a new virtual machine may not be ready in time for the first release of Apple's future OS. Apple may introduce other technologies first, including enhanced support for Sun Microsystems' platform-independent Java language.

Many elements of Apple's OS plans are not yet set, sources said, but the goal remains a modern OS that Apple can bring to market quickly with preemptive multitasking, protected memory, and symmetric multiprocessing. Apple reportedly is negotiating with Be over whether to adopt some of that company's BeOS technology. Sources said Apple expects to announce its new OS strategy at the San Francisco Macworld Expo in January. Apple declined to comment. / STEPHEN HOWARD AND THE MACWEEK STAFF
NEW & NOTABLE
SOFTWARE
Poser 2. This upgrade to the popular 3-D figure-modeling and -rendering application now lets you animate figures by using keyframes and inverse kinematics. Body parts can be swapped with imported 3-D objects and individually sized. Other bonuses include improved import/export features and a collection of ViewPoint models. $240; upgrade, $69. Fractal Design: 800-325-1270 or 480-430-4200; http://www.fractal.com/.
Macconomy 2.8. In this new version, this multiuser job-costing/business-management system has improved access controls, allowable billing controls, and inventory tracking. A new integrated contact-management module lets you track contact history for each job. $9,500 and up. Macconomy NE: 508-460-8337; http://inet.uni-c.dk/~macconomy.
IsoDraw 4.0. More than 50 new features beef up version 4.0 of this vector-based technical-illustration program, including perspective-projection tools, fills, hot spots, and parallel paths. A new API lets programmers create plug-ins, customize menus, and enhance tools. $3,600; upgrade, $595. The IsoDraw Company: 408-260-3450; http://www.isodraw.com/.
TeamFlow 4.6. This charting- and document-management network software is now cross-platform and Internet-enabled. Five-user network license, $995; unlimited users, $4,900; upgrade, $89 per user. CFM: 800-647-1708 or 617-275-5258; http://www.teamflow.com/.

FIRST LOOKS
QuickMail Pro: Familiar Look for Internet Mail

IF THE PLEASANT "ping" of an incoming message or the easy-to-use interface of QuickMail is your idea of e-mail nirvana, you'll probably like QuickMail Pro, CE Software's POP-mail client software. If you're a power user, though, QuickMail Pro may not be up to the standard set by other POP tools.

QuickMail Pro is fundamentally an update of CE Software's familiar LAN-mail application. The address book and preferences dialog box are improved (thank goodness), but everything else looks and feels like the QuickMail of old.

Creating, sending, and reading mail are a snap. So is adding a new user to your address book. After you enter a user's name and e-mail address, QuickMail Pro will automatically choose the correct message format and enclosure-encoding method when you select the user's computer type from a pop-up menu — a unique feature that'll be invaluable to e-mail novices.

As attractive as QuickMail Pro seems on the surface, the software suffers from the same limitations as its LAN sibling and doesn't match other POP client software's capabilities. For example, MailManager (which lets you forward, file, and reply to messages automatically) is quite limited: You can filter a message according to only one of three criteria. MailManager also copies, rather than moves, files to messages to their intended destination.

New e-mail users and fans of QuickMail may take to QuickMail Pro, but it's doubtful that admirers of Qualcomm's Eudora or Claris E-mail will want to switch — and MailManager will frustrate even QuickMail diehards. / SHELBY BRISBIN

Navigator Is Dead; Long Live Navigator

IF YOU THOUGHT the browser war would go on forever, think again. Netscape has announced that it will make Navigator just one small piece of a larger software suite: Netscape Communicator, a suite of communication apps that will take on not only Microsoft Internet Explorer but also groupware products such as IBM’s Lotus Notes.

Navigator isn't going away, however. As part of the Communicator suite, version 4.0 will offer support for style sheets, fonts, and precision layout controls that will let HTML authors have unprecedented control over how their pages appear on screen. Netscape also promises improved support for plug-ins, including the ability to automatically download and install a plug-in when a page requires it.

Other items in Communicator include Messenger. e-mail client software that supports both the POP/SMTMP and IMAP protocols and that has an integrated address book, a spell-checker, and filtering capabilities; Collabra, a newsgroup reader designed for intranet discussion areas; Composer, a WYSIWYG HTML editor; and Conference, a teleconferencing application. A "professional edition" of Communicator will add support for group scheduling and shared calendars. Netscape says Communicator will be available for the Mac as well as for Windows and UNIX platforms, but the company has not indicated if some features might not initially make it to the Mac — as with past Netscape software releases. 415-937-3777; http://home.netscape.com/.

CONS: MailManager is severely limited, dialog boxes are modal and heavily layered.

Look familiar? QuickMail Pro's main Internet-mail window is almost identical to that of QuickMail's LAN version.

Brita Wheeler
Internet Explorer 3.0: Microsoft’s Navigator Killer?

AT FIRST WE JOKED that the original Microsoft Internet Explorer Web browser was merely a lure to help sell Windows 95 to the masses. However, when a Mac version of Internet Explorer 2.0 was released, we rated it higher than Netscape Navigator 2.0 (“Web War,” July ’96, page 62). Then Netscape introduced Navigator 3.0 — Internet Explorer 2.0 lagged behind in three key areas: support for frames, JavaScript, and Java. The ability to display frames was added in Internet Explorer 2.1; now version 3.0 adds support for Java and JavaScript. In terms of crash resistance, Internet Explorer’s Java support seems to be no worse than that of Navigator 3.0 — which isn’t saying much.

Notable in Internet Explorer 3.0, Beta 1, is added support for two new HTML features: cascading style sheets and floating frames. Cascading style sheets allow Web authors to specify fonts, colors, margins, indents, and various other style information for Web pages or entire Web sites. Floating frames let authors embed HTML pages within other HTML pages, just like placing images. Most noticeable in Internet Explorer 3.0 are its customizable tool bars: Drag a hyperlink to a tool bar, and Internet Explorer automatically adds it as a new button.

Although Internet Explorer supports a host of video and audio formats without requiring a plug-in, the beta version we tested couldn’t play items on pages designed to use plug-ins. We’re also disappointed that file downloads take place in the browser window itself rather than in a small daughter window, à la Navigator.

On the whole, however, Internet Explorer 3.0 has the potential to leave Navigator 3.0 in the dust. It’s small (less than half the size of the Navigator 3.0 application, with less than half the RAM requirements) and fast, was written especially for the Mac OS, and remains compatible with Netscape Navigator while adding support for exciting new HTML features. / JASON SWELL

Sony Creates the Ultimate DTP Display

YOU MAY NEVER BE SATISFIED with your current monitor again — especially if you’re a DTP professional — after you take a look at a display system built around Sony’s new wide-screen 24-inch Trinitron CRT. Sony’s GDM-W900, the first monitor based on this new high-resolution “bottle,” will be able to display 1,920 x 1,600 pixels in a 16:10 aspect ratio — enough room for QuarkXPress or Adobe PageMaker users to display, side-by-side, two WS1840 NG 8.5-x-11-inch pages with room to spare for control palettes and desktop icons.

In addition to its sheer size, the new tube’s innovations include a variable-width aperture grille (.25 mm in the center and .28 mm at the edges) and a tungsten-imregnated cathode-ray gun that improves focus by doubling the electron beam’s density while tightening its width by over 30 percent.

When the GDM-W900 appears in early 1997, expect it to cost around $5,000 with cable and Mac adapter. That’s not cheap, but compare this price with that of Sony’s first attempt at a wide-screen desktop monitor, affectionately code-named Shamu, which appeared a few years back — that leviathan weighed in at a cool $30,000. / BK MYSLEWSKI

IN BRIEF

Apple Adopts IMAP

APPLE PLANS TO INTEGRATE the fast-growing e-mail standard Internet Mail Access Protocol (IMAP) in future Mac Internet-mail products. IMAP servers provide more control over e-mail by first delivering only mail headers so that users can select which messages to download. Also, the server retains message copies even after download to safeguard against data loss. http://www.apple.com/. / BROOKE C. WHEELER

SGI Power Moves to Mac

SILICON GRAPHICS VETERAN Vertigo Technology is bringing Vertigo 3-D software to the Mac in its first move to the desktop market. Based on Pixar’s powerful RenderMan technology, Vertigo sports a familiar Mac interface, support for QuickDraw 3D, and seamless movement of scripts between SGI workstations and Macs. $888. Vertigo Technology: 604-684-2113; http://www.vertigo3d.com/. / SCHOLLE SAWYER

Easy Internet Access


DVD Gets Real

SKEPTICS TAKE NOTE: Digital Versatile Discs (DVDs) are coming soon. Compact-disc manufacturer Kao Infosystems and digital-production house Pacific Coast Sound Works have opened a full-service DVD studio in Hollywood, California, that provides audio and video capture, editing and compression, mastering, replication, packaging, and shipping. Pacific Coast Sound Works can be reached at 800-423-2834 or 213-655-4771. / BROOKE C. WHEELER
NEW & NOTABLE
HARDWARE
Apple Color LaserWriter 12/660 PS. An optimized ROM, 16 MB of additional RAM, and PowerPC-native drivers make the 12/660 PS printer up to 30 percent faster than its predecessor. $6,000. Apple Computer; 800-776-2333 or 408-996-1010; http://www.apple.com/. Phase One PowerPhase. Capture superhigh-resolution images (up to 7,000 x 7,000 pixels) with this digital-camera back for medium-format cameras. It has light sensitivity equal to ISO 1,600 and flicker-suppression technology that eliminates the need for special studio lights. $29,990. Phase One: 516-757-0400; http://www.phaseone.com/. Agfa ePhoto 307. This new 24-bit, point-and-shoot, digital color camera lets you capture and store 36 to 72 images in two resolution settings: 640 x 480 pixels for printed documents and 320 x 240 pixels for Web pages, presentations, and e-mail. $599. Agfa: 800-685-4271 or 508-658-5600; http://www.agfa.com/. Epson PhotoPC 500. Smaller than the original PhotoPC digital camera, the 500 has improved optics, more storage capacity, red-eye reduction, and an optional LCD monitor for preview and playback. $499. Epson: 800-922-8911 or 310-782-0770; http://www.epson.com/. QMS 2600 Printer Series. These 20-ppm monochrome printers offer up to 1,200-dpi tabloid-sized output and edge-to-edge printing and can duplex-print letter-sized output. $1,999 to $5,999. QMS: 800-523-2696 or 334-633-4300; http://www.qms.com/.

FIRST LOOKS
Hewlett-Packard LaserJet 5Si Mopier: The Name's Dumb; the Printer's Smart
BEFORE WE APPLAUD the abilities of HP's new multi-talented workgroup printer, we must first flame the name: Mopier (rhymes with sl overhead, not dopier). According to HP, the LaserJet 5Si Mopier does not print, it creates - an unfortunate neologism for making multiple original prints. We welcome a device that marries the image quality and convenience of a laser printer with the speed and paper handling of a copier, but we feel duty-bound to protest HP's attack on the Queen's English.

Rants aside, our first look at the new LaserJet 5Si Mopier shows that using it can be a cost-effective way of increasing the productivity of a mid-sized workgroup. As its name implies, the Mopier is built on the solid foundation of a LaserJet 5Si MX, which got four mice in our review in April '96 (page 88). The Mopier shares with the 5Si MX a 600-dpi, 24-ppm engine; outstanding text quality and very good grayscale-image quality on tabloid, letter, and intermediate-sized paper; and the ability to accept print jobs from Mac OS as well as PC sources. To the 5Si's two 500-sheet auto-size-sensing paper trays and one 100-sheet multipurpose tray, the Mopier adds a 2,000-sheet tray; a duplexing unit; and - most impressively - five individually addressable output trays, a sixth tray for stapling A4 and letter-sized output, and a seventh standard-output bin.

In our preliminary tests, the Mopier froze once when bombarded by multiple network jobs but generally obeyed our complex print-handling commands after we decoded its somewhat arcane on-screen interface. Overall, we found the Mopier's ability to duplex-print, sort, and staple moderate-length documents a welcome relief from the long lines at MacUser's overwhelmed photocopier.


Rewritable CD-ROMs to Appear Soon
FIVE INDUSTRY HEAVYWEIGHTS recently gave their blessing to a new technology - CD- ReWritable, or CD-RW - that aims to bridge the gap between current CD and upcoming ultra-high-capacity DVD (digital versatile disc) technologies. Jointly announced by HP, Mitsubishi/Verbatim, Philips, Ricoh, and Sony, the CD-RW physical format (also known as Orange Book III) coupled with the cross-platform UDF (Universal Disk Format) 1.5 file format, will let inexpensive CD-RW drives write, read, erase, and rewrite individual files to and from 650-MB phase-change compact discs, directly from the Finder. Expect CD-RW drives to be available in early 1997 for below $1,000, dropping quickly to sub-$500 levels as shipments increase; discs should cost under $25.

There's one major catch: Due to the much lower reflectivity of CD-RW discs, CD-ROM and CD-R drives won't be able to read them. To remedy this, the five-company consortium has endorsed a new drive-design specification, MultiRead, developed by Philips and HP. MultiRead drives will be able to read CD-ROMs and discs written by CD-R and CD-RW drives. Consortium members have pledged that their DVD drives will conform to MultiRead.

CD-RW technology will finally bring Finder-level read/write/rewrite capability to CD-ROM drives, but its life span will likely be limited to the few years before DVD becomes ubiquitous - early in the next millennium. Before then, MultiRead CD-RW drives will likely replace CD-R as well as Panasonic/Toray PD drives.

/~RIKMYSLEWSKI/
Web Wandering Reduced

Two new ways to navigate the World Wide Web make surfing more productive.

THE WORLD WIDE WEB is so vast that even the heartiest Web surfer can’t be expected to have visited even a fraction of its sites. Search engines and catalogs can be of some help, but which items they identify depends on the whim of the search engine’s algorithm or the catalog’s Category system.

To the rescue come trains and rings, two new navigation systems that make the Web a little more linear, a little more accessible — and a lot more productive. Both of the systems link related pages in sequence, like beads on a necklace. You move between them by clicking on forward or backward buttons that are common to each page.

The Rail (http://www.therail.com/cgi-bin/station) uses a railroad metaphor: Clicking on a railroad-track icon moves you between sites. The Rail provides several different trains: One of them takes you on a tour of high-tech sites; others lead through entertainment sites and even children’s sites — a great way to have your kids safely surf the Web.

Even more effective is the WebRing system (http://www.webring.org/), in which rings of sites are based on various subject categories. From the WebRing home page, you can begin exploring any ring, click through dozens of sites, and eventually end up where you began. Fortunately, there’s still some serendipity involved: WebRing’s categories are so broad that you’ll always find great sites you never knew existed. (A similar concept, the World Wide Web Tour [http://www.derossi .com/tour/tour.1tg] is the Internet version of a wine tasting: The order of sites has been chosen to provide a mix of the humorous, the serious, and the bizarre. Accessing it also is a great way to find fascinating sites you would never ever look for in a search engine.)

These systems don’t benefit just surfers — Webmasters of sites on a train or ring also benefit by attracting visitors who might otherwise have never found their site. All you have to do is join either system (or both — they’re not mutually exclusive) is fill out a form at a Rail or WebRing site and add the appropriate links to your Web page. /JASON SNELL

Creative Speed-Bumping

DON’T ATTEMPT TO TELL telecom engineers that telephone and ISDN lines have speed limits — they’re bound and determined to cram more and more data into every last bit of bandwidth.

For example, although Farallon’s second-generation Netopia ISDN modem ($495) boasts a 230-kbps serial port (double that of the original Netopia’s 115-kbps port), an ISDN BRI (Basic Rate Interface) maxes out at a mere 128 kbps. However, Farallon exploits the extra port power by using a 4-to-1 compression scheme from Stac Electronics, coupled with Apple’s PowerPC-native update to the SerialDMA driver (included in System 7.5.3 Update 2). According to Farallon, any Mac with GeoPort-enabled serial ports (all PowerPC-based systems, all AV Macs, and some Performas) and current system software will benefit from the Netopia ISDN Modem’s 230-kbps serial port. 510-814-5000; http://www.farallon.com/. Similarly, U.S. Robotics (USR) claims that its new x2 technology can trick a standard phone line into carrying a full 56 kbps — with two catches, however: First, both ends of the connection must use x2-compatible equipment from USR. Second, 56-kbps transfers are asymmetric: Although data coming from an Internet service provider or a corporate remote-access server moves at x2 speeds, data sent by the consumer-grade modem — that’s yours — moves at traditional V.34 speeds. USR expects to have x2 upgrades available in early 1997 for all Courier V.34 and 1 Modems as well as for V.34-based Sportster products that are purchased after August 15, 1996. Upgrade pricing has not yet been announced. 800-342-5877 or 847-470-2010; http://www.usr.com/. /SHELLY BRISBIN

The Geek Beat

INTERNET. Progressive Networks, Netscape, Apple, and approximately 40 other companies have lined up behind a proposed multimedia streaming standard, RTSP (Real-Time Streaming Protocol). Developed by Netscape and Progressive Networks, maker of RealAudio, RTSP defines the connection between streaming-media clients and servers and is making its way through the IETF (Internet Engineering Task Force) standard ratification process.

Pictorius’ new CGI Toolkit is a development environment meant for CGI-application (Common Gateway Interface) authors. The package also includes the company’s Web-server software and an HTML editor, all for $149. 800-927-4847 or 902-492-2880; http://www.pictorius.com/.

PageSentry and PageSentry Pro, from Maxum Development, keep tabs on Mac-based Web servers. Version 2.0 adds monitoring of FTP, SMTP (e-mail), DNS, and Telnet services and can notify an administrator or Webmaster of trouble via pager or e-mail. PageSentry ($149) and PageSentry Pro ($395) differ in the number of Internet services that can be monitored. 706-830-1113; http://www.maxum.com/.

JAVA. ActionLine might be called a WYSIWYG Java editor. ActionLine lets you drag and drop elements into a window to create Java applets that contain animation, scrolling text, or images. The applets can then be incorporated into HTML pages, for viewing with Java-enabled browsers. The introductory price is $99. Interactive Multimedia: 415-948-0745; http://www .imicinfo.com/.

CROSS-PLATFORM. Biscom has released Mac client software for its FAXCOM enterprise fax servers. FAXCOM for LAN and FAXCOM for cc:Mail server applications run on Windows NT, Novell NetWare, and other servers. Mac users can send faxes to the server from within their Mac applications. Prices begin at $495 for a five-user client pack. 800-477-2472 or 508-250-1800; http://www .biscom.com/. /SHELLY BRISBIN
PowerBook for the Disabled

Customized PowerBook 5300s with multiple controls find new life as innovative laptops for the disabled.

The first Mac OS system specifically designed for disabled users will make its debut in March. The Freestyle, from Assistive Technology Inc. (ATI), is a touch-screen-equipped tablet and is intended to accommodate people with either physical or learning disabilities.

Built on a PowerBook 5300 motherboard, the Freestyle has dimensions similar to those of the top half of a standard PowerBook (11.5 x 9.75 x 1.875 inches). Instead of having a keyboard and a trackpad, however, the Freestyle supports multiple control options, including voice and touch, and includes ports for switches and joysticks used by those people who cannot manipulate traditional input devices. Designed to fit a standard wheelchair tray, the Freestyle also has screen-magnification software and can be used as a Telecommunications Device for the Deaf (TDD).

Like a standard PowerBook 5300, the Freestyle contains a 100-MHz 603e processor, a 750-MB hard disk, 16 MB of RAM, a PC Card slot, and the usual complement of peripheral ports. The screen is a 10.4-inch active-matrix LCD. Unlike its PowerBook parent, the Freestyle also has a 6x CD-ROM drive and stereo speakers.

Apple's Knowledge Navigator authoring system and GUI, once touted as a potential Finder successor, surfaces in the Freestyle as a customizable environment that resides atop the Finder. Because it uses pictures to represent the environment and as hot links to applications, it's particularly well suited to the needs of users with learning disabilities. Users can customize the interface to represent their own physical surroundings and can open an application by touching a picture that represents it. The Knowledge Navigator can also be controlled by voice, using Apple's PlainTalk speech recognition, which comes preinstalled.

ATI and frogdesign developed the Freestyle with input from Apple's Disability Solutions group and will market the system to rehabilitation professionals, occupational therapists, and others who work with disabled clients. The base system is $4,995, with optional Knowledge Navigator applications available to support users with specific disabilities. 800-793-9337 or 617-731-4900; http://www.assistivetech.com/. /SHELLY BRISBIN

THE OFF BEAT

Solar So Good

That big, gaseous ball up there can give your PowerBook 1400 more energy — slip a PowerCover solar panel into your 1400's BookCover. The panel provides up to 3.3 watts of energy, which can fully recharge the battery in 12 hours. The more direct sunlight, the better. A PowerCover may be just the reason you need to schedule your next business trip in an equatorial paradise. Keep It Simple Systems: 800-327-6882 or 408-412-3359; http://www.wildwestweb.com/. /NANCY PETERSON
Easy Web Multimedia

XtraNet plug-in for Macromedia's Director eases Web interactivity.

MULTIPLAYER GAMES, Web-savvy CD-ROMs, interactive chat rooms — the Web is about to become a much more multimedia-rich place, thanks to XtraNet, a new $399 plug-in, or Xtra, for Macromedia's Director. XtraNet lets developers use Lingo (Director's scripting language) to add interactive features to multimedia projects that could previously be developed only by using complex C++ code, and such projects can be made accessible through popular Internet browsers such as Microsoft Internet Explorer and Netscape Navigator.

Royalty-free XtraNet adds support for common Internet protocols such as HTTP, FTP, and SMTP to Director-made projects. Using Director and XtraNet, a developer could, for example, create a CD-ROM that automatically calls a Web site to upload or download new information or could develop a science CD-ROM for students and a teacher to share over an intranet. As the teacher shifted a slide on a virtual microscope, the server would update what the students saw on their screens.

If you're worried about overloading the server, XtraNet can also help by letting users hook up with one another directly. XtraNet includes a special protocol that lets gamers meet on the server, disconnect, and then talk directly through their own machines.

To take advantage of XtraNet on the Web, you must download both the XtraNet and Shockwave browser plug-ins. You can find demo games at developer Human Code's Web site (http://www.humancode.com/). For more information on these and other models, call 800-755-3033 or 714-833-6233. 

CD-ROMS

Country, Jazz, and Monkees Art

ALL MUSIC FANS SHOULD check out these three new releases, each linked to a corresponding Web site and each from Graphix Zone: 800-828-3838 or 714-833-3838; http://www.graphixzone.com/.

WILLIE: THE LIFE AND MUSIC OF WILLIE NELSON. Don't ask why, but there's now a CD-ROM devoted entirely to Willie Nelson's life and music. For example, did you know that he wrote Patsy Cline's classic "Crazy" and almost sold it for a hundred bucks? Hungry once, Willie? Although his singing voice can be more than irritating, the CD-ROM is full of tidbits tracing the four decades of his career. Thankfully it doesn't take that long to wade through the disc.

UNDER THE COVERS •. If you wishfully sigh when you hear the words "Haigl Ashbury," you're sure to puddle up over this exploration of rock-and-roll history as told through album cover art. Crosby Stills & Nash, The Doors, The Monkees, and others are featured through rare photographs and interviews — including one with country-styled crooner Dan Fogelberg.

HERBIE HANCOCK PRESENTS LIVING JAZZ. By far the richest of the three titles, Herb's disc offers not only some rare performances by Charlie Parker, Miles Davis, and Coleman Hawkins but also a comprehensive history of America's only true native musical form, jazz. The interface is truly funky — in the best possible sense — and a wonder to experience as you roam from Storyville in New Orleans to the South Side of Chicago. /LAMONT RIDGELL
Breaking the Speed Barrier

MacUser Labs takes an exclusive look at Power's prototype 300-MHz system.

POWER COMPUTING has done it again. The first company to ship a 225-MHz Mac OS system, and then the first to ship a 240-MHz one, has developed a prototype system that hits the 300-MHz mark. 300 MHz! Eat your heart out.

According to IBM and Motorola's PowerPC road map, 300-MHz chips weren't due until the end of 1997; now it looks as if they may arrive as much as a year early. Although we've seen demos of Exponential's 500-MHz X704 chip (see "PowerPC Speeds Increase Exponentially," January '97, page 19), systems based on those chips aren't expected to ship until well into 1997. Part of the delay — the chips themselves are expected to be ready by the end of 1996 — is that chips that fast can't fully flex their muscles with today's logic-board designs. To take advantage of 500-MHz chips, system vendors need to design logic boards with much faster memory buses than are currently available on Mac hardware. To some extent, this is true of 300-MHz processors too, but by pushing one of its existing logic-board designs to the limit, Power has been able to take advantage of the higher clock speed.

Road Test

When MacUser heard the news of Power's new system, we couldn't resist the temptation to rush over to Power Computing's Cupertino office and test a prototype (the system is not yet shipping). And test it we did, with our brand-spanking-new version of MacBench, the industry-standard benchmark suite for measuring the speed of Mac OS systems (see the "Introducing MacBench 4.0" sidebar).

Before you get too excited, we should tell you that the processor in Power's new system isn't a top-of-the-line PowerPC 604e, the chip at the heart of Power's high-end PowerTower and PowerTower Pro systems. Rather, it's a 603e, like those in the company's low-end PowerBase models.

But a 300-MHz 603e is anything but low-end. On MacBench 4.0's Processor test, the PowerCenter 300 (the tentative name for Power's new system) bested what was hitherto the fastest Mac around — the PowerTower Pro 225 — by more than 5 percent (see chart). This system really packs a wallop. And Power plans to outfit it with high-speed graphics hardware and a fast SCSI bus to boot.

It might seem that Power would debut the new chip in models aimed at publishing, video, and multimedia professionals. Not so. The plan is to roll out this new processor in midrange systems for the business market. And they'll come with a price to match. Expect the PowerCenter 300 to enter the market at under $3,000, rather than in the $4,000- to $5,000 range of the PowerTower Pros. Power also plans to ship the PowerCenter in 240-MHz 603e and 275-MHz 603e configurations.

Power Computing hopes to demo its new speed demons at Macworld Expo in January and to begin shipping them to customers sometime in the first quarter of 1997.

Speed Racers

To see how these new 240-MHz and 300-MHz systems stacked up (a 270-MHz system wasn't available), we compared them with some of Power's PowerBase, PowerTower, and PowerTower Pro models. The results are an intriguing study in how different aspects of a Mac system's design can affect processor performance — just the type of thing MacBench excels at revealing.

For example, the PowerCenter is based on Apple's Catalyst logic-board design, which is also the basis of the Power Mac 7200/120. But whereas Apple runs the memory bus on the 7200/120 at 40 MHz, Power has pushed its speed to 60 MHz on its new models. That means data can move between the processor and RAM 50 percent quicker, so the processor can be more productive. And that translates to better performance for users.

You can see the impact of memory-bus speed by comparing the PowerCenter 240's Processor Score with that of the PowerBase 240. Both systems employ 240-MHz 603e processors, but the PowerCenter 240 has a 60-MHz bus and the PowerBase 240 has a 40-MHz bus. The faster bus yields a 38-percent speed improvement. (The L2 cache of the PowerCenter 240 we tested is twice as big as the standard PowerBase 240 configuration — 1 MB versus 512K. This also affects processor performance.)

Introducing MacBench 4.0

This issue of MacUser inaugurates MacBench 4.0, the latest version of our industry-standard Macintosh benchmark suite, developed in conjunction with the Ziff-Davis Benchmark Operation (ZDBOp).

Like previous versions, MacBench 4.0 lets you easily measure the speed of the processor/RAM, FPU, disk, graphics, and CD-ROM subsystems of Mac OS systems. But there are key changes in MacBench 4.0:

Scores. Like MacBench 3.0, this release produces results normalized to those of a baseline machine. But to keep up with the changing market landscape and to accommodate a new publishing—graphics test, we added a 2-MB VRAM card to the last version's Power Mac 6100/60 baseline machine. Scores are set to 100 rather than 10 as in the past. Because of the many differences between MacBench 4.0 and 3.0, there's no valid way to compare the scores of the two versions, which the different scoring systems should help emphasize.

Graphics Test. MacBench 4.0's main graphics tests — both regular and publishing — use a new ZDBOp technology, playback: Proprietary ZDBOp tools let developers record the QuickDraw calls a series of applications made and then play them back. The result is that when you run MacBench 4.0's graphics tests, what you see looks as if the actual applications are running.

Video Tests. The new full-motion-video tests in MacBench 4.0 involve any video hardware and drivers plus the codec. They include clips for the CinePak and Motion JPEG-A codecs as well as an uncompressed clip and the ability to run a clip of your own. You can run two tests for each clip: The Maximum Frame Rate test plays the movie as quickly as possible without sound. The Percent Frames Played test plays the clip with sound at the correct speed and records what percentage of the frames the system was actually able to play.

CD-ROM Test. MacBench 4.0 also includes an improved CD-ROM playback test that is more like running typical CD-ROM applications. One consequence of this change is that the test is much less sensitive to CD-ROM caching than MacBench 3.0's CD-ROM Mix test.

You can check all the tests out by getting your own copy of the benchmark suite. To request a CD-ROM, send $5 ($6 Canada; $7 International) to Ziff-Davis Benchmark Operation, 1001 Aviation Parkway, Suite 400, Morrisville, NC 27560, Attn: Distribution Coordinator. Or download an abbreviated version from http://www.zdbop.com/.
You can see a similar bus-speed effect if you compare the Processor scores of the PowerTower 180e and the PowerTower Pro 180. Both use the same processor, a 180-MHz PowerPC 604e. However, the PowerTower 180e, like the PowerCenter 240 and 300, is based on the Catalyst architecture and also has a 60-MHz memory bus. Ironically, the PowerTower Pro, which is based on Apple’s high-end Tsunami logic-board architecture (on which the Power Mac 9500 is also based), is limited to a 50-MHz bus. (Actually Power pushes it just a hair past 50 MHz; the PowerTower Pro 180 has a 51.4-MHz memory bus.) The result: The PowerTower 180e outruns the PowerTower Pro 180, by about 6 percent.

As Power puts the final touches on its new PowerCenter models and gets closer to shipping them, we’ll bring you a more complete report on their capabilities. In the meantime, if you’d like to see a full set of MacBench 4.0 scores for systems currently shipping from Apple, Motorola, Power, and UMAX, we invite you to take a look at our updated online CPU Report Cards at http://www.zdnet.com/macuser/cpu.html. / HENRY BORTMAN

**TAKING THE LEAD / a Power prototype passes its peers**

Using our new MacBench 4.0 Processor test, we found that the prototype PowerCenter 300 we tested edged out the PowerTower Pro 225, the previous holder of the Fastest Mac OS System title, by more than 5 percent. MacBench 4.0 scores are relative to those of an Apple Power Macintosh 6100/60, which scores 100 on all MacBench 4.0 tests. This baseline system contains a PowerPC 601 processor running at 60 MHz, a 30-MHz memory bus, and no L2 cache.

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- **Best performer in test**
HEARD ON THE NET

"You know the 'Shutdown' DA, which Apple includes with System 7.5? Make a copy, and put it in 'Startup Items' in your System folder."

— A cruel prank from Ben Running's Mac Hacks page (http://www.skidmore.edu/~brunning/machacks.html)

Mouse Improvement

GOOD INTERFACE DESIGN and ease of use have always been Mac hallmarks, but even Apple doesn't have all the answers. Several OS enhancements have been conceived by shareware authors; in fact, Apple's own Find File started life as MacUser's utility of the month Find Pro III. Good shareware can make the Mac experience much easier and more efficient, as these low-cost items prove:

Richard C. Cardona's $5 Click there it is (★★★★★) keeps you from having to navigate your folder hierarchy from within Open and Save dialog boxes. Once you've installed the extension, clicking on any open Finder window automatically displays that folder's contents in the dialog box.

St. Clair Software's $25 Default Folder (★★★★★) adds a pop-up menu of recently visited folders to your file dialog boxes, along with several other useful dialog-box enhancements. Ted Sherrill's $5 Snap-To (★★★★★) automatically repositions your cursor over the default button every time you open a dialog box.

If you have a large monitor and keep a lot of Finder windows open simultaneously, Jouko Pakkanen's free TitlePop (★★★★★) may be just what you're looking for. It adds a pull-down menu to the title bar of each open Finder window, allowing you to bring forward any other open Finder window or currently running application.

And if you're tired of mousing across a 21-inch monitor to reach the other side of a Finder window's scroll bar, try Edward Voas' $10 DoubleScroll (★★★★★), which puts up and down arrows on both ends of scroll bars.

Left-out lefties and cursor cravers can try Mike Stith's free Lefty Cursor (★★★★★) or Wilhelm Platz's free Cursor Animator (★★★★★), each of which provides left-handed cursors — the arrow points to the right. Cursor Animator does a whole lot more than this, including letting you replace any of the standard system-software cursors (arrow, watch, text, crosshair, and plus) with static or cool animated cursors. (Download these files from http://www.zdnet.com/macuser/0297.html#online.) /JO/DI/NAA5

TOP OF THE CHARTS

SOFTWARE DOWNLOADS
1. System 7.5.5 Update / Latest Mac OS bug fix
2. Open Transport 1.1.1 / Updated Mac networking software
3. After Dark Online / Internet news screen saver
4. MacUser's Talking Mouse / The Talking Moose reincarnate!
5. MacUser's Clean Sweep / Scans your hard disk for junk

GAME DOWNLOADS
1. Escape Velocity / Amazing space adventure game
2. Alley 19 / More bowling fun than you can shake a pin at
3. Blackjack Deluxe / A card counter's dream
4. Grizzly / A fight game with an animal twist
5. Maelstrom / Classic space arcade shoot-em-up

Ranking based on download counts from MacUser's Software Central on the Web (http://www.zdnet.com/macuser/software/).

MACUSER UTILITY OF THE MONTH

The Reading Rodent Returns

MACUSER'S TALKING MOUSE was such a popular utility — at last count, over 30,000 people had downloaded it — that we've brought it back for more. This month's free MacUser utility is Reading Mouse, which reads to you, using Apple's PlainTalk technology, from text you paste or drag and drop from other Mac applications. A customizable animated character reads anything you give it and even highlights your text word by word or line by line as it reads, a great tool for people just learning to read, people with vision problems, or people who simply want to lean back and let someone else do the reading for once.

Written by Robert McNally, Reading Mouse is available, as of December 30, exclusively from MacUser's homes on CompuServe (GO ZMC;MACUSER), on the Web (http://www.zdnet.com/macuser/software/), and on America Online (keyword MACUSER).

MACUSER ONLINE
Web: http://www.macuser.com
AOL: keyword MACUSER
CompuServe: GO ZMC;MACUSER
Send letters to the editor to letters@macuser.com.
To subscribe to the MacUser Web bulletin, e-mail macuserweb@macuser.com, using the subject subscribe.
Now there’s a Pilot for the rest of us.

Pilot* is your automatic link to the personal info on your Apple® Macintosh® computer.

Pilot includes its own Personal Information Manager software that lets you edit, import and export info to and from your Macintosh.

Pilot stores thousands of addresses, phone and fax numbers, personal notes — you name it.

Touch here to see the day’s agenda. Make recurring meetings appear automatically.

Delete old records from your Pilot, and keep for future reference in an archive file on your Macintosh.

At about 4.5" tall, and 5.5 oz. and at $299* the new Pilot organizer fits your shirt pocket — and your budget. Yet it’s huge on functionality. But instead of telling you all it can do, we think you’d rather try it out yourself. To find out where to get your hands on one, give us a call at 1-800-881-7256. To arrange a demo, visit our web site at http://www.usr.com/palm.

Enter any word and touch “Find” to retrieve a stored item instantly.

It’s easy to add memory, upgrade software, or in the future, attach products like modems.

Prepare a To-Do list, prioritizing items by due date. Make items disappear as you complete them.

Take notes on the road, then later copy and paste them into programs like Word and Excel on your Macintosh.

Enter data once into your Pilot or Macintosh. Then press the HotSync® button to keep your Pilot and Macintosh up-to-date.

One touch automatically keeps the data on your Pilot safe and backed up on your Macintosh.

The one-touch organizer

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CIRCLE 143 ON READER SERVICE CARD
New OmniPage Pro 7.0 gives you the recognition you deserve.

OmniPage Limited Edition or OmniPage Lite is the OCR that came with your scanner. They give you basic OCR.

OmniPage Pro 7.0 integrates seamlessly with your favorite applications like Word, ClarisWorks and more. It even guides you through the OCR process using its AutoOCR Toolbar. All with the simple push of a button.

OmniPage Pro gives you almost twice the OCR accuracy with the same ease-of-use as OmniPage Limited Edition.

Upgrade now to faster, more accurate OCR.

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**Key Feature Comparison**

<table>
<thead>
<tr>
<th>Feature</th>
<th>OmniPage Pro</th>
<th>OmniPage Limited Edition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caere’s fastest and most accurate OCR engine</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>AutoOCR Toolbar for easy, one-button OCR processing</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Apple Guide gives you on-screen interactive help</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Preserves graphics in output text</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>OCR from within your favorite applications</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Retains original layout</td>
<td>✓</td>
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CIRCLE 99 ON READER SERVICE CARD
Home-system rivalries heat up, and users stand to win.

**THE ACTION HAS SHIFTED** on the Mac OS battlefield. After months of one-upmanship on the high ground, with the introduction of ever faster systems based on the top-of-the-line PowerPC 604e chip, competition is heating up on another plain — the home market. Two new systems based on chips in the less powerful (and less expensive) PowerPC 603e family appeared in time to vie for holiday-shopping dollars, and both make compelling choices: Apple’s latest Performa system, the monitorless 6360CD, runs at 160 MHz and appeals to the pocketbook with a great software bundle and an attractive price ($1,499 estimated street). The SuperMac 600/240 minitower ($2,295 list), meanwhile, offers impressive speed at 240 MHz plus expandability and lots of hardware extras in UMAX’s first home-oriented system — and what may be its first winning system design.

The Performa 6360CD and the SuperMac 600/240 share many features that make them good, solid systems for home use: Both ship with 8x CD-ROM drives, built-in 28.8-kbps data modems (with 14.4-kbps fax capability), and speakerphone/answering-machine software. Both come with 1 MB of video RAM on the motherboard, to deliver built-in video support for thousands of colors at a resolution of 600 x 400 pixels (or 256 colors at 832 x 624 pixels). Both come with starter software for instant connections to the Internet (the Performa via Apple’s Internet Connection Kit, the SuperMac via Earthlink Network Total Access). And both come with generous software bundles that include ClarisWorks; Intuit’s Quicken Special Edition; calendar and contact-manager programs; Web-authoring software; and reference programs, including an interactive atlas and Grolier Multimedia Encyclopedia.

**What Sets Them Apart**

With the Performa 6360CD, Apple wisely decoupled the computer from a bundled (or built-in) monitor, to allow better comparison of its systems against rival clones. Viewed in this light, the 6360CD stacks up respectably against its competitors. Its 160-MHz PowerPC 603e processor won’t break any speed records, but with its included 16 MB of RAM and a 1.2-GB Quantum IDE hard-disk drive, it runs basic home-productivity software and office-productivity programs easily, with respectable snappiness. Still, it’s no match for the SuperMac system: With its 240-MHz processor, 24 MB of RAM, and 2.1-GB IBM IDE hard drive, it beat the 6360CD’s scores by at least 50 percent on all our speed tests except those of storage subsystems — the hard-disk drive and CD-ROM tests. And it won the storage tests as well, albeit by a smaller margin.

The Performa 6360CD and the SuperMac 600/240 bested Apple’s low-end business-class system, the PowerPC 601-based Power Mac 7200/120, on our processor test. The 7200 admittedly is showing its age, and fire-sale prices (nearly as low as that of the Performa 6360CD) imply that it may be nearing obsolescence. Still, the test results suggest that these home machines might capably double as affordable office systems.

**Room to Grow**

The Performa 6360CD offers various expansion options, and installing them is a cinch, due to the slide-out tray that houses the logic board and internal peripherals. Unfortunately, though, most of the add-ons come only from Apple, so you can’t shop around for the best deal. Proprietary accessories include a hobby-quality video-capture card, the Apple Video System ($109), which installs into a Performa multimedia slot; two accessories for the Video System — a TV/radio tuner ($149) and Avid...
Cinema video-editing software ($459 expected); and a 256K Level 2 cache option. (The SuperMac C600/240 comes standard with a 256K L2 cache.)

The C600/240's closest competitor in terms of processing speed is the Power Computing PowerBase 240, which, like the C600, is based on a 240-MHz PowerPC 630e chip. The PowerBase system, which we awarded five mice in our October '96 issue ("Special Report: Systems for Home and Office Scream Past 200 MHz," page 41), differs from the C600/240 in two important ways. The PowerBase's graphics subsystem is faster than the C600's, because it uses a video controller chip that's newer and speedier than the Valkyrie chip found on the C600 motherboard (and on the Performa 6360CD board as well). And the PowerBase 240's hard-disk drive, an older-generation 5.25-inch Quantum Bigfoot SCSI drive, is slower than the IDE drive in the SuperMac system.

The Performa 6360CD has a single PCI slot, which holds only 6-inch cards. Its lack of support for full-sized (12-inch) cards seriously limits enhancement options.

The SuperMac C600/240 offers many more expansion options than the Performa, with three PCI slots that accept full-sized cards. These slots are mounted on a riser card that sits parallel to the motherboard with its slots facing downward. This setup positions the cards upside-down, with no real support underneath. Although we had no problem installing a card in one of these slots, we found ourselves wondering whether cards in this battlic posture might work themselves loose over time.

Beyond expansion cards, the SuperMac C600/240 offers an L2-cache expansion slot — which ships filled with a 256K DIMM and is upgradeable to as much as 1 MB. This marks a welcome break from UMAX's practice with earlier systems of soldering (typically inadequate) L2 caches to the motherboard, making it impossible to upgrade. The main processor is also upgradeable, although not by the standard means previously adopted by Apple, Power Computing, and DayStar Digital. In place of the standard processor-daughter card slot used by its competitors, UMAX has opted for a design that essentially calls for removal and replacement of just the main processor chip. This processor-upgrade design strikes us as troublesome: There's practically no chance you'll be able to choose among multiple vendors for C600 upgrade chips — UMAX will be the only source.

Bundles of Difference
We've come to expect loads of extra software from Performa systems, and the 6360CD doesn't disappoint. In addition to the items that both it and the SuperMac C600/240 include, it comes with more than a dozen other titles, among them a variety of children's educational programs (such as Edmark's excellent Thinkin' Things Collection 2 and Broderbund's The Amazing Writing Machine); Surfwatch, for limiting access to adult Internet content; two clip-art collections; electronic dictionaries for kids and adults; and Adobe's PhotoDeluxe image-editing program.

The SuperMac C600/240 falls short of Apple's software bonanza, but it makes up for it with a few hardware extras. The computer comes with a pair of multimedia speakers and also includes a Jabra Headphone, a combination earphone/microphone you can use for hands-free telephone conversations. These additions won't benefit everyone equally, but both are potentially useful additions to a home-office system.

The Bottom Line
The Apple Performa 6360CD, with its generous software bundle, is a good value at $1,499. Its limited expansion capabilities and relatively slow (and nonreplaceable) processor limit its flexibility, however. The UMAX SuperMac C600/240 is a speedy home system with a hefty bundle of its own that makes a very attractive package. Although three PCI slots make its expandability better than that of the Performa, the C600/240's unorthodox processor-replacement scheme makes upgrading something of an unknown quantity.

/ Jim Shat-Akin


WHAT'S THE DIFFERENCE, ANYWAY?

<table>
<thead>
<tr>
<th>Feature</th>
<th>Apple Performa 6360CD</th>
<th>UMAX SuperMac C600/240</th>
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<td>Bus speed</td>
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<tr>
<td>CD-ROM speed</td>
<td>8x</td>
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CIRCLE 30 ON READER SERVICE CARD
Pinnacle Micro Apex 4.6 GB

Fastest, highest-capacity optical drive ever.

IT'S BEEN NEARLY two years since Pinnacle heralded the Apex 4.6 GB with boasts that it would be the first magneto-optical drive as fast as a fixed-platter hard-disk drive. Well, the Apex has finally shipped — albeit in extremely limited quantities — and our testing indicates that the 5.25-inch cartridge drive lives up to that claim — to an extent. It is the fastest optical drive we've ever tested, and it is as fast as some older-generation hard-disk drives, at least on some tasks. The Apex 4.6 GB also offers an innovative front-panel drive-status readout — but the drive and its still-scarce cartridges come at a premium price.

Apex optical cartridges ($109 list) have the highest capacity of any cartridges currently available, 2.2 GB per side, formatted. They are not industry-standard, and Pinnacle Micro is the only source for them. The Apex can also read, write, and format 2.6-GB cartridges (1.3 GB per side), the current standard. It operates in much the same way as previous 5.25-inch optical drives, with motorized disk insertion and ejection. It connects to your computer via an included 25-pin SCSI-to-SCSI-2 cable and is internally terminated. You select the SCSI ID with a standard back-panel switch, and your selection is displayed on the front LCD panel when the drive is powered up. That's handy, but it would be helpful to be able to switch the ID from the front panel as well.

The front-panel display also reports whether write verification is on or off. It defaults to on, which ensures data integrity at the expense of speed. Even in this state, the Apex is faster than the Power Mac 6100/60's hard-disk drive. Turning write verification off, which poses a minor data-loss risk, boosts the speed of the Apex about 15 percent.

With write verification off, the Apex's speed does indeed rival that of older-model hard drives. Its score of 116 on our MacBench 4.0 Disk test indicates that the Apex is about 16 percent faster than the 250-MB internal Quantum hard drive that originally shipped in the Power Mac 6100/60. (The 6100/60 is used as MacBench 4.0's baseline system and is assigned a score of 100 on all tests). The Apex fares less well on our Publishing Disk test, which mimics data transfers performed by image-editing and desktop-publishing applications. But even though it can't match the hard-drive's speed on the Publishing Disk test, it outscores the previous speed champ among 5.25-inch optical drives — Pinnacle Micro's Vertex 2.6 GB (with write verification off) — by 25 percent.

The Apex is speedy enough to use as a startup drive, and we had no problem booting and running word-processing and spreadsheet programs from an Apex cartridge. The only noticeable difference between running the programs from an internal hard drive was the mildly annoying chattering sound the Apex makes when its cartridge is spun up. Despite that minor distraction, the Apex's speed was truly impressive.

Media: Mixed

Our experience with Apex media was mixed: One side of the cartridge Pinnacle Micro supplied us was defective and could not be formatted. We were able to set up and test the drive by using the cartridge's good side and the supplied Pinnacle Formatter utility. A full low-level format took an agonizing hour.

Pinnacle Formatter was easy to use and proved smart enough to distinguish between systems with and without SCSI Manager 4.3, which enables Mac OS systems to recognize volumes that have a capacity greater than 2 GB. On SCSI Manager 4.3-equipped systems, the utility's Auto Format feature creates a single volume of 2.2 GB. On non-4.3 systems, it partitions each cartridge into a 2-GB volume and a 200-MB volume.

The Bottom Line

The Pinnacle Micro Apex 4.6 GB offers capacity and speed previously unheard of among optical drives — in its write-verification-off configuration. It gets the nod for bulk archiving and can even serve as a backup boot drive. / Jim Shatz-Akin

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DiskWorks 3.0

All-purpose disk tool manages RAIDs, single drives.

**WITH DISKWORKS 3.0,** MicroNet Technology attempts to deliver the universal hard-disk tool set. It just may have succeeded: Although sometimes a bit tricky to navigate, the PowerPC-only DiskWorks provides the disk-formatting tools, SCSI-mode-page-tweaking capabilities, and support for RAID levels 0 and 1 of FWB's RAID Toolkit ($299 list). DiskWorks rolls in some nifty disk-optimization software and delivers the whole package at a comparable price.

When you launch it, DiskWorks polls all SCSI buses for devices and displays available devices as icons in a grid: SCSI channels (up to 6 of them) are represented as horizontal rows, and SCSI IDs (as many as 15 per channel) are represented in columns. This arrangement is easy to understand, but we were annoyed by the window you must use to view the grid: Its width can expand only in increments of 192 pixels, so you can't maximize it to make the most of your monitor's real estate.

To test, tune, or format a drive, you click on its icon in the grid and then select one of four labeled buttons: Auto Setup (which automatically creates a single HFS partition on the drive), Mount/Unmount, Analyze (which, somewhat confusingly, also accesses the tuning module), or Erase.

Creating an array is similarly simple: You use a marquee-style tool to create a box around adjacent drives in the grid — either within the same channel or spanning two channels. This procedure involves a dialog box that gives you access to DiskWorks' robust disk-partitioning capability: You click on icons to choose among normal HFS partitions, RAID 0 (striped) partitions, and RAID 1 (mirrored) partitions. You can specify that both disks make up a single volume or, using simple drag-and-drop, designate different partitions on the array as HFS, RAID 0, or RAID 1. The partitioning tools can even turn a formerly mirrored RAID 1 partition back into a normal HFS partition in the (unlikely) event that one of your mirrored drives fails.

Large-site managers will love DiskWorks' copying utility, which allows one SCSI volume to be simultaneously copied to as many as six devices: When these devices are each connected to their own SCSI host adapter, copying happens asynchronously in parallel — in other words, really fast.

**Tools for Tuning**

DiskWorks comes with a comprehensive performance analyzer that measures seek time, data throughput at various block sizes, and I/O per second. You are able to isolate particular block sizes for observation and even confine testing to the inner, middle, or outer zones of a disk.

In addition to providing direct access to SCSI-mode-page settings, DiskWorks features a tuning module that automatically tweaks SCSI mode pages (hardware-configuration settings for parameters such as write verification, disk-block sizes, and cache controls). You can optimize disks by using preconfigured profile settings MicroNet provides or use DiskWorks' autotuning function to make your own custom profile. The tuning module has four degrees of precision: The coarsest setting provides a tune-up that takes a few minutes, and the finest setting begins a session that can take several hours — even days, depending on the SCSI-mode-page permutations the drive supports. Once you've tuned a drive, you can save its optimized settings and apply them to other drives of the same type.

DiskWorks' tuner works on drives formatted by any vendor's drivers. But MicroNet's DiskWorks driver contains a profiler that logs the number of I/O transactions of various block-size ranges. You can use the driver for a while, extract its transaction-log data, and then use it to tell the tuner what block sizes to optimize for.

MicroNet says DiskWorks' tuning module yields maximum benefit when you're tuning arrays — particularly arrays set up across disparate drives. (Such arrangements are rare in our experience, but it's easy to imagine the need for one if a drive gives out during a critical project.) We found the tuner's value to be marginal at best on single drives, even at the highest degree of precision: We were able to improve MacBench 3.0 disk-test scores by 2 or 3 percent on an Omega Jaz drive but gained nothing whatsoever on a pair of randomly chosen hard drives — an APS drive based on a Micropolis 2-GB mechanism and a MicroTech Blue drive built around a Seagate 3.4-GB mechanism. The picture didn't improve any when we raised the drives' potential throughput by hooking them up to Fast SCSI-2 host adapters. The drives' scores did improve on the faster bus, but tuned and untuned results scaled equally — and were virtually identical even when the drive was tuned for a variety of transfer sizes.

DiskWorks' tuning effectiveness is no doubt dependent on how many SCSI mode pages the drive you're tuning supports. The speed improvement you'll see also depends on how efficiently the drive's original driver was adjusted for the kind of work you do.

We're not saying that DiskWorks isn't able to improve drive speed significantly, but we weren't able to substantiate MicroNet's claims of up to 30-percent improvement in single-drive speed.

**The Bottom Line**

If you need a robust disk formatter and RAID 0 or 1 capabilities or are bent on squeezing every iota of speed from your hard drives, DiskWorks — and a little patience — may be just the prescription for you. / Jeff Fittekau and Jim Shatz-Akin

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CIRCLE 10 ON READER SERVICE CARD

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Fractal Design Detailer

Paint directly on the surfaces of digital 3-D objects.

FOR DIGITAL-3-D ARTISTS, creating 2-D texture maps and aligning them with the surfaces to which they will be applied is typically tricky, counterintuitive, and frustrating. It's a bit like painting a large decal while imagining how it will look when you place it on a plastic-model kit — with the additional complexity of 3-D geometries to worry about. Fractal Design Detailer simplifies this process by letting you paint directly onto a 3-D object with the same "natural media" tools that have made Fractal Design Painter famous. Although we ran into some rough spots, Detailer is a valiant (if imperfect) attempt to define the state of the art in the growing 3-D-software arena.

You start working in Detailer by defining (or importing) a 3-D shape. Detailer can create some basic 3-D primitives, such as spheres, cubes, and cones, but it's primarily designed to be used on 3-D geometry files created in other programs and saved in DXF or 3DMF format. We had a few difficulties importing files into Detailer: DXF files from auto-des-sys' formZ opened successfully only if models were saved as 3-D polygons; polylines and lines crashed Detailer. Less severe bugs arose with DXF files generated by Specular's Infini-D and even Fractal's own Ray Dream Designer, which ships in a bundle with Detailer. This incompatibility detracts from an otherwise outstanding bundle.

Detailer preserves links between imported 3-D objects and their image maps and can even smooth the surface normals of DXF files, but it discards any object hierarchies designated in the 3-D source program. This necessitates the unwieldy strategy of first creating 3-D objects in your modeling program, bringing them into Detailer for texture-map creation, and then placing the results back in the 3-D animation/rendering program for parent/child linkage and animation.

Once your 3-D object is in Detailer, you create a new texture map and specify the way in which the texture is to be "wrapped" around the object — cylindrical; spherical; or the critical "implicit," which conforms the texture to the shape of the target object. You also assign a surface type (color, reflection, bump, glow, or highlight) and start painting your texture. Detailer allows you to paint directly on a 3-D shape and also presents you with a window for more-traditional 2-D-texture-map editing. The 2-D and 3-D views are linked, so edits made in one appear instantly in the other.

Detailer includes most of the comprehensive Fractal Design Painter tool set and shares Painter's familiar (if often overly dense) interface. In fact, Detailer is basically identical to Painter in its painting functionality and includes such advanced Painter features as masks, layers, and the Image Hose.

In a welcome innovation, Detailer lets you import Photoshop files complete with multiple layers — a capability surprisingly not available in any other 3-D program for the Mac. You can also export textures created in Detailer as layered Photoshop documents (or any of numerous other popular image-file types). This gives designers a wealth of new possibilities in texture-map creation: They can use third-party Photoshop plug-ins to enhance textures generated in Detailer, and they can easily correct texture-alignment or-positioning problems by shifting layers in Photoshop.

Detailer's Model window, which displays the 3-D model to which surfaces and textures are being applied, can display a model in wireframe form or with Gouraud or Phong shading. Detailer is also one of the few Mac 3-D applications that uses depth cueing in its wireframe models — a model's wire frame gets darker the farther the model is from the camera, an incredibly useful feature we'd love to see in other mainstream 3-D applications. Any number of lights can be added to the Model window to better illuminate the 3-D object, and this extra illumination is very useful in previewing reflection maps, bump maps, and surface highlights.

In an interesting twist, Detailer lets you overlay a 3-D object's mesh onto a 2-D page (in the 2-D painting window), so you can size and position the object for placement on the page. This is handy for 2-D artists who want to put 3-D objects in their work, and 3-D artists will enjoy using it to create still scenes in which a model has surface features that differ from its main texture: It's easy to layer a "glass" cockpit over a "metal" airplane, for example.

The Dark Dimension

Detailer's multiple-undo capability (up to 32 levels) is welcome — as far as it goes. It applies only to painting functions; model manipulations — including changes in mapping options, lighting parameters, and 3-D-model positioning — can't be undone. Also, Detailer hogs memory: You need at least 20 MB of RAM to run the program comfortably and even more to increase the size of the 3-D-model window. Detailer allows you to export files directly from Ray Dream Designer into Detailer format. This ability is enabled by an included Designer plug-in that proved incompatible with the higher-end Ray Dream Studio, a surprising flaw.

An in-depth discussion of importing Detailer-generated textures into third-party 3-D-modeling and -rendering software is conspicuously absent from Detailer's manual.

The Bottom Line

Fractal Design Detailer is an exciting development for any creative or production artist working with 3-D. Having Painter's powerful tools in 3-D space is downright amazing, but Fractal is going to have to improve DXF support, and possibly even provide direct support for other native 3-D file formats, before Detailer becomes a must-have tool for many 3-D artists. / David Siedny and Nathan Moody

Mariner Write 1.3

New word processor proves feisty and nimble as well as affordable.

THERE'S A PLACE FOR feature-laden, heavy-duty word-processing software with all the bells and whistles money can buy, but for a sizable number of Mac users, that place is anywhere but their desktop. If you're among those who believe that small is beautiful and that more is less — Mariner Write, a new entry to the ranks of Mac word processors, may be the answer to your prayers.

For starters, it occupies only about 875K of disk space, consumes less than 2 MB of memory, and lists for a mere $69.95. On the basis of those statistics alone, Mariner Write will immediately impress some onlookers. But the program offers more than just its minimalist stats. It's a low-end word processor with a surprising amount of spank.

Mariner Write's interface is simple and uncluttered: A single tool bar provides access to the most-common formatting and file commands (which can also generally be accessed via menus and keyboard command equivalents). The bar also sports a status field that displays information about interface elements — pop-up menus, buttons, and so on — as you move your cursor over them.

Big-League Text Tools

As you'd expect, Mariner Write offers basic text-editing features, but it also throws in some capabilities usually seen only in high-end word processors. For example, in addition to giving you standard-text-selection methods, the program lets you Shift-highlight discontinuous blocks of text — a capability previously available only in Nisus Writer ($295 list). You can use Macintosh Drag and Drop to move or copy text, a capability Microsoft Word, for one, does not match. There are also tools that let you have page numbers and dates inserted automatically (either as text or as auto-updating fields) without working your way through multiple formatting dialog boxes.

Mariner Write lets you include headers, footers, and footnotes (but not endnotes) in your documents. You create each of these in a special editing window, but all are visible on the page when Page Layout View is selected.

As in other word processors, this page-layout view displays pages with their margins, headers, and footers. A draft mode called Standard View, which shows only body text, is also available. The program is fast enough that keeping a document in layout mode doesn't degrade speed substantially.

The text-formatting features of Mariner Write include style sheets and the standard capabilities found in any word processor, such as control of type style, size, fonts, kerning, and widows/orphans. Style sheets apply to paragraphs only (the program offers no character styles) and can be exported from one document to another. Mariner Write styles can include based-on and next-style information, so updating a family of related styles and formats is easy and automatic. The program distinguishes between superscript/subscript and superior/inferior text. The last pair not only raises or lowers text from the baseline but it also makes it a smaller point size — a thoughtful touch.

A bit less intelligent is Mariner Write's handling of multiple-column pages. You can create multiple columns, but the column setting applies to the entire document — you can't break a document into sections with various column settings.

Mariner Write lacks a drawing module — which is fine, given the lameness of most word-processor drawing tools — but it does import graphics in EPS, PICT, JPEG, or GIF formats. Imported graphics can be in-line (so they flow with paragraphs) or objects that float in rectangular windows that text wraps around. Irregular text wrap is not supported. Graphics can be hidden in a document to accelerate screen redraw.

Miscellaneous other features make Mariner Write appealing to a variety of users who have special requirements. If you're a PowerBook user, you'll appreciate the setting that minimizes disk accesses and creates an extrabold cursor. If you're in a production setting, you may be glad that Mariner Write is AppleScript-able. Multilanguage users will appreciate Mariner Write's support for WorldScript, including Kanji and right-to-left word processing.

Mariner Write lets you undo up to ten of your last actions. Through the use of Macintosh Easy Open and DataViz filters, you can open and save in several key word-processing formats: Microsoft Word 4.0 through 6.0, Microsoft Word for Windows 6.0, ClarisWorks 1.0 through 4.0, WordPerfect (Macintosh only) 2.0 through 3.5, and WriteNow 3.0 through 4.0.

Keeping software compact does entail some sacrifices. In the case of Mariner Write, you'll currently have to do without mail-merge, tables, endnotes, bookmarks, and outlines. Mariner Software plans to add mail-merge, a table editor, and endnotes in the near future. Some advanced features, such as outlining and text wrap around irregular objects, will probably never appear. The company seems to want to avoid creeping featureitis and program bloat at all costs. It's an admirable goal we hope it sticks to.

The Bottom Line

Mariner Write is an application worth trying. It meets low-end word-processing needs with an admirable set of capabilities and is a snap to learn and use. You can download a free software demo of Mariner Write at the company's Web site. If you test-drive it for a week, you may never go back to Microsoft Word. /Gregory Wasson

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Mouse Replacements

**Datadesk TrackBoard**

**Logitech Cordless MouseMan**

**Gyration GyroPoint Desk**

**Logitech TrackMan Live!**

**Port Presentation System**

A few pointers on picking a pointing device.

**AS IT WENT WITH THE FORD** Model T, so it goes with the classic one-button Apple mouse. When your original pointer finally clicks its last or a basic mouse won't do anymore, consider one of a new flavor of input devices. With perks such as programmable buttons, remote-control capability, or specialized designs, these pointers are smarter than the average mouse — and they may be right for you.

We test-drove five pointers, each offering a range of options not found in a standard Apple mouse, and weighed their strengths and weaknesses: Datadesk's TrackBoard is a small-footprint trackball/keyboard combination. Logitech's Cordless MouseMan is a mouse that replaces the traditional cable with radio waves. Gyration's GyroPoint Desk is a mouse that operates in the traditional desktop mode or, turned on its side, as a handheld pointer. TrackMan Live!, also from Logitech, is a remote control that uses radio signals. And Port's Presentation System is an infrared remote control with presentation software.

**Datadesk TrackBoard**

The all-in-one TrackBoard from Datadesk is a less expensive replacement for both keyboard and mouse, although it does require some trade-offs. Smaller than Apple's Extended Keyboard, it shares that model's basic layout but replaces the right-side numeric keypad with a built-in trackball that eliminates the need for a mouse (and mousepad).

The trackball is about the diameter of a golf ball — bigger than the original PowerBook trackballs but smaller than most stand-alone desktop trackballs. We found it acceptably responsive but not especially smooth. The trackball offers two preprogrammed buttons: The left performs single clicks; the right, double ones; both together, click lock. No extra software is required but no custom macros are possible either.

To save keyboard space, Datadesk did away with a few seldom used keys (such as Help and Home) and mapped them to other keys. You activate them with combinations of the Control, Option, and Command keys. Keys with nonstandard extra functions are coded with candy-colored caps; replacement gray keys are included in case you don't like the originals.

Datadesk offers a separate numeric keypad, the $50 NumPad. The NumPad plus TrackBoard is roughly the same length as an Apple Extended Keyboard, but adding a NumPad to the TrackBoard erases much of its price advantage: the TrackBoard's street price is roughly $100; with the NumPad, its price approaches that of the Apple Extended Keyboard ($175 list) plus mouse (roughly $30). Those with scant desk space may still want to consider the TrackBoard, but if you need a numeric keypad, stick with Apple's original.

**Logitech Cordless MouseMan**

Logitech's Cordless MouseMan replaces that pesky mouse cord with radio signals, by means of a receiver that plugs into your keyboard's ADB port. The pointer itself is an excellent three-button mouse, with smooth rolling and tracking and an ergonomic shape that will feel more comfortable than a conventional mouse's shape to most users. The mouse, which requires two AAA batteries, can be used up to 6 feet away from the receiver.

Logitech's MouseKey software, which installs a simple control panel, lets you program the Cordless MouseMan's three buttons to any arrangement of single click, double click, and click lock. You can also adjust sensitivity, tracking speed, click speed, and the like. Overall, the MouseMan is an excellent general-purpose mouse and is especially well suited for conference-room use, where users may want to share the computer controls.

**Gyration GyroPoint Desk**

The GyroPoint Desk, from Gyration, has two aims: providing a good desktop mouse and offering a pointer that works well in a presentation setting. Unfortunately, it's a great idea in an awkward package. The GyroPoint serves as a fine desktop mouse — with smooth, sensitive tracking and a comfortable egg-shaped design — and it also works in midair, using a nine-foot cord and a built-in gyroscope mechanism that translates your free-space hand movements into cursor movements.

This is fine in principle, but in practice, there are too many problems: The superlong cord gets in the way, and the gyro also takes some getting used to, so you can't just hand it to any visitor in your conference room. Worse, the GyroPoint's inner mechanism needs to be restabilized for four seconds when it stops responding correctly to your movements — a real flow stopper in presentations. The GyroPoint is fun for Web surfing while leaning back in your chair but is ultimately unnecessary.

**Remotely Appealing**

For presentations in which you need more-controlled remote access to your computer or laptop, the Presentation System, from Port, and TrackMan Live!, from Logitech, both offer appealing options. Both have small receivers that plug directly into your keyboard's ADB port, and both have sleek, lightweight handheld units.

Like Logitech's Cordless MouseMan, the
TrackMan Live! uses a radio signal to communicate between the remote and the receiver; Port's Mind Path Remote Control uses infrared light. Of the two technologies, the radio system in TrackMan Live! is more reliable. The Port system uses diffuse infrared light, which means — in theory — that it, like radio, should be able to bounce off walls or ceilings to get around objects. In fact, however, you can be up to 45 feet away from the receiver but must aim the remote carefully and accurately or your signal won't reach its target.

The Port handheld unit has five programmable buttons that call up presentation effects, a circular rubber disc that moves the cursor joystick-style, and a forward/back button for slide-show-style presentations. Port's Presentation F/X software offers a host of impressive effects, but you'll need to practice plenty before they become automatic. What's more, the software generated spurious "out of memory" errors.

The TrackMan Live!'s setup is similar to that of the Cordless MouseMan: Both run from a plug-in radio receiver, and both use the same MouseKey software to program key macros. The TrackMan Live! hand unit lets you stand up to 30 feet away from your computer and is simpler than the Port device, with just three programmable buttons and a trackball. The trackball is smooth and responsive but very small, and it induces trackball-thumb soreness after extended use.

The Bottom Line

New ideas nudge the basic one-button mouse out of the picture, but snazzy new features can give additional usability and extra headaches. Some options showcase definite improvements, but before you spend the money, take a test drive and decide what you must have and what you can do without. / Brooke C. Wheeler

Direct-To-Press

If you want to learn more about the most intriguing and burning topic in the print industry, then read the April issue of MacUser when the editors examine the direct-to-press process. Find out the pros and cons of doing direct-to-press, what kind of projects direct-to-press is good for, and how to prepare your files for it. There is also an overview of the different kinds of presses that can accommodate direct-to-press.

Color Management

This April in the Graphics How-To section, MacUser looks at how to use a colorimeter device for creating accurate color previews in order to make better design decisions. If you're a graphic designer, desktop publisher or pre-press professional, this report will definitely enhance your image.
Add-on Photoshop tools benefit pros, novices alike.

FROM GREENHORNS TO GUNSLINGERS who can perform complex channel operations in their sleep, all Photoshop users will find something for them in Extensis PhotoTools, a new set of extensions for Adobe Photoshop. The package consists of eight Photoshop plug-ins: PhotoBars, which places preconfigured or custom tool palettes on the screen whenever you launch Photoshop; PhotoType, an excellent set of tools for adding type to Photoshop images; Intellihance Light, a pared-down version of Extensis' Intellihance plug-in, for automatically correcting image problems; PhotoTips, a flash-card tutorial on Photoshop tricks and techniques; and four effects modules — PhotoBevel, PhotoEmboss, PhotoGlow, and PhotoShadow — that let you apply and interactively adjust bevel, emboss, glow, and shadow effects, respectively. All the PhotoTools plug-ins share a simple and elegant interface.

PhotoTools' most obvious feature, PhotoTips, is also its least essential: In its default mode, the application presents you with a different Photoshop-usage tip every time you launch it. We found this behavior annoying and quickly disabled it, but the Tips library, in which the same topics are listed alphabetically, serves as a handy help tool.

PhotoBars lets you create multiple custom tool bars and palettes with buttons for common Photoshop and PhotoTools commands. A menu containing a list of commands lets you build palettes manually by attaching any commands on Photoshop's menus to buttons. You can also use the SmartBar option, which "watches" you as you work and builds a set of buttons for all the commands you use. One of PhotoBars' handiest features is its ability to turn any Finder folder into a pull-down icon, which we found very handy for streamlining access to project files. The chief drawback of PhotoBars is the clutter that can arise when tool bars are added to Photoshop's own palette-heavy interface. Judicious use of PhotoBars may enable you to reduce palette count by consolidating tools from several Photoshop palettes into one master tool bar.

We wish the PhotoBars floating palettes, like Photoshop's own, could be collapsed to a smaller size, but they can only be hidden altogether or docked to any edge of your screen. Intellihance Light is a simplified version of Extensis' Intellihance 2.0 plug-in. Unlike the full Intellihance, it works only on RGB images and lacks scriptability. Like the full Intellihance, it boils down to a few simple menu choices the often confusing process of cleaning up bad scans. You select choices from pop-up menus to adjust contrast, brightness, saturation, sharpness, and despeckling and let Intellihance Light quickly spiff up your images. Like the other PhotoTools tools, Intellihance lets you name and save favorite settings for quick retrieval.

PhotoType, which provides much-needed improvement over Photoshop's rudimentary text-handling abilities, is the module that will make seasoned Photoshop users want to buy PhotoTools. It lets you enter text in a Photoshop layer, which you can view superimposed over your main image. Even better, you can track, kern, and resize type just as if you were working in QuarkXPress: Extensis has faithfully duplicated all of Quark's keyboard commands for type formatting. Once you've experienced the speed and ease of formatting type with PhotoType, you'll never want to go back to a Photoshop type dialog box again. PhotoType's screen redraw is a bit sluggish with anti-aliased type turned on, but you can easily temporarily disable this feature.

PhotoTools' other plug-ins — PhotoBevel, PhotoEmboss, PhotoGlow, and PhotoShadow — create the effects for which they're named. Each plug-in has a large preview window that reduces these often complicated effects to a few simple choices, letting you pick from pre-defined types of bevels, for example, and then use sliders to determine the size, contrast, and sharpness of the effect, along with foreground and background colors, lighting angle, and so on. On-screen previews show you exactly how your effect will look when you apply it.

An extracool touch PhotoTools shares with The Black Box 2.0, from Alien Skin, is that it can apply effects onto transparent areas of Photoshop layers, so you can easily create floating, embossed, or shadowed type in its own repositionable layer and let Photoshop blend the bevel into the background image. PhotoTools' effects modules are similar in function to those found in The Black Box, which lacks anything comparable to PhotoBars, PhotoTips, PhotoType, or Intellihance Lite. But even considering the effects modules only, PhotoTools' preview windows edge out The Black Box's: PhotoTools' windows are large, resizable, and zoomable, whereas The Black Box's are cramped and unwieldy.

The Bottom Line
Whether you're a Photoshop beginner or veteran, PhotoTools will let you churn out surprisingly sophisticated effects with a minimum of effort. PhotoTools avoids the flashier effects and Baroque interfaces of other, more expensive plug-in collections, yet, with its carefully designed feature set, offers more value for day-to-day use. / Eric Taub


![The PhotoBars plug-in in Extensis PhotoTools lets you add custom floating command palettes to Adobe Photoshop.](image-url)
Go through life with less baggage.

Introducing the MessagePad 130 with Newton 2.0.

The farther we go, it seems, the more we're asked to bring with us. The names and numbers of clients past and present, dates, times, and notes from countless meetings. Not to mention a way to get your e-mail.

The new Apple MessagePad 130 was designed to lighten your load by making it easier than ever to schedule work, take notes, send and receive e-mails and faxes—or hop on the Internet—from wherever you happen to be. Even in the dark, thanks to its backlit screen.

The Newton 2.0 operating system: learn less, do more. The award-winning Newton 2.0 provides a surprisingly familiar way of working that encapsulates all you do now in a simpler, more concise form. Instead of loading you with complex commands, Newton works the way you do. It even reads your handwriting.

Dozens of new and well-known applications, such as Now Contact, ACT!, Quicken, CompuServe, Meeting Maker, and Eudora Pro, are available for Newton, with more coming. Making it easy to transfer information to and from your PC.

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ChitChat

An effort to milk productivity from online chats proves futile.

CHITCHAT, A BASIC UTILITY from Mainstay Software, has a simple, if questionable, goal: It provides an ad hoc conferencing arrangement that allows you and networked cohorts to "talk" together — either figuratively, using text chat (and retaining a transcript), or literally, via voice transmission. It even allows you to exchange simple pictures during the conference.

ChitChat enables users to run an unlimited number of chat rooms (conferences), in which sounds and pictures as well as text can be exchanged. With the ChitChat server software running on any Mac, two or more users can start a conference, using the ChitChat client software. Unfortunately, the program runs only on Mac OS systems on AppleTalk networks, which limits its usefulness.

Just as in an AOL chat room, you type your comments in a two-line box and press the Return key to send the text to all conference participants. Sending a picture is as simple as clicking on the picture button in the conference window’s toolbar and dragging a PICT file into the Graphic window. (ChitChat doesn’t support other graphic formats.) To speak, you click on the Push to Talk button and speak into your microphone — you can adjust the quality of the outgoing sound to suit your connection: Ethernet, LocalTalk, or modem.

We were disappointed that ChitChat lacks the ability to transfer files. Although plenty of other applications exist for moving files from place to place, we feel that ChitChat would be a more useful business tool if participants could exchange files during conferences.

ChitChat is speedy. We found that sound was clear over an Ethernet network. ChitChat was also impressively fast at displaying a small picture to everyone in a conference, even when we used it over a 14.4-kbps ARA modem connection (employing ARA is the only way to use ChitChat via modem).

The Bottom Line

As a program that works only on LAN-based Macs, ChitChat is a bit limited and offers little value for the money. If you have a network, you probably already have an e-mail system such as CE Software's QuickMail or a collaboration tool such as Farallon's Timbuktu, each of which lets you create instant chat conferences. And, of course, there's the telephone or the real thing, the watercooler.

Carolyn Bickford and Shelly Brisbin

Now Startup Manager 7.0.1

Extensions-management utility now corrals plug-ins as well.

THE FIRST REAL COMPETITION against Casady & Greene’s popular Conflict Catcher ($55 estimated street) in the title fight for best extensions manager is Now Startup Manager (NSM). Originally available only as part of the Now Utilities suite ($89.95 list) — and still included in that excellent collection — NSM has been revved up and spun off into a stand-alone product. This new version manages extension conflicts as thoroughly as Conflict Catcher and also manages increasingly prevalent plug-ins such as those for Adobe Photoshop and Netscape Navigator. Unfortunately, concerns about reliability may keep Now's product from winning Conflict Catcher's title just yet.

NSM manages the bewildering number of extensions, control panels, and Startup Folder items found on nearly every Mac, and — like Conflict Catcher — it isolates and resolves conflicts among them through a trial-and-error process conducted over a series of system restarts. Also like Conflict Catcher, NSM lets you enable or disable startup files, modify their loading order, choose whether to display startup icons, create links between symbiotic files, and create startup-file groups.

NSM also lets you create a system profile, increase the system heap, view information about each startup file and its purpose, create multiple startup sets, and manage fonts. NSM's best feature — what really sets it apart from Conflict Catcher — is its handy ability to activate and deactivate not only startup files but also plug-ins for Adobe Photoshop, Adobe Illustrator, and Netscape Navigator.

Although NSM does offer something more than Conflict Catcher, it also lacks several of its best features. For instance, NSM doesn't let you stop a conflict-isolation test and save it for later resolution. NSM also doesn't have Conflict Catcher's password-security feature.

NSM shows great promise, but it's not as stable as Conflict Catcher. We encountered problems (all ultimately solved) with NSM on two out of the three Macs we tested it on. Now Software has squashed known bugs with a quick, free update, but some problems, such as incompatibilities with RAM Doubler 2.0, still persist on some Macs.

The Bottom Line

Even though NSM is innovative, we're sticking with the more reliable Conflict Catcher for now. You can decide for yourself, since Now Software's Web site has a free, fully functional demo of Now Startup Manager. / Gregory Wasson

Now Startup Manager 7.0.1, 5-user server software with client software, $99 (list).

Mange plug-ins and other startup files with Now Software's pumped-up Now Startup Manager.
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MovieStar

Basic video-editing program will appeal to hobbyists but not pros.

**Mixing and Matching** sound, animations, movies, and text for multimedia delivery on Web pages or videotape is made easy with MovieStar, from Intelligence at Large. Its simple controls lack the precision required for professional-quality output, but MovieStar is well suited for home or classroom use.

MovieStar lets you prepare and combine sound, still images, animations, and QuickTime movies for delivery over the Web or for output to videotape. The program makes it easy to create basic animations, which you can export as MIME, QuickTime, or animated-GIF files. MovieStar also offers basic software video- and audio-capture capabilities.

As you build a multimedia project, you view its elements as a series of superimposed layers, all visible simultaneously. You position elements within the project by dragging them or double-clicking to invoke settings dialog boxes that let you specify their size and position.

The program ships with a freely distributable Netscape Navigator plug-in that allows projects generated in MovieStar to begin playing on-screen before they’re fully downloaded.

To build an animation, you issue the Animate command and then drag a media object across the screen along the path you want it to follow in your animation. MovieStar records its movement and animates it. Although this drag-and-animate method is extremely easy, it is hard to control your dragging speed and direction, so you often get uneven animation.

One of MovieStar’s best features is the application’s ability to add anti-aliased text to any project, to quickly add impressive-looking titles or rolling credits to a movie. In addition, MovieStar lets you insert transitions between scenes. The latter are useful but limited to basic fades, zooms, and wipes. Apart from its aesthetic limitations, we found MovieStar 1.5 a bit unstable, with bugs in the text-scrolling, object-depth, and movie-output functions.

**The Bottom Line**

MovieStar’s tools are easy to use. They’re not precise enough for QuickTime professionals, but they’re well suited to hobbyists, teachers, and students. / David Biedny and Nathan Moody

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IF YOU SWITCH page-layout programs from Adobe PageMaker to QuarkXPress, you have to worry about more than retraining. In order to update or reuse PageMaker documents, you have to either continue supporting PageMaker or lay out your documents all over again in QuarkXPress. Now there's some relief, in the form of Markzware's $99 PM->QXP, an XTension that can import nearly all PageMaker documents, with layout intact, into QuarkXPress.

Once you've installed PM->QXP, you'll see PageMaker documents (created with versions 4.2, 5.x, or 6.x) in QuarkXPress' Open dialog box and can convert them to QuarkXPress simply by clicking on the Open button. You can even convert PageMaker templates, complete with master page layouts.

The time it takes to convert a PageMaker layout to its QuarkXPress equivalent depends on the size and complexity of your document, but PM->QXP was impressively fast in our tests. For instance, converting a single-page, three-column layout containing text and images took little more than a minute on a Power Mac 9500/132. PM->QXP automatically places PageMaker's free-form text containers and images into QuarkXPress' text and picture boxes. Fonts, text formatting, style sheets, and even image-cropping and -resizing settings are all maintained.

With PageMaker-to-QuarkXPress conversions in other utilities, graphics embedded in PageMaker files are often deleted or moved without link creation. PM->QXP handles this situation elegantly, by extracting embedded images, saving them in a Source folder, and reestablishing the links.

Not every conversion is perfect. PM->QXP couldn't convert images that had been placed into rectangle, ellipse, or polygon picture boxes by use of PageMaker's Mask feature. The XTension extracted such images and placed the picture boxes over them, leaving us to cut and paste or reimport the images. PM->QXP exports your PageMaker-generated tables of contents and indexes into QuarkXPress, but these will not update to reflect any changes resulting from slight differences in spacing between the QuarkXPress and PageMaker files. This can lead to inaccurate page numbering in your tables of contents or indexes.

The Bottom Line

Although not flawless, PM->QXP converts documents quite adroitly. With most conversions, the required tweaking is minimal — and the time it will save you is well worth the price. / William Harrel


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**Tektronix Phaser 350**

Solid-ink office printer rivals color laser printers.

**WITH THE PHASER 350,** its latest solid-ink printer, Tektronix aims to offer print quality and speed that match those of color laser printers — but at a much lower cost. The Phaser 350 succeeds in being economical: Its $3,495 base price is roughly half what you'd pay for a new color laser printer, and even the $5,495 expanded configuration compares favorably to laser printers in terms of price. And two factors combine to keep the per-page cost low as well: The Phaser 350's solid ink is suitable for nearly any porous media, so you can use it with inexpensive copier paper, and the 350 comes with a lifetime supply of free black ink. When you order three boxes of ColorStix (cyan, magenta, yellow), plus shipping, you get a fourth box of black ColorStix free. Order black only, you'll pay a $15 shipping fee.

The Phaser 350's output quality is generally comparable to that of color laser printers as well, and on color pages with heavy coverage, the Phaser 350 matches color laser printers' speed. But for bread-and-butter office documents — pages with black text — the Phaser 350 can crank pages out as fast as a laser printer. What's more, the Phaser 350's solid-ink technology makes double-sided printing impossible, which limits printing flexibility.

The Phaser 350 offers an admirably simple three-step setup: Slide a maintenance tray (which lasts for 12,500 prints and costs $195 to replace) into the front of the printer; add crayonlike wax ColorStix to the top-loading chip, and includes Adobe PostScript Level 2; this configuration lacks a Mac network connection (it doesn't even have a LocalTalk port). To use it, you must tack a minimum of $495 onto the price for an Ethernet adapter card. More realistically, you can get the expanded configuration, which adds $2,000 to the 350's base price and includes an Ethernet card and an extra 16 MB of RAM and has 600-x-300-dpi output capability — along with new abilities such as job pipelining and the ability to let you check the first print of a multipage job.

We tested the 350 in its expanded configuration and put it through our standard battery of printer tests. Test after test, the printer performed reliably. We tested how fast the print engine was by printing a 20-page text document. The 350 came very close to matching its rated engine speed, 4 pages per minute, in Standard, 300-x-300-dpi mode — a good default setting for balancing output speed and quality. Fast mode, with a resolution of approximately 300 x 200 dpi, yielded slower printing but rendered text noticeably jaggy.

On color documents with heavy page coverage, such as presentation slides, the 350 matched laser-printer speed and its output was vibrant. Even in Enhanced, 600-x-300-dpi mode, the text seemed to be more jaggy than that of a 600-dpi laser printer, however.

A final comparison of Phaser 350 output with that of color laser printers: Because the output is wax on paper, it is possible to scratch pigment off a page printed by a Phaser 350. But we handled the output samples a lot and found them to be almost as durable as color laser prints.

**The Bottom Line**

The Tektronix Phaser 350 offers some attractive features, such as plain-paper printing, easy setup and maintenance, and a low per-page cost. It's great for on-demand printing of mostly color documents without a monetary penalty for printing in monochrome. But as for fitting into the workgroup-printer category, it lacks the ability to print on both sides of media and its speed falls short of laser printers when printing text pages.

**APPROACHING LASER-PRINTER SPEED**

solid-ink printer rivals color laser printers

We timed the Tektronix Phaser 350 printing a 20-page Microsoft Word text document, a 4-page Word newsletter with color graphics, a PowerPoint slide (on paper and on transparency), and a QuarkXPress layout. We compared the results with those of an Apple Color LaserWriter. The Phaser 350 ran at 300 dpi and the Apple printer at 600 dpi. Even doubling the Phaser times to compensate for the difference in resolution, the Phaser 350 fared well on all but the text tests.

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THE 20th-ANNIVERSARY MACINTOSH

APPLE SCULPTS ITS SWANK NEW VISION FOR THE FUTURE OF THE MACINTOSH.

Imagine for a moment that you had the chance to design the ultimate Macintosh. What would it look like? What features would it have? How would it be similar to the Mac OS systems available today, and, more important, how would it be different?

In the last year, we’ve seen self-proclaimed experts attempt to tackle these questions, with results that have often bordered on the bizarre. During that time, and for years before it, Apple has quietly labored on its own vision of the ultimate expression of Mac OS technology — a computer-industry X-Car and a work of art in high-tech plastic and metal alloy, intended to celebrate two decades of innovation and to help define where we go from here.

We were recently allowed to take the 20th-anniversary Macintosh, now just months from completion, into our labs for a thorough examination. What we found may well require the invention of a few new superlatives.

BY ANDREW GORE

In order to give its 20th-anniversary Mac such a dramatically sleek and slim look, Apple borrowed technology from its PowerBook line: A bright, sharp 12.1-inch active-matrix display offers users 800-x-600-pixel resolution and 24-bit color at a fraction of the depth of a CRT-based screen. Despite its thin chassis, the Spartacus still offers all the options of a well-equipped desktop Mac, including two serial ports, an ADB port, a SCSI port, audio-in and -out, coax hookups for TV and FM cable connections, and a floppy-disk drive.

SIGHT

Code-named Spartacus (at press time, Apple had not decided what the actual name of the machine would be), the 20th-anniversary Macintosh is the descendent of a long line of conceptual prototypes that some inside Apple nicknamed designer Macs. Unlike most shipping Mac systems, designer Macs are first and foremost an expression of the industrial-design engineer’s craft.

So it comes as no surprise that the Spartacus makes one heck of a strong visual impression. From the color-coordinated bronze and brown panels to its Bang & Olufsen-inspired slightly curved chassis, the Spartacus...
looks more like something that belongs in a modern-art museum, or on a Star Trek set, than in a computer store. Using technology borrowed from both the PowerBook and the Power Mac lines, Apple has managed to create a Macintosh with a razor-thin profile, dramatic curves, and vast surfaces.

One of the key components to achieving this look is the 12.1-inch active-matrix display, offering 800-x-600-pixel resolution and 24-bit color. Because the Spartacus does not need to concern itself with conserving power, the screen’s backlighting is cranked up far beyond what a PowerBook display normally produces, making the screen the brightest, sharpest flat-panel display we’ve tested. Another component that helps preserve the Spartacus’ trim figure is the CD-ROM drive, which is mounted so that the top of the drive faces the user, instead of the front as on most Mac systems. The overall effect is as if Apple had taken the guts of a PowerBook; folded them flat; and then mounted them in a flat, rigid case.

The Spartacus’ look isn’t just borne of clever integration of existing technologies. It is also the result of no-expense-spared craftsmanship. An example is the curved metal base that operates as both stand and gimbals for the machine’s chassis. In order to get a stand that was thin as well as strong enough to hold the weight of the machine, Apple had to have it molded in a factory that specializes in high-tech metal fabrication.

Even the keyboard offers a little extra flare and a clever tweak. Based on a PowerBook design, the keyboard offers leather palm rests with a trackpad in the center. However, unlike a PowerBook’s, the trackpad is removable and can be placed on either side of the keyboard, like a mouse. A small compartment under the keyboard holds a leather pad that fits in the slot vacated by the trackpad.

SOUND

One of the dominant features of the Spartacus is the two fabric speaker grilles that run the length of the machine. These grilles mask one of the most sophisticated sound systems ever put into a computer system.

Designed by Bose, the two speakers, which offer maximum output of 3 watts per channel, are supplemented by a 7-watt subwoofer about the size of a small dog. Even the subwoofer, which also doubles as the Spartacus’ power supply, sports a curvy design, especially around the air dams on the top and base of the unit.

The speaker system is based on Bose’s Acoutimass technology and produces tremendously fat sound. Don’t be fooled by the relatively low output wattage — in our tests, the speakers were more than powerful enough to fill a large loft with sound.

Software in the Spartacus automatically balances sound levels for optimum effect and can also, in combination with Apple’s SoundSprocket technology, be used to set the listening angle, creating a rich stereo envelope around the user. The gestalt of all this sound technology is a computer-based stereo that can go toe-to-toe with a moderately priced audiophile system.

STRUCTURE

If a cool chassis and hot sound is all the Spartacus had to offer, buyers could save a bundle and just buy a Bang & Olufsen CD system. However, the Spartacus’ clever, functional design is more than skin-deep.

The Spartacus is based on a later generation of the Alchemy logic board, the same one used in the Power Mac 6400. It is capable of using all the expansion options currently available for Apple’s entry-level PCI Macs, including the video-in and Ethernet cards (the Spartacus will
Looking more like a high-tech laundry hamper than a sophisticated speaker component, the Spartacus' subwoofer puts out 7 watts of bass that really fills the room, more so than a sophisticated hi-fi system, The entire sound system, specially designed by Bose for the Spartacus, incorporates some of the most advanced sound components the company produces. The subwoofer also doubles as the Spartacus' power supply.

A little pressure: on two catches, and the Spartacus' back panel lifts right off to expose the most easily accessible logic board Apple has ever put in a Mac. The slots, from top to bottom, include a 7-inch PCI slot, a communications slot, RAM slots, and an AV slot. Users can also easily access the machine's 2-GB internal Enhanced IDE drive. Apple will include with all Spartacus systems a second back panel with the extra space necessary to accommodate either an Ethernet or a PCI card.

not come equipped with onboard Ethernet or an AV card). However, the Spartacus logic board does differ in two key ways from the Alchemy board: It offers 2 MB of video RAM, as opposed to 1 MB, and it has a 50-MHz, instead of a 40-MHz, processor bus. The difference in VRAM is what makes it possible for the Spartacus to offer 24-bit color at 800 x 600 pixels (because it uses a flat-panel display, screen resolution is fixed). The difference in bus speed allows the Spartacus to run the same processor as the 6400 but with a lower clock-rate multiplier, thus noticeably increasing overall speed (for more on the effect of bus speed on system speed, see "Breaking the Speed Barrier" in this issue's News section).

The system we tested used a 200-MHz PowerPC 603e with a 256K Level 2 cache, although Apple said that it will likely incorporate a faster processor by the time the Spartacus ships, in June. Even with the slower CPU, the Spartacus' performance was very snappy, no doubt due to the faster bus and the L2 cache. It also included a 2-GB Enhanced IDE hard drive.

Although this all sounds nice, the really cool thing about the Spartacus' internal structure is how accessible everything is. You remove the machine's back panel by depressing two small catches at the bottom and lifting up. Once the panel is off, everything is right in front of you: RAM slots (standard 32 MB of RAM, expandable to 128 MB), an AV slot for a video-in card, a communications slot for Ethernet (the Spartacus will include a 33.6-kbps GeoPort modem pod), and a 7-inch PCI-card slot. To add either Ethernet or a PCI card, users will need to swap the flat back panel with one that has a small hump, to make room for the cards. Both back panels will come with the machine.

Also included in the basic package are built-in TV and FM tuners; the Spartacus will also include 3-D-hardware acceleration onboard, making it a home entertainment center that just happens to have a Mac inside.

The Bottom Line

At approximately $9,000, the Spartacus is not going to be for everyone. That's just as well, because Apple plans to build only 10,000 of these machines and will likely offer them only in the U.S., the U.K., Japan, France, and Germany. People looking to buy the Spartacus will need to either go to one of the select few dealers authorized to carry it (according to Apple, only longtime Apple-only dealers and certain key vertical-market VARs will get to offer the Spartacus) or order it from a special Web site.

When people finally get their hand-built, limited-edition Mac, it will come with concierge service — Apple will send someone to the buyer's home or office to set up the machine, install any add-ons and software, and give them an introduction. As to how those lucky few will feel about their new computer: If the reactions the Spartacus got around our office are any indication, it will quickly become their most treasured possession.

As to what the Spartacus means for rank-and-file Mac users, a lot will depend on how well Apple and its clone vendors learn the lessons it has to teach. If future Macs start to offer better sound, more-serviceable designs, more-creative chassis, and a unique flair that can't be had on any Intel-based PC, then the Spartacus could prove to be the most important Mac Apple ever ships.
Motorola, creator of the PowerPC chip, has set a new standard for 100% Macintosh-compatible performance...

Introducing the new Motorola StarMax series of desktop and mini-tower systems, featuring a state-of-the-art motherboard design and a lightning-fast hard drive—both exclusive to Motorola. With speeds of up to 240MHz, you'll race through all your graphics and publishing applications faster than you ever dreamed possible!

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- **Fax/Modem**: External 28.8Kbps
- **Expansion Slots**: 3 PCI
- **Drive Bays**: 2 external, 1 internal
- **Warranty**: 5-Year Manufacturers
- **Keyboard and Mouse**: Extended
- **Price**: $1999.

### MOTOROLA STARMAX 4000 MAC OS DESKTOP
- **PowerPC 604e Processor**: 200MHz
- **RAM**: 16 MB (Exp. to 160MB)
- **Hard Drive**: 1.2 GB
- **CD-ROM Drive**: 256K Level 2 Cache
- **VRAM**: 2MB
- **Supports**: 14", 15", 17" or 21" Monitors, VGA and SVGA Displays
- **Sound**: 16-Bit Stereo
- **Fax/Modem**: External 28.8Kbps
- **Expansion Slots**: 5 PCI
- **Drive Bays**: 2 external, 1 internal
- **Warranty**: 5-Year Manufacturers
- **Keyboard and Mouse**: Extended
- **Price**: $2199.

### MOTOROLA STARMAX 3000 MAC OS TOWER
- **PowerPC 603e Processor**: 180MHz
- **RAM**: 32 MB (Exp. to 160MB)
- **Hard Drive**: 2.5 GB
- **CD-ROM Drive**: 512K Level 2 Cache
- **VRAM**: 4MB
- **Sound**: 16-Bit Stereo
- **Fax/Modem**: External 28.8Kbps
- **Expansion Slots**: 5 PCI
- **Drive Bays**: 3 external, 2 internal
- **Warranty**: 5-Year Manufacturers
- **Keyboard and Mouse**: Extended
- **Price**: $2799.

### MOTOROLA STARMAX 4000 MAC OS TOWER
- **PowerPC 604e Processor**: 200MHz
- **RAM**: 32 MB (Exp. to 160MB)
- **Hard Drive**: 2.5 GB
- **CD-ROM Drive**: 512K Level 2 Cache
- **VRAM**: 4MB
- **Sound**: 16-Bit Stereo
- **Fax/Modem**: External 28.8Kbps
- **Expansion Slots**: 5 PCI
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Apple's new Mac OS 7.6 release is no revolution in OS software, but it's on time and OpenDoc-ready.

MAC OS 7.6, formerly known as Harmony, is no great leap forward for Mac OS software. After more than a year of enticing Apple demos of user-selectable desktop themes, a Finder that can walk and chew gum at the same time, active assistance, and a speedy full-text search engine — plus promises of greater stability and improved performance — Mac OS 7.6 comes as a bit of an anti-climax. It has none of these spiffy new features.

However, as the first release to appear under Apple's new OS strategy of delivering two reference upgrades a year, Mac OS 7.6 does have one thing going for it: It shipped on time. And for that, Apple should be applauded. After all, it takes guts to ship an upgrade with as little to offer as Mac OS 7.6 just to meet a schedule. Seriously. Think about it.

If Apple were still using its old OS-delivery strategy, the new release would not have been available until Java support, one of its planned features, was ready. That means it would have shipped in February or March rather than in the scheduled month, January. With Apple's new approach, we don't have to wait for the few new OS features that are ready to ship. And as for Java, Apple plans to ship it as a stand-alone extension sometime early in 1997. Presumably, it will become a core OS feature in July, when Apple's next reference release (code-named Tempo) is due to ship.

BY HENRY BORTMAN
Apple’s new OS-upgrade strategy has other advantages over the old triennial mega-upgrade approach. Many features originally slated for Mac OS 8 were intended to run only on PowerPC-based Macs. These will now be delivered as additions to System 7. And Mac OS 7.6 runs on 68040- and 32-bit-clean 68030-based machines as well. (The IIx, IICx, and SE/30, however, are no longer supported — even if you have MODE32 installed.) An example is the new Finder, with pop-up folder tabs and spring-loaded menus as well as the ability to launch applications, copy files, and empty the Trash all at the same time. It’s now a likely candidate for the July Tempo release.

These benefits aside, though, we found one gaping hole in Apple’s new OS strategy. At press time, the company still had not articulated a plan for delivering the new modern foundation that was to have been at the heart of Mac OS 8. Although MacUser has learned that the Mac OS 8 engineering effort has been refocused to deal solely with the new foundation — the release’s other features are being peeled off for inclusion in the semianual-upgrade program — it remains unclear how or when Apple will deliver the new foundation (see the “Behind the Eight Ball” sidebar). It’s also not clear how Apple will manage backward compatibility with existing Mac applications and how developers will make the transition to the new OS core.

A Bird in the Hand

Meanwhile, we’ve got Mac OS 7.6. And, in addition to some obligatory bug fixes, it does have some noteworthy new features. The most significant is OpenDoc (version 1.1) — Apple’s component-software architecture is now included as part of the core OS, rather than as an optional install, as it was with System 7.5.3. [As we went to press, we learned that the Mac OS 7.6 installer will not install OpenDoc on 680x0 machines. Apple found a bug in its Code Fragment Manager for 680x0 machines that can cause crashes and data loss. Because OpenDoc relies on the Code Fragment Manager, Apple decided to play it safe. Whether the bug will be fixed in time to be included in the April Mac OS update was unclear at press time, — Ed.] Cyberdog (version 1.2). Apple’s suite of OpenDoc-based Internet components, is also included in 7.6 — its first appearance as part of the retail package. Cyberdog is installed by default, but users can opt not to install it if they prefer (if you’re not ready to relegate your Internet activities to Cyberdog, you will have the option of using the Apple Internet Connection Kit, which will be bundled with Mac OS 7.6).

OpenDoc lets users arbitrarily embed independent modules, called parts, within OpenDoc-compatible documents. Parts can perform various functions — for example, you can randomly place an editable chart, a rotatable 3-D image, a QuickTime movie, and a live Web-browser window within a word-processing document by simply dragging the parts into position. You can go even further and include a set of button components that run AppleScript scripts, to control the interaction among the parts (see the “OpenDoc” sidebar for more ideas).

Other major features of Mac OS 7.6 are a new system-software installer; a new Extensions Manager; Open Transport 1.1.1 (a bug-fix update); Open Transport/PPP, for IP dial-up connections; new Apple telecom software that enables GeoPort adapters to support 28.8-kbps connections; LaserWriter 8.4 and Desktop Printing Software 2.0, which together improve printing performance and enhance desktop printing; and QuickTime 2.5, with expanded MPEG and MIDI support. Many of these bits and pieces were previously available separately via the Internet.

First Encounter

When you start installing Mac OS 7.6, the first novelty you’ll see is the Installer application itself. Unlike past versions of this utility, the new installer steps you through Apple’s recommended preinstallation process, to increase your chances of success. In particular, it gives you the opportunity to upgrade your hard-drive driver software — if you have an Apple disk formatted with Apple’s Drive Setup — and it automatically runs Disk First Aid to check your disk for problems before the install. Users’ failure to perform these preparatory steps — Apple formerly recommended them in Read Me files, but you know how that goes — was a major cause of unsuccessful system-software upgrading in the past. Apple has also simplified its approach to custom installation and made it easier to tell which optional components are installed by default.

Users will also appreciate the improved look and capabilities of Mac OS 7.6’s new Extensions Manager (version 4.0). But don’t toss out Conflict Catcher yet: Extensions Manager still won’t help you through the reductive process of isolating problem extensions. What it will do is make it easier to get information about the functions of individual extensions and control panels.

We especially liked Extensions Manager’s ability to display installed extensions and control panels in various ways. It can display them in the “as Items” view, which lets you see one unified list of everything you have installed, regardless of where it’s located. If you opt for “as Folders,” you see the contents of the Extensions folder, the Control Panels folder, the System Folder proper, and more, displayed in separate groups. The most useful view is “as Packages,” which groups items identified by Apple (in the case of system software) or third parties (in the case of applications and utilities), regardless of

The new Extensions Manager, which lets you view extensions and control panels in a variety of ways, is one of Mac OS 7.6’s best features. Shown here is the most useful view, dubbed “as Packages.” It groups related items, regardless of their location on your hard disk. At press time, most extensions from third-parties (Microsoft is the example here) did not yet include the information Extensions Manager needs in order to create useful groups.
Behind the Eight Ball / major Mac OS retrofit long overdue

WITH THE RELEASE OF HARMONY, Apple has finally managed to deliver a release of the Mac OS on schedule. Moreover, the company’s new plan to deliver whatever OS components are ready every six months, with the emphasis on deliver, is a welcome departure from its past record of broken promises. But, as we went to press, nearly three months have passed since Apple first announced that it had canceled Mac OS 8 (Copland) as it was originally conceived. And there’s still no word about how the company plans to roll out the new foundation that was to have been the centerpiece of Mac OS 8. That’s a big problem.

It’s all well and good to add bells and whistles to System 7, but the Mac OS aging foundation is cracking. It needs seismic retrofitting — badly. Today’s ponderous new data types — animations, movies, 3-D images — put far more strain on the Mac OS than it was originally (15 years ago) designed to handle. The fact is, Apple has created gobs of great multimedia technology for the Mac but the operating system underneath isn’t constructed to handle the weight. It’s a testament to the rubber bands and paper clips Apple has cleverly applied that the edifice we know as the Mac OS remains intact.

Many of the needed modern OS features were slated to appear in Copland and others in Copland’s successor, Gershwin. These features, missing from the current Mac OS, read like the table of contents from a textbook for Operating Systems 101: preemptive multitasking, multithreading, symmetric multiprocessing, true virtual memory, and protected memory. (For an explanation of these OS features, see “Plan Be,” January ’97, page 64.)

Due to advances in Windows NT, Microsoft now has just such a modern operating system. Because of Windows NT’s features, it is capable of seriously challenging Apple’s dominance in high-end publishing and media-content-creation markets. The BeOS, which will shortly be available for PowerPC hardware, is also a potential contender for a share of this lucrative market. In short, if Apple wants to hold onto its lead in this arena — indeed, if the Mac is to remain a healthy platform in any market — the company desperately needs to develop a plan for delivering a new modern Mac OS foundation as well as for articulating its vision to developers and users. And it needs to do so real soon.

their location on your hard disk. This simplifies the task of turning off everything having to do with speech recognition, for example. As third parties begin to take advantage of this new capability (they have to add information to their extensions so that Extensions Manager can accomplish the grouping), Extensions Manager will become an increasingly valuable troubleshooting tool.

Phone Home

A trio of Mac OS 7.6 features enhances the Mac’s telecommunications capabilities. Open Transport has been upgraded to version 1.1.1, which fixes several bugs. Also included is the long-awaited Open Transport/PPP, which makes it possible to use Open Transport for dial-up access to the Internet. Users set up PPP connections by using two new control panels.

Apple will also maintain its tradition of supporting yesterday’s modem connection speeds just as they’re being replaced by today’s higher speeds. To wit, the Apple telecom software included as part of Mac OS 7.6 will enable GeoPort modem adapters to connect at 28.8 kbps. That’s the good news. The bad news is that many of today’s leading telecommunications products support 33.6 kbps.

Completing the trio of telecom offerings is Apple Remote Access Client software (version 2.1), which lets Macs establish AppleTalk dial-up connections to network-based printers and AppleShare servers. ARA has historically been bundled with PowerBooks, but it hasn’t been a component of Apple’s retail system software. Future versions of ARA are expected to support PPP connections — more efficient than AppleTalk for modem connections — to AppleShare servers.

Printing

In the printing department, Mac OS 7.6 has LaserWriter 8.4 and Desktop Printing Software 2.0, both of which shipped previously only with selected Apple printer products. LaserWriter 8.4, a one-pass driver, offers significant speed improvements over the previous two-pass LaserWriter 8 driver. Its interface is also enhanced, making it easier for users to access the device-specific features of various printers.

Desktop Printing Software 2.0 improves on the drag-and-drop desktop-printing metaphor. It’s the first version of desktop-printing software that lets you move desktop-printer icons off the desktop and into any folder. A Control Strip module makes it easier to switch among desktop printers. And it’s now possible to choose a printer from directly within the LaserWriter Print dialog box.

The Bottom Line

It’s a little too soon to judge the wisdom of Apple’s new twice-a-year system Software-update strategy. Mac OS 7.6 was a rush job, designed more to prove that Apple could actually get a system out the door on time than to deliver significant new functionality. But a single success, particularly one that represents organizational more than technical progress, is only the first step. Apple will have to establish a longer track record before it can celebrate.

And then there’s the nagging question of value. There’s almost nothing in Mac OS 7.6 that users can’t continue to download free from the Internet. Sure, there’s some advantage to having everything in one place, but is the new release really worth paying for? That, of course, depends on how much money Apple’s going to charge, a detail that at press time was not yet finalized.

Hopefully, Apple will be smart enough to realize that if it wants users to buy into its semiannual-release program, it’s going to have to price its upgrades commensurately with their value. And frankly, the value of Mac OS 7.6 isn’t all that great — we’d like to see Apple sell it at a very low cost, something on the order of $25 (perhaps a bit more if it’s bundled with the Apple Internet Connection Kit).

We’d like to see Apple offer a discount-subscription program. If the company is going to ask users to upgrade twice a year from now on, it would do well to think about what type of financial incentive to offer. Even if subsequent upgrades offer more than Mac OS 7.6 does — and it’s likely they will — users are going to suffer sticker shock if they have to pay full price each time Apple rolls out a new OS version.

Meanwhile, you may be wondering whether Mac OS 7.6 is for you. If you like to keep up with the latest and greatest, go for it. If you want to get in on the ground floor with OpenDoc and Cyberdog, this is your chance. But if your system is working just fine the way it is and Apple decides to price the upgrade in the $99 range, as it has with previous upgrades, you’re probably better off waiting. You won’t be missing out on much, and if things go according to plan, there’ll be a more compelling upgrade six months down the road.
OpenDoc / Apple technology stands apart

APPLE'S OPENDOC component-software technology has been an installation option since Apple began shipping System 7.5.3. But with Mac OS 7.6, it becomes a core part of the Mac OS. And OpenDoc's faithful Internet companion, Cyberdog, gets installed by default.

To date, OpenDoc has been more of a curiosity than a guiding light to what Apple has dubbed "the future of software." But with OpenDoc's inclusion in Mac OS 7.6 and the release of several useful third-party components, called parts, it's time to take notice. OpenDoc is now officially A Big Deal.

OPENDOC 101

OpenDoc components, known as parts in OpenDoc lingo (see "OpenDoc Glossary"), are relatively small software modules that can be linked together within OpenDoc-compliant documents, which are known as containers. For example, let's say you need to prepare a multimedia presentation. Within your document, you might want to include spreadsheets, 3-D charts, Quick Time movies, and perhaps a live link to a Web site.

With today's throw-everything-into-one-application approach to software, a presentation-program developer who wants to meet all your needs will have to build explicit support for each of these data types into the application. That's a lot of work. Still, many developers are prepared to do it, because they have no other way of meeting customer needs. The unfortunate result is that many applications have grown to huge proportions, taking up tens of megabytes of disk space and requiring many megabytes of RAM to run (can you say Microsoft Office?).

With the OpenDoc approach, developers can concentrate their efforts on building task-specific application features, such as the ability to create templates and present slide shows, to use our presentation-package example. But it wouldn't be necessary to also do all the work of supporting spreadsheets, charts, movies, 3-D images, and Web links. By supporting OpenDoc, developers would enable users to add those functions to a presentation. All you would need to do would be to find the requisite OpenDoc parts and drag them into your presentation document, and — voilà! — OpenDoc would handle them automatically.

Because different functions are broken out into independent parts, users can mix and match parts as they choose, selecting a word-processing part here, a spreadsheet part there, and a charting part somewhere else. As long as all the parts conform to OpenDoc standards, they should interoperate seamlessly.

You're not convinced? We don't blame you. It might help to know there is an organization, Component Integration Labs (CI Labs), responsible for ensuring that OpenDoc parts behave themselves. CI Labs has developed a test suite for parts — if a part passes the test, it's officially dubbed a Live Object. Live Objects are certified to work properly with each other.

Parts also offer financial advantages to users. Because they're small, they can be sold at lower prices than traditional applications.

KICK-STARTING OPENDOC

Although Apple has big plans for OpenDoc, including the eventual transformation of the Finder into an OpenDoc container, the company's offerings are for now more modest. To get users going, Apple has included in Mac OS 7.6 a set of basic parts called Apple Live Objects Essentials (see the "Live Objects 101" table).

More interesting is Cyberdog, Apple's collection of Internet parts (see "Walking the Cyberdog," July '96, page 69). Version 1.2 is included in Mac OS 7.6 and installed by default. Although Cyberdog takes an innovative approach to Internet access by letting you embed Web browsers and FTP directories directly within other documents, it still needs a bit of work before it's ready to replace more-traditional Internet applications.

Perhaps Cyberdog's most serious weaknesses are that its Web-browser part still doesn't support plug-ins and still doesn't support some of the most popular HTML features, such as frames and transparent GIFs. Apple and Netscape have announced that Netscape will develop a Cyberdog-part version of its popular Netscape Navigator browser. Netscape Navigator for Cyberdog will address both of these issues, but neither Apple nor Netscape has committed to a release date. When it finally ships, the Netscape browser part will replace Apple's current Web-browser part as a standard component of Cyberdog.

In the meantime, Apple is working to address its browser part's shortcomings. Expect to see support for more HTML tags in the next version. As for plug-ins, the company has already made available online a beta version of an extension to OpenDoc, Internet Plug-in Viewer, that enables the Cyberdog browser part to correctly display Web sites that require supported plug-ins. This solution has a fascinating twist: Because Internet Plug-in Viewer is OpenDoc-based, it will enable users to embed and run plug-ins from within any OpenDoc document, not just from within Cyberdog-browser windows.

Mac OS 7.6 includes a new Cyberdog Starting Point document. In addition to the log, notebook, Web, search, e-mail, and news functions provided in the original version, the new document includes an alternative to the Chooser for accessing AppleTalk-network-based file servers.
WHAT'S IN A FACE?
Cyberdog 1.2 also addresses interface criticisms voiced by some people about the original, 1.0, release. But in attempting to address them, Apple appears to have traded one problem for another. OpenDoc is document-based, not application-based, so you don't launch OpenDoc applications and then create documents. That's because there are no OpenDoc applications, just part editors and viewers. To create a document, you double-click on the appropriate type of stationery icon.

In keeping with this new approach, Apple replaced the traditional File menu with the Document menu and removed the Quit item from the menu. After all, the logic went, you don't quit documents, you simply close them. But when Apple applied this approach to Cyberdog documents, users complained. They wanted a way to close all their Internet-related documents with a single command. So Apple made an exception for Cyberdog, which actually runs as a separate application — when you open a Cyberdog document, you don't get the standard OpenDoc Document menu; you get the traditional Mac File menu, complete with the Quit command.

The result is rather like a maze. Activate any OpenDoc document except a Cyberdog document — even if you're working with a Cyberdog part embedded in some other type of document — and you see the new Document menu. But activate a Cyberdog document — even if you're working with a non-Cyberdog part embedded in that document — and you see the traditional File menu. This is a dubious achievement.

THIRD PARTIES
If the fate of OpenDoc depended entirely on Apple's offerings, it would be in for a rough ride. The real excitement comes from third-party developers. And they're not the developers you're used to. True, ClarisWorks, Corel WordPerfect, and a handful of other well-established applications are being modified to support the embedding of OpenDoc parts. But software giants such as Adobe, Microsoft, and Macromedia have no current plans to support Apple's component technology. Much of what's hot in "partware" is coming from startups such as Digital Harbor and Adrenaline Software. And although the current selection is limited, dozens more parts are just around the corner.

In addition, some vendors, rather than producing parts themselves, are finding innovative ways to use Live Objects to meet new challenges. Addison-Wesley, for example, is creating a group of interactive CD-ROM titles that use Cyberdog to access updates posted on the Internet. The SimCalc Project is creating a set of parts math and science teachers can use to create interactive lessons demonstrating concepts such as velocity and acceleration. Another vendor, Kantara Development, is offering an extension to OpenDoc, called PartFinder, that automatically connects you to the company's PartBank Web site whenever you open an OpenDoc document that contains a part for which you don't have an editor or viewer installed; from PartBank you can instantly download the needed software.

As parts proliferate, we may soon be faced with having a variety of parts installed that perform similar functions. Fortunately, Apple provides a mechanism — the Editors Setup control panel — that lets you select your default editor for data of a particular type, such as PICT images. Unfortunately, the control panel has a nearly incomprehensible user interface. Apple has assured us that the interface is high on the "to be fixed" list.

CRYSTAL GAZING
Does OpenDoc represent the future of software, or will it be just another Apple technology that flares brightly and then quickly fades to black? From early returns, it's too early to tell. Even if OpenDoc is ultimately successful, expect a long transition period that probably won't be all that smooth. OpenDoc has some serious rough edges. The concept may be good, but the implementation could use some work, particularly in the area of user interface. OpenDoc's UI problems extend far beyond the few issues addressed in this article.

Still, shortcomings aside, OpenDoc is one of the hottest technologies Apple has going. If you haven't tried it yet, we highly recommend a test drive. You might be pleasantly surprised.

OpenDoc Glossary

component: generic term for a software module that performs a specific function and can be linked with other modules within a compound document.
container: document that accepts embedded OpenDoc parts.
container application: traditional application modified to allow OpenDoc parts to be embedded within the documents it creates; not an OpenDoc part and cannot be embedded within other documents.
container part: OpenDoc part that can serve as both a container and an embedded part.
Cyberdog: Apple's collection of OpenDoc parts that performs basic Internet functions.
Live Object: OpenDoc part that is certified by Component Integration (Cl) Labs as having passed its suite of OpenDoc-compliance tests (Cl Labs doesn't yet have a compliance test suite for container applications, which are therefore not technically considered Live Objects).
OpenDoc: Apple's component-software technology.
part: embedded element of an OpenDoc document that performs a specific function, such as creating a chart or browsing the Web.
part editor: software for editing the contents of OpenDoc parts; part editors are stored in the Editors folder, which the Mac OS 7.6 installer creates automatically in the System Folder.
stationery: icon that serves as a proxy for an OpenDoc part; double-clicking on a stationery icon creates a new document, and dragging a stationery icon into an existing document embeds the part represented by the icon.
viewer: software module that lets you view, but not edit, the contents of OpenDoc parts.
Sum of the Parts

OPENDOC'S CLAIM TO FAME is that it enables you to mix and match Live Objects from different sources, so that you can create custom documents that satisfy your own special requirements. The document shown here demonstrates six types of Live Objects, all working together. Two of the Live Objects are from Apple, and the remaining four of them are each from a different third-party vendor.

In OpenDoc documents, the File menu is replaced by the Document menu.

Folders in the WAV document's tool bar provide easy access to installed Live Objects.

When SoftLinc's LEXI part is installed, WAV adds spell-checking, thesaurus, language-translation, and verb-conjugation items to its Tools menu.

Digital Harbor's WAV word processor was used to create the container for this OpenDoc document, which here serves simply as a shell for embedding other parts.

This is a Cyberdog Web-browser part we embedded in the WAV document by dragging in the CyberItem (a special Cyberdog icon) that represents the Web page shown here.

These buttons were created with Hutchings Software's Rapid-I Button part. The buttons have been programmed with AppleScript — when you click on one of them, the corresponding Web page appears in the Cyberdog-browser window.

Corda Technologies' C-TextBox part was used to create this colored background and border.

The grid you see on either side of the colored box is a tool from an Apple Draw part, which was used here to align the tops of the box's buttons automatically. The buttons and the colored box are actually embedded within the Apple Draw part, which, in turn, is embedded in the WAV container.
Live Objects 101

THE DEFAULT MAC OS 7.6 INSTALLATION places two sets of basic parts on your hard disk: Apple Live Objects Essentials and Cyberdog Tools.

Apple Live Objects Essentials contains five parts, three of which provide basic functions, such as drawing and audio recording and playback. The other two enable viewing of images — bitmaps (PICT, TIFF, GIF, and JPEG) and QuickDraw 3D objects. You don’t interact directly with viewers; when you place an image or 3-D object in an OpenDoc document, the corresponding viewer goes into action behind the scenes, allowing you to see the object on-screen.

The Cyberdog Tools folder contains three parts, which facilitate the creation of Cyberdog-based documents and the inclusion of Internet functionality within any OpenDoc document. Cyberdog also provides some basic viewer capabilities, including support for viewing QuickTime movies.

Parting Shot / OpenDoc Live Objects from third-party companies

AS WITH MOST TECHNOLOGIES Apple integrates into the Mac OS, it’s third-party adoption that will make OpenDoc sink or swim. At long last, users have a variety of useful OpenDoc parts and containers with which to begin building custom documents tailored to their individual needs.

In this table, we’ve listed nearly a dozen Live Objects worth investigating. Many will be available by the time this article appears. In addition, several vendors have announced their intention to convert existing applications into OpenDoc container applications — topping the list of applications are ClarisWorks and WordPerfect.
MAKE YOUR WEB SITE JUMP TO LIFE WITH ONE OR MORE OF THESE HANDY WEB ANIMATION TOOLS.
Nothing catches the eye like movement — especially when it's movement on Web pages, since static Web pages are still more common than those featuring animated images. In the past, the options for creating animation on the Web were few and were daunting for novices. Even many experienced animators were deterred by a new set of rules, standards, terminology, and tools when entering Web territory.

Today, you can choose from at least a dozen shareware and commercial products designed to help you put everything from simple animated logos to complex interactive animations on the Web. Which of these tools should your toolbox include? And which of the four primary available technologies — animated GIF, QuickTime, plug-ins, and Java — should you use?

Which tools you need depends in part on which technology you choose — a choice that, in turn, depends largely on how simple or complex you want your animation to be. To help you work through these questions, we offer this guide to the available technologies and tools. And we give special attention to features such as compactness of output files, convenience for end viewers, and browser support, all of which can influence whether or not your Web animation finds the audience it seeks.

BY LYNDA WEINMAN
WEB ANIMATION

ANIMATED GIFS: SIMPLE AS FLIP-BOOK

Animated GIFs are simple to make, easy to include in HTML, and effortless for your Web-viewing audience to see. Using them is one of the most elegant approaches to Web animation; they are lacking only in that they cannot include interactivity or sound. For an animated logo or button, however, animated GIFs are a pretty smart option.

The animated GIF, or GIF89a, has been in existence since the late '80s. What's new in the past year is that most Web browsers now support the spec for these files, so you can include them in Web pages without worrying about excluding any potential end viewers.

Here's how animated GIFs work: The file format allows for multiple images to be stored inside a single GIF document. When displayed within browser software that recognizes the multiple images, the artwork streams into the Web page in a predetermined sequence, creating a slide-show-style animation. The file format also supports looping (the ability to repeat a sequence of images indefinitely) and timing delays between frames of artwork. In addition, it supports limited masking, meaning animations can be made to appear in irregular shapes and can be transparent.

If you already have a sequence of images you want to animate, you can easily assemble them into an animated GIF with either of two programs: the freeware GifBuilder or BoxTop Software's inexpensive GIFmation. If you need to create a sequence of images from scratch, see the "Starting from Scratch" section; most of the programs described in that section allow you to export in animated-GIF format.

GifBuilder. The winner of MacUser's 1996 Shareware Award in the Graphics and Multimedia category (October '96, page 113), Yves Piguet's GifBuilder (available at http://iawww.epfl.ch/staff/Yves.Piguet/clip2gif-home/GifBuilder.html) is a handy, easy-to-use resource for everyone from novices to professionals. It lets you import artwork in several basic formats (Photoshop, QuickTime, sequential GIF, and PICT) and save it in animated-GIF format with a simple Save command; if you want, you can also set frame delays, turn transparency on and off, and load custom color palettes. In addition, GifBuilder includes an optimization feature that stores a stationary background and creates transparency wherever overlying frames don't change or alter the background — a technique that is able to shrink file size significantly.

GIFmation. If you want more-sophisticated color and cropping controls, add BoxTop Software's GIFmation to your toolbox. It imports artwork in Photoshop, Photo CD, GIF, JPEG, and TIFF file formats and provides excellent color-reduction (for smaller file sizes) and color-palette-handling capabilities. It also has an eye dropper that helps you remove fringes around transparent edges. In addition, you can reposition artwork within a frame and set transparency on a frame-by-frame basis. Even in the beta version we looked at (the final version is to be released before you read this), the program was easy to use and well documented.

QUICKTIME: MOVIES ON THE WEB

One step up in complexity from animated GIFs are QuickTime movies, which provide sound as well as moving images. Although they don't provide ways for end viewers to interact with the content (other than starting and stopping the movie with playback controls), they're among the easier-to-create options — as with animated GIFs, no programming is needed. You can include QuickTime movies in your Web page by using one of two methods: the old way, which doesn't require that end viewers have a plug-in, and the new way, which requires a plug-in with most browsers but offers faster, inline playback.

With the older method, end viewers must wait for the file to download before they can play it — and it plays in a separate application rather than being embedded in the browser page. The only special preparation required in this method is flattening the QuickTime movie — that is, changing its resource fork so that platforms other than the Macintosh can play it. You can do this with the Flatten Movie option in Adobe Premiere, or you can use the flattening utility available at ftp://ftp.ncsa.uiuc.edu/Mosaic/Mac/Related/flattenmov.hqx. If you use this method of including QuickTime movies, it's courteous to include a warning of the file size on the Web page where the movie link is, to warn end viewers of potentially long download times.

The newer method, which is supported by all plug-in-capable browsers, allows QuickTime movies to be viewed as inline (intra-browser) elements of a Web page — and they play immediately, with no downloading required. Apple calls this type of QuickTime file a fast-start movie. This new method has obvious appeal over the older method, although end viewers' need to download a plug-in to play the movie (except in Navigator 3.0, which includes the plug-in) is a drawback (see the "Browser Plug-Ins" section). This method requires different HTML code than the older method does (see the "From GIFs to Scripts" table) and requires that you first convert your QuickTime movies to the fast-start format. You can perform this conversion easily within QuickTime 2.5 or by using Internet Movie tool, a simple drag-and-drop utility available for free from the QuickTime site: http://quicktime.apple.com/. The plug-in necessary to play fast-start movies is also available at this site.

Many tools exist for creating QuickTime content — including several of the animation tools described in the "Starting from Scratch"
section. For putting existing QuickTime content on the Web, however, there's just one tool that's a must-have: Web-Motion.

**Web-Motion.** If you want to optimize your QuickTime content for Web delivery, Terran Interactive's $100 Web-Motion (which requires the company's Movie Cleaner Pro product; a bundle of both costs $270) is a pricey but worthwhile investment. Given five mice by MacUser in June '96 (page 52), Movie Cleaner Pro is targeted at those

First Looks / make your type tango with PaceWorks' Dancer

**IF YOU'LL LIKE TO MAKE** letters come alive in your Web animations, you'll definitely want to take a look at PaceWorks' Dancer, a promising new animation tool expected at press time to be shipping by January. We tested Dancer while it was still in beta, to check out some of its interesting features related to animation on the Web.

The best as well as the worst features of Dancer both spring from its use of QuickDraw GX, which gives Dancer unprecedented control over typeface animation — and some annoying compatibility problems. Thanks to QuickDraw GX, Dancer lets you animate the point size, spacing, and even the bold or italic properties of master font faces, so your words can shift shapes and pop with wild abandon. But QuickDraw GX still has compatibility problems with many printer drivers; it seemed to cause overall havoc with our testing machine (a Power Mac 8500 with System 7.5.5 and 83 MB of RAM).

The motion-control and sound capabilities of Dancer are impressive. It supports independent layers and motion paths, letting you shape the paths with Bezier-curve points and handles.

You can also save libraries of motion paths and animation attributes (such as rotation, color, and size) and reuse them from project to project. As for sound, Dancer's sound-and-image-synchronization tools are notably superior to those of competitors Adobe Premiere and After Effects, letting you see the visual representations of audio waveforms and easily align movement and images to match perfectly. Dancer also offers MIDI and multitrack sound support unparalleled by other animation software.

The good news for Web developers is that Dancer creates animated GIFs and Java applets and supports GIF transparency and optimization for small file sizes. It's the first program with this set of powerful features to be sensitive to Web authoring needs. Less impressive, however, are Dancer's interface and output quality. For a Web animation tool, Dancer is very complex to use and not for the dabbler or casual user; we were especially puzzled by an inconvenient interface that required us to click all over the screen in order to get to essential controls and dialog boxes. On the output end, the motion the program generated seemed fine for the Web and for multimedia but was of lower quality than that generated by After Effects, which supports subpixel interpolation for professional-quality motion. Without subpixel interpolation, which mathematically calculates the extra pixels that are needed for incremental motion over a large number of frames, movement tends to appear jerky and unrefined.

We'll reserve final judgment until we see a shipping copy of Dancer, but for now, our verdict is this: Don't buy it to create animations for broadcast video or film, since the motion isn't smooth enough; but if you want stellar typography and sound-synchronization controls for Web animations — and you want them enough to put up with a frustrating interface and a steep learning curve — give Dancer a whirl.

**PROS:** Powerful type-animation controls; Web-optimized output.

**CONS:** Compatibility problems; output not broadcast-quality.

**INFO:** $445; PaceWorks, Palo Alto, CA; 415-855-0400; http://www.paceworks.com.

Creating movies for CD-ROM authoring; it specializes in making QuickTime-motion compression easy to understand and implement. Web-Motion is a plug-in for Movie Cleaner Pro that optimizes movies for Web delivery. Web-Motion includes Web Expert advice that counsels you on a movie-by-movie basis to help you make wise compression choices, and it lets you preview the results of your decisions. It also creates flattened movies in fast-start format, automatically generates the `<EMBED>` tags for your HTML, and does a great job of helping you through the otherwise confusing process of choosing Web-appropriate data rates and video compression. Easy to learn and use, Web-Motion provides a very convenient way of creating small, fast, and Web-appropriate QuickTime movies.

**BROWSER PLUG-INS: MORE INTERACTIVITY, MORE HASSLE**

If you want more interactivity in your animation than animated GIFs or QuickTime movies can provide but you're not ready for the complexities of Java, you have several alternatives — including putting Macromedia Director presentations on the Web or using a program specifically designed for creating Web animations that can include event-triggered effects. However, these alternatives generally involve proprietary formats that require end viewers to install special software that plugs into their browsers.

In order to play an animation that requires a browser plug-in, end viewers must first download the plug-in, install it in their browser's plug-ins folder, and restart their browser. Plug-ins do not make for effortless Web surfing; in truth, many people will choose to leave a page that requires a plug-in, rather than endure the bothersome interruption or time-consuming installation process.

Because this technology is only about a year old, many browsers are just beginning to support plug-ins — and that support is some-
WEB ANIMATION

From GIFs to Scripts / a primer of Web-animation technologies

<table>
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<tr>
<th>TECHNOLOGY</th>
<th>BASIC CONCEPT</th>
<th>PROS</th>
<th>CONS</th>
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<tbody>
<tr>
<td>Animated GIFs</td>
<td>Browser software recognizes the multiple images stored in a GIF document and streams them to the page, creating a slide-show-style animation.</td>
<td>Easy to create and view (no programming or plug-ins needed).</td>
<td>Can't include interactivity or sound.</td>
</tr>
<tr>
<td>QuickTime</td>
<td>Can work either of two ways:</td>
<td>Includes sound; existing QuickTime content can be easily converted; older method doesn't require a plug-in; plug-in for newer method comes preinstalled in Netscape Navigator 3.0.</td>
<td>Newer method requires that end viewers download a plug-in (except with Netscape Navigator 3.0); interactivity is limited to movie-playing controls.</td>
</tr>
<tr>
<td>Browser Plug-ins</td>
<td>End viewer installs special (downloadable) software in browser's plug-ins folder; browser then uses the software to play animations.</td>
<td>Proprietary formats may be smaller and allow sophisticated features; you can repurpose some existing content (such as Director projects) with product-specific plug-ins.</td>
<td>Many end users won't bother to install plug-ins and won't see the animation; plug-in support from browsers can be buggy.</td>
</tr>
<tr>
<td>Java</td>
<td>Programmer uses Java language to create compact, platform-independent programs that download and execute on end viewer's system.</td>
<td>Can create computational, interactive animations; also can be used to create code for installing plug-ins.</td>
<td>Requires substantial programming expertise; still not fully reliable across all platforms and browsers.</td>
</tr>
</tbody>
</table>

development scale; coding in Java. By creating a Java applet that automatically installs the plug-in software needed to play an animation, you can remove the major impediment for end viewers. However, at press time, Java still seemed to be working better in theory than in practice, with less-than-seamless browser support (see the "Java: Lots of Power, Lots of Programming" section).

Specific animation-oriented products that use browser-plug-in technology include Macromedia's Shockwave and Afterburner (for projects in Macromedia's Director), Totally Hip Software's Sizzler (for streamable animations and sounds), FutureWave Software's FutureSplash Animator (for interactive, vector-based animations), and DeltaPoint's DeltaPoint WebAnimator (for storyboard-style, vector-based animations). Because the latter two products export to other formats as well as to their own plug-in-dependent formats and because they let you create animations from the ground up, we discuss them in the "Starting from Scratch" section.

Shockwave/Afterburner. If you're experienced with Macromedia's Director and want to use Director projects as the basis for your Web animations, using Shockwave is an obvious way to go. Available for free at http://www.macromedia.com/shockwave/devtools.html, Shockwave is the plug-in that enables end viewers to see Director projects (compressed with Macromedia's Afterburner postprocessor, included with Director 5.0 or downloadable for free) on the Web. Lingo, Macromedia's proprietary scripting language, is a capable animation tool; it lets you script interactive presentations that include animation, rollover effects, and streaming sound. However, Lingo has a steep learning curve compared to that of other similarly featured programs. In addition, you can't produce very compact files using Shockwave/Afterburner; most end viewers will have to up the RAM allocation for their browsers in order to look at Shockwave content. Although Shockwave and Afterburner are quite useful for people who are already up to speed on Director, we wouldn't recommend them for people who are not—or for those who want to provide maximum convenience for end viewers, who would be required to download a plug-in and (probably) allocate extra RAM.

Sizzler. If you want to inexpensively and easily turn QuickTime movies or PICS files (sequences of PICT images) into streamable animations with synchronized sound, the freeware Sizzler editor and plug-in can do the job. Once you've saved the files in Sizzler's proprietary format, end viewers with the Sizzler plug-in installed can watch the animations play as they're downloading. Sizzler automatically introduces "interlacing" into the images (which means they look blocky and then come into focus) so that you can see the images as they're downloading. In addition to exporting files in its own format, Sizzler can export animations as Java applets or as ActiveX applets. (ActiveX
To include animated GIFs in Web pages, you use the standard `<IMG SRC>` tag.

- Old way: Write QuickTime files into HTML with an `<HREF>` tag, making sure that the document has a .mov or .qt extension at the end of the filename, as in the following example:

```
<A HREF="PH60709B.mov"> .
```

- New way: Because a plug-in is involved, you use the `<EMBED>` tag to write the file into your HTML document (see "Browser Plug-ins"). There are also other controls you can include in your HTML, such as whether to have play buttons appear and whether to include autoplay or looping functions. For a full list of support tags (and the plug-in you need), go to http://quicktime.apple.com/.

Typically, whenever you include content that requires a plug-in, you’ll use an `<EMBED>` tag within your HTML. You must always put in the `HEIGHT` and `WIDTH` tags to define the size for any plug-in or Java content on a Web page. The `<NO EMBED>` tag will display alternative content for end viewers who don’t have the plug-in installed. The code for including a plug-in-reliant file might look like this:

```
<EMBED SRC="myanimationfile.xxx"HEIGHT="200"WIDTH="200">
<NO EMBED SRC="alternativecontent.gif"HEIGHT="200"WIDTH="200">
```

Java requires an `<APPLET>` tag in HTML pages. Here’s a sample of Java-based code:

```
<APPLET SRC="my_first_java_programming_triumph.xxx"HEIGHT="200"WIDTH="200"><NO EMBED SRC="alternativecontent.gif"HEIGHT="200"WIDTH="200">
```

is Microsoft’s PC-centric answer to Java — you can create ActiveX applets on a Mac but not view them on one.) However, unless you choose the somewhat iffy Java option (see next section) or the Mac-unfriendly ActiveX, Sizzler animations suffer from being dependent on a plug-in — and a lesser-known plug-in at that, which means end viewers are highly unlikely to have it already installed. And since QuickTime is already streamable, there isn’t much need to use Sizzler on QuickTime content unless you want to play around with the sound or intersperse QuickTime with PICS content. Still, Sizzler is easy enough for beginners to learn and the price can’t be beat.

JAVA: LOTS OF POWER, LOTS OF PROGRAMMING

The most powerful and flexible option for creating interactive animations on the Web is also one of the most hyped-up programming languages ever invented. People who would have never before considered learning a programming language are responding to Java’s allure in unprecedented numbers. So, what’s all the hype about — and is using Java a good animation-delivery approach?

Java’s potential benefits are almost as revolutionary as those of the Web itself. Java creates executable miniprograms, called *applets*, that are (at least in theory) platform-independent; compact enough to travel over phone wires; and able to expand on anyone’s system regardless of operating system, make, or model — in other words, programs that anyone can run just by clicking on the icons on a browser page. Another major benefit is that the Big Two browsers (Netscape Navigator and Microsoft Internet Explorer) and even some less popular ones support Java without requiring a plug-in. This support means that Java gets high marks for accessibility and compatibility.

Because Java creates custom programs, it has the potential to create computational animation, as opposed to sprite-based animation. In simple English, this means Java applets can calculate a changing curve shape or color on the fly, react in various ways to changeable conditions, and create motion based on external input. With sprite-
based animation, on the other hand, you’re limited to creating premade images and displaying them in succession. Clearly, for the right purposes, Java holds great promise as an animation-delivery medium. However, for simple effects, it’s probably overkill.

Potential Java adopters should note that the technology is still very young, with implementation problems to be worked out. Many Mac users have reported browser crashes during downloads of Java applets, and the promise of Java as a platform-independent panacea has fallen short of expectations in its current implementation by Microsoft Internet Explorer and Netscape Navigator. Many developers are wary of adopting Java before the current bugs are ironed out.

If you’re an intrepid pioneer tempted by Java’s benefits but wary of the programming required, there are a couple of programs available — WebBurst, from PowerProduction Software, and ActionLine, from Interactive Media — that promise to help you create Java applets within a GUI (graphical user interface), with no coding required. Be forewarned, though, that these programs bring to mind the old adage, “if it sounds too good to be true, it probably is.”

WebBurst. Starting from WebBurst’s palette of clip art or art you import in PICT or GIF format (text and sound in the AIFF or SND

### Web-Animation Tools / something for everybody

<table>
<thead>
<tr>
<th>RATING</th>
<th>PRODUCT</th>
<th>PRICE</th>
<th>DESCRIPTION</th>
<th>PROS</th>
<th>CONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td>GifBuilder</td>
<td>free</td>
<td>Conversion/optimization tool that imports artwork and exports animated GIFs. Lets you work with color and transparency, set frame delays, and optimize output file sizes.</td>
<td>No cost; easy to use; optimization capabilities can shrink files sizes significantly.</td>
<td>none</td>
</tr>
<tr>
<td>🌟🌟🌟🌟</td>
<td>GIFmation</td>
<td>$49</td>
<td>Conversion/conversion tool that imports artwork and lets you fine-tune it with sophisticated color-preview and cropping controls.</td>
<td>Easy to use; offers handy, high-end color and cropping controls.</td>
<td>none</td>
</tr>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td>Web-Motion</td>
<td>$100 or $270*</td>
<td>A plug-in for Movie Cleaner Pro (QuickTime compression software) that optimizes QuickTime movies for Web delivery.</td>
<td>Expert advice helps you through the confusing process of choosing Web-appropriate data rates and video compression; creates small, fast, Web-appropriate content.</td>
<td>Somewhat high price of bundle with Movie Cleaner Pro.</td>
</tr>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td>Shockwave/Afterburner</td>
<td>free</td>
<td>Shockwave is the browser plug-in end viewers need in order to see projects created in Macromedia’s Director on the Web (after they’ve been postprocessed with Afterburner).</td>
<td>Simplifies repurposing of Director content for the Web; Director’s scripting language can create interactive animations with rollover effects and streaming sound; no cost.</td>
<td>Steep learning curve if you’re not experienced in Director scripting; creates fairly large files that require lots of RAM to view; browser plug-in needed to view animations in proprietary format.</td>
</tr>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td>Sizzler</td>
<td>free</td>
<td>Tool for turning QuickTime and PICS content into streamable animations with synchronized sound.</td>
<td>No cost; easy to use; streamable animations don’t take download time.</td>
<td>Browser plug-in needed to view animations in proprietary format.</td>
</tr>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td>ActionLine</td>
<td>$299</td>
<td>GII-based Java-applet creation tool oriented toward creating slide-show-type animations without programming.</td>
<td>Lets you create Java applets without programming; offers fairly easy ways to set up effects such as transitions and wipes.</td>
<td>Difficult, nonintuitive interface; nonprofessional-looking results; Java applets still not fully reliable across multiple platforms and browsers.</td>
</tr>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td>WebBurst</td>
<td>$299</td>
<td>GII-based Java-applet-creation tool oriented toward creating interactive buttons and setting up conditional interactivity. Includes a palette of clip art.</td>
<td>Lets you create Java applets without programming; creates small files, meaning shorter download times.</td>
<td>Steep learning curve; Java applets still not fully reliable across multiple platforms and browsers.</td>
</tr>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td>DeltaPoint WebAnimator</td>
<td>$99</td>
<td>Animation-creating tool oriented toward business-style slide shows.</td>
<td>Proprietary, vector-based .wan format means files are small and fast-downloading.</td>
<td>Storyboard format is limiting; browser plug-in needed for viewing animations in proprietary format.</td>
</tr>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td>Future-Splash Animator</td>
<td>$250</td>
<td>Animation-creating tool suited to professional Web-site designers who want a distinctive, anti-aliased, vector-based look.</td>
<td>Lets you create animations with rollover effects, multiple moving objects; proprietary, vector-based .spl format is small, fast, and scalable.</td>
<td>Browser plug-in needed for viewing animations in proprietary format.</td>
</tr>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td>3D Web Workshop</td>
<td>$249</td>
<td>Bundle of two existing products (LogoMotion and TextureScape) with a Web clip-art collection and (optionally) Adobe’s PageMill for Web-page creation.</td>
<td>Useful, Web-savvy combo for creating 3-D art and animations.</td>
<td>Lacks integrated documentation (simply documents individual products).</td>
</tr>
<tr>
<td>🌟🌟🌟🌟🌟</td>
<td>WebPainter</td>
<td>$100</td>
<td>Painting tool for creating cel-style character animation.</td>
<td>Easy to use; very useful for learning animation principles in general and cel-style animation in particular.</td>
<td>Lacks some sophisticated animation features, such as timelines and motion controls.</td>
</tr>
</tbody>
</table>

*Requires Movie Cleaner Pro as well; bundle of Web-Motion and Movie Cleaner Pro costs $270. *The $399 version includes Adobe PageMill.
Using breakthrough LIMDOW® technology, Maxell brings you
super-fast direct OverWrite Magneto Optical Disks.

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Most, Mitsubishi Chemical, Konica, and others.

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disks. Got questions? Call our tech
support center, or get our FREE product
brochure by calling 1-888-2-Maxell (262-9355).
Check out our Website at www.maxell.com
format are also importable), you can set up animations; interactive buttons; and interactivity based on “if,” “less than,” and “greater than” conditions. Instead of flipping through individual frames of animation, WebBurst puts whatever artwork you create into a matrix and pans across it (imagine a camera sweeping along a filmstrip), and this makes for shorter download times than what would be needed for lots of individual animation objects. In addition to writing finished Java applets, the software also saves animated GIFs and the AU sound-file format — although we’re not sure why anyone would want to use a tool this complex to create GIF or AU content. The interface is pretty overwhelming, and even though the program saves you the hassle of having to learn Java from scratch, it still isn’t at all easy to learn or use.

ActionLine. Similar to WebBurst in its promise of letting you create Java applets without programming, ActionLine also made us wonder if the end results were worth the bother involved. The product comes in three components: an editor (with which you create Java applets), a viewer (with which you preview the applets), and a Java viewer (which gets stored with the final applets on your Web server). The editor imports image and sound files in various formats (PICT, JPEG, GIF, Photo CD, AIFF, and AU) and lets you set up effects such as transitions and wipes, color transitions, and changeable images (such as what you might use in a rollover effect) without much effort. But the creation process is rather unintuitive: You build your presentation with an abstract interface showing boxes and filenames, save it, and then preview it in a separate application in order to see the end results. And the end results are less than inspiring; most of the sample applets you’ll find at the ActionLine Web site look like rather crude slide shows. If you want to create presentations that require interactive slide shows, ActionLine is worth considering, but the level of interactivity lends itself more to changing the color of text than to linking to database information or handling more-complicated what-if-type programming operations.

STARTING FROM SCRATCH: GENERAL-PURPOSE ANIMATION CREATORS

Although some Web animation tools are targeted toward using specific technologies to put content (usually preexisting) on the Web, others are more general-purpose, letting you create content from scratch and choose from multiple Web-delivery technologies. If you’re looking for a tool that lets you create animated content for the Web in multiple formats, check out the following products: Totally Hip Software’s WebPainter, Specular’s 3D Web Workshop, FutureWave’s FutureSplash Animator, and DeltaPoint’s DeltaPoint WebAnimator. End viewers will need plug-ins in order to view animations in the proprietary, vector-based formats of the latter two products, but the resultant speed may be worth the compromise — or you may want to export these products’ animations in one of the other formats allowed.

---

**Cut to the Chase / deciding on a Web animation approach**

Still confused by all the options for creating animations for the Web? Here’s a visual guide to help you find the simplest way to meet your goals.

<table>
<thead>
<tr>
<th>To create</th>
<th>use this technology</th>
<th>To meet these specific goals</th>
<th>use this technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple, noninteractive animated logos, buttons, or soundless slide shows</td>
<td>Animated GIFs</td>
<td>To assemble existing sequences of images into animated-GIF format</td>
<td>GifBuilder</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...without defringing and cropping tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>...with defringing and cropping tools</td>
<td>GIFFrame</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...using 3-D text and art tools and premade backgrounds</td>
<td>WebPainter</td>
</tr>
<tr>
<td>Movies with sound (noninteractive except for playback controls)</td>
<td>QuickTime</td>
<td>To create animated-GIF artwork from scratch</td>
<td>3D Web Workshop</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...using painted, cel-style animation</td>
<td></td>
</tr>
<tr>
<td>Animations with interactivity, event-triggered sound, or proprietary file formats (such as Director or vector-based formats)</td>
<td>Browser plug-ins</td>
<td>To create interactive, vector-based animations with sound</td>
<td>DeltaPoint WebAnimator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>...and sophisticated effects such as interactive buttons that change in response to cursor movements and mouse clicks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>...in a slide-show-style format, using prebuilt templates</td>
<td>FutureSplash Animator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To create streamable animations with sound from QuickTime movies</td>
<td>Sizzler</td>
</tr>
<tr>
<td></td>
<td></td>
<td>To turn Director projects into Web animations</td>
<td>Shockwave/Afterburner</td>
</tr>
<tr>
<td>Computational, interactive animations that generate artwork on the fly</td>
<td>Java</td>
<td>To take advantage of the capabilities that only Java offers</td>
<td>learn to program in Java*</td>
</tr>
</tbody>
</table>

---

*The GUI-based Java-applet-creation tools we looked at were complicated and didn’t offer impressive enough results to make them worth learning.
#1 Selling and Best Value
Why should you choose the program 7 out of 10 family history enthusiasts choose? Quite simply, Family Tree Maker’s huge community of users and vast database of genealogy records will help you find your ancestors. And this award-winning program gives you the best variety of beautiful printouts.

Find Your Ancestors Fast
Unlike other family tree programs, Family Tree Maker actually helps you find your ancestors. Just click the FamilyFinder button to search a list of 115 million people from centuries of genealogy records. You’ll instantly learn where to find more information about possible ancestors. And, if a distant relative has already traced your family tree, you may find it on one of the accessory CD-ROMs that work with Family Tree Maker. In fact, we have the world’s largest collection of actual family trees and genealogy records on CD-ROM. Save precious time while tracing your family tree from the comfort of your home!

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We’ve sold nearly one million copies of Family Tree Maker. And thousands of those users visit our Web site every single day. Just click the Online button from inside Family Tree Maker and you’ll be on the Internet, too. Once there, use our FREE matching service to quickly find others working on your same family tree. Create a FREE Web page for your family. Or post a FREE classified advertisement seeking family information. If the Internet contains information about your family, we’ll help you find it fast!

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Family Tree Maker makes it rewarding and fun to preserve your family history for future generations. The program stores literally any kind of information. Start with names, dates, and basic facts. Record cherished family stories. Include photos and video clips, too. Then, choose from a variety of attractive printouts to share with your family—beautiful family trees, family journals, scrapbooks, and more.

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Don’t miss the chance to preserve your family history before more time slips away. Order today! Or find Family Tree Maker at a software store near you. Satisfaction guaranteed.

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WebPainter. If you want to create basic, cel-style Web animations (artwork changing in each frame, as in a cartoon) or if you just want to learn about animation principles, you can't go wrong with Totally Hip Software's WebPainter. It provides an easy way to paint animations and export them in a variety of formats, including PICS, QuickTime, animated GIF, sequential GIF, and Sizzler. Its interface lets you use onion-skinning (the computer equivalent of tracing paper), edit multiple cells (frames) at once, and create foregrounds and backgrounds separately. The WebPainter Web site includes a very thorough tutorial that not only explains how to use the product but also describes universal animation principles. Although WebPainter lacks some of the sophisticated animation features found in higher-end packages, such as timelines and motion controls, it does a great job of making cel-style character animation understandable and easy.

3D Web Workshop. If you want your animation to pop out in that superdimensional way that only 3-D art can, Specular's 3-D Web Workshop bundle is a handy bag of tricks to have. 3D Web Workshop bundles two existing products (logoMotion and TextureScape) with a Web clip-art collection called WebHands — plus Adobe's PageMill (the popular WYSIWYG HTML generator) as an optional extra — to form a suite of Web artwork-generation tools. The WebHands collection gives you easy-to-edit-and-customize clip art as well as clip animation of preexisting Web-based artwork, such as seamlessly tiling background textures and 3-D buttons, bullets, and rules. All the WebHands clip art is professionally designed for use on the Web, with optimized palettes and transparency information, and you can drag and drop the clip art onto a Web page with either the Mac OS or Windows version of Netscape's Navigator Gold. You can also build your own 3-D animated logos in logoMotion and save them as animated GIFs or QuickTime movies, or you can create your own custom artwork and background tiles by using TextureScape. We were disappointed that the documentation for the individual products wasn't reworked and integrated for the bundle, but overall, it's a helpful group of 3-D tools, suitable for animation old-timers and newcomers alike.

FutureSplash Animator. If you want to create animations that are both fast and scalable to different resolutions, a vector-based format is your best bet, and if you want lots of controls to make those animations professional-looking as possible, go for FutureWave Software's FutureSplash Animator, a distinctive, original Web animation tool and plug-in. There are two basic parts to this product: the animation-creation interface and the SaveAs choices, which let you save files in FutureWave's impressive .spl format (which supports interactive buttons and admirably small file sizes) or as animated GIFs or PICS files (among other formats). The animation tool lets you create animations that use multiple artwork layers and multiple movement paths (for example, a ball, a triangle, and some text all moving at various speeds and all independently controlled) — plus, you can create interactive buttons with rollover effects without doing any programming. FutureSplash Animator is a great overall package with terrific features. The only drawback is that it's plug-in-based, so it requires your end viewer to go that extra mile that some will not travel — unless you can bypass the problem by using the included Java and ActiveX players for the .spl format. If support for its format were built right into browsers, FutureSplash would be a product everyone from professionals to design dabblers would want.

DeltaPoint WebAnimator. Like FutureSplash Animator, DeltaPoint WebAnimator is built around a vector-based, plug-in-independent format that produces fast, scalable animations — but it's a less flexible product, oriented more toward business-style slide shows than artistic-looking animations. WebAnimator supports sound and animation. It imports artwork in PICT, GIF, JPEG, and TIFF formats and exports in QuickTime format or its own proprietary .wan format (which can be seen from Netscape Navigator or Microsoft Internet Explorer if the WebAnimator plug-in is installed). WebAnimator uses a storyboard-style creation process, in which you can set wipes, pans, and movements. It supports animation templates, so once you've settled on a movement sequence you like, you can repeat it with various artwork, sounds, and text. The problem is, most of the prebuilt templates are fairly mundane and the storyboard/template structure limits users' ability to branch out into more-creative ground. The fact that it's a plug-in-based system limits its accessibility as well.

MOVING TO A CLOSE

With all the superb tools now available, there's little reason not to spice your Web site up with some animated art. Whichever animation technologies and tools you choose, though, you should always keep your site's goals and audience in mind. Although animation can add a lot to your site's appeal, it can also create exclusionary walls that only the elite few with fast CPUs and loads of RAM can break through. Make sure your medium fits your message; use animation wisely and sparingly, and the Web will be a much more inviting place.

Lynda Weinman is a designer, animator, mother, and author of three books on Web design from New Riders Publishing: Designing Web Graphics, Deconstructing Web Graphics, and Coloring Web Graphics. Additional research was done by Juan Gonzalez and Wendy Poley.
Why settle for a product which is big and slow?
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Wingz® is the lightest, fastest and most scalable spreadsheet available for the Macintosh® environment. This new release of Wingz, version 2, has added many new features and boosted its already sizzling performance without adding unnecessary bulk. This means that choosing Wingz as your spreadsheet is a decision without compromise.

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For a limited time, existing Wingz users can upgrade to version 2.1 for the remarkably low price of $89. Hyperscript Tools upgrades are available for only $179. If you use another spreadsheet, please ask us about our competitive upgrade plan. You must act quickly, however, as this opportunity will not last.


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Ricoh’s RDC-2 advanced design features let you go beyond just taking still pictures. Now you can bring your images to life by capturing the movements and sounds of your subjects. The RDC-2 lets you select between five independent recording modes to capture digital information in any combination or order you choose: Still Mode with macro capability, Sound Mode, Stills with Sound Mode, Continuous Mode, Document Mode.

The Ultimate Presentation Tool. The RDC-2 allows you to use your digital images in a multitude of ways...plug the RDC-2 into any TV monitor or VCR and playback your images and sounds instantly. Download text and graphics to the camera to customize and enhance your presentations.

RDC-1 3X Zoom Digital Camera with Full Motion and Sound.

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- Output to Virtually All Digital Media: Output to color PC or video printer, TV monitor, or send still images and sound around the world via modem/digital phone.
- 6 Different Data Recording Modes: Still images, sound, still images with sound, continuous shooting, full motion video with sound, document mode, and macro capability.
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Document events, create entire presentations, send your images to the Internet within minutes. Communicate with co-workers in remote locations.

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CIRCLE 160 ON READER SERVICE CARD
Is E-Mail Dead?

The stampede toward Internet mail is trampling all over LAN-based office e-mail systems — and the casualties are going to be the features you know and love.

Sweeping down from the steppes of academia and the defense industry to meet its crowds of hyped-up fans, the Internet-mail craze has quickly overwhelmed the proprietary systems that carry messages within most networked companies. In the rout that's taken place over the past year, many stalwart Mac e-mail products for offices — from e-mail-centric packages such as CE Software's QuickMail to groupware products and bulletin-board systems — have taken blows that have brought changes to the world of e-mail as we know it.

The switch from LAN mail (where a matched pair of client and server applications share advanced ways of exchanging information) to a strategy of "adding value" to Internet mail has happened with a rapidity unknown in the usually poky e-mail world. If you weren't paying

By Stephen Howard
obsessively close attention during 1996, you probably didn't notice that virtually every vendor of Mac LAN-mail software jettisoned its proprietary LAN-mail underpinnings and set its sights on Internet standards for intranet mail delivery. And there's the rub: Although the Internet is great for contacting colleagues continents away, it's really suboptimal for the day-to-day business of batting messages around inside an organization. Unfortunately, the shortcomings of Internet mail for intracompany use haven't stopped Mac mail-software vendors such as Lotus, Microsoft, Novell, and SoftArc from executing a collective about-face (see the "Reincarnation Scorecard" table). Each of them is integrating Internet protocols into the heart of their LAN products and making development of Internet-based mail software a primary focus.

If you're an Internet junkie, you're likely to greet this new regime with glee. No doubt you're going to see the ascendency of almost universal mail access and open standards as a victory over the iron grip of often incompatible platforms, operating systems, and proprietary technology. But that rosy view ignores the fact that compared to LAN-based e-mail, Internet mail stinks.

Apple, independent software vendors, and online services have temporarily taken leave of their senses in their rush to embrace this technology. They've been lured by the Carl Sagan-like numbers that fuel every Internet craze, and in the process, they are all too happily tossing aside features that users of every non-Internet Mac mail system take for granted.

**Internet Mail's Trade-Offs**

Delivering e-mail was, until recently, the fundamental activity on the Internet. Traffic from Web browsers now exceeds that of basic mail, but for the first few decades of the Net, its millions of users were primarily sending and receiving mail. Admittedly, these early settlers were onto something. From the beginning, anyone who had a spare UNIX server could plug into the Internet, so mail could leap over organizational boundaries and circle the world to the intended recipient. The same is true today, and like Amway's, the scheme sounds good when you

---

**Reincarnation Scorecard**

/ will your LAN-mail package be reborn as an Internet-mail product?

Rebirthing instructors may want to offer their services to the many vendors of Mac LAN e-mail products who are reworking their offerings around Internet-mail standards. Here's a scorecard to help you track the changes.

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>PRODUCT</th>
<th>STATUS OF LAN-MAIL PRODUCT</th>
<th>INTERNET-MAIL PLANS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>PowerTalk</td>
<td>Canceled. Deader than a doorknob</td>
<td>All-new Internet-based mail system to come.</td>
</tr>
<tr>
<td>Claris</td>
<td>OfficeMail</td>
<td>Never planned.</td>
<td>Claris skipped LAN mail altogether and jumped headfirst into Internet-based mail in 1996, with OfficeMail.</td>
</tr>
<tr>
<td></td>
<td>and Emailler</td>
<td></td>
<td>Emailler; Claris' Internet front end, came out in 1995.</td>
</tr>
<tr>
<td>Lotus</td>
<td>Notes</td>
<td>Still strong because of groupware hooks. Mac product slow to ship.</td>
<td>Ahead of the curve, Notes developers started moving quickly to add Internet features during 1995.</td>
</tr>
<tr>
<td>Lotus</td>
<td>cc:Mail</td>
<td>Behind the curve. LAN product needs an upgrade.</td>
<td>Lotus waited surprisingly long to adopt an Internet strategy for cc:Mail. As the company leaps to catch the boat that's left the dock, cc:Mail may sink.</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Exchange</td>
<td>Limbo. Mac Exchange client software still MIA.</td>
<td>Microsoft spent millions developing a competitor to Lotus Notes and then discovered that it had to switch gears to embrace the Internet. Not quite there yet.</td>
</tr>
<tr>
<td>Novell</td>
<td>GroupWise</td>
<td>Upgrade due in early 1997 will add significant features.</td>
<td>The most integrated groupware system around was moved to the Internet in the fall of 1996.</td>
</tr>
<tr>
<td>Quarterdeck</td>
<td>Quarterdeck Mail</td>
<td>Improving, with much needed ease-of-use features.</td>
<td>Quarterdeck is building a new Internet life for the program once known as Microsoft Mail. First baby steps in 1995, more due soon.</td>
</tr>
<tr>
<td>Spider Island Software</td>
<td>TeleFinder</td>
<td>Forgotten. AppleTalk services available but little known.</td>
<td>Company has taken a quiet lead in Mac Internet-mail server software.</td>
</tr>
<tr>
<td>Stalker Software</td>
<td>CommuniGate</td>
<td>Needs attention. Decent low-end product has life in SOHO.</td>
<td>Stalker has made its low-end approach to Internet mail the main selling point for its small-group messaging software.</td>
</tr>
</tbody>
</table>
If you weren't paying close attention during 1996, you probably didn't notice that nearly every vendor of Mac LAN-mail software jettisoned its proprietary LAN-mail underpinnings.

The Standard Drawbacks

Although you could build castles in the air with the advanced features promised for Internet mail, the daily reality for almost all of its users is a text-only message that uses a single, monospaced font and contains more gobbledygook than content. Internet mail is confusing and plain because it's built on international standards that are, and always have been, unable to deliver a high level of service and sophisticated features. Although widely accepted on paper, these mail standards and protocols are also, unfortunately, widely interpreted in programs. The resulting discord among the implementors results in "standards-based" mail often being unreliable and unfriendly — adding insult to the injury inflicted by the overly basic nature of the standards.

What are the specific standards at the root of all this trouble? There are three in particular: MIME, or Multi-purpose Internet Mail Enclosures, which allows a message to include data other than plain text; SMTP, or Simple Mail Transfer Protocol, which basically sends messages; and POP3, or Post Office Protocol version 3, which lets a client program pick up mail from a server that's holding it. There are other standards involved as well, particularly BinHex and uuencode, which both serve to translate usable files into sendable text, but the first three are the biggies.

MIME: Off with the Gloves. It is telling that MIME is named after one of the least loved types of performance artist; this so-called standard is a pest. If you're unfortunate enough to have used Cybergod's mail parts, then you've experienced firsthand the hassle that ensues when one mail client creates a MIME message in a manner slightly different from the way another client expects. Early users of Intercon's TCP/Connect programs experienced some of the same difficulties, as do Lotus Notes users today — along with just about anyone who's ever tried to link an Internet-mail gateway to a LAN-
mail system. Depending on its source and type, your mail may be chopped into pieces or arrive with tons of garbage text included at the bottom. Sometimes that garbage is actually an enclosed file that you need to copy into a new document, save as text, and decode by using some geeky utility. (Thank heavens for StuffIt Expander! Without it, Mac-based Internet mail might not function at all.)

Although it has always been finicky, MIME is one of the great hopes of Internet mail, since it tries to create a way for mail to be more than just text. This open-endedness has resulted in such fascinating experiments as the use of formatted text (multiple fonts and sizes) and the embedding of live Web links, sounds, QuickTime movies, raw Macintosh resources, and even interactive electronic forms in messages. These features are already available, of course, in most non-Internet Mac e-mail systems, and it's still very rare that any of these capabilities work across three or more Internet-mail clients. But MIME at least has potential as a mechanism for new Internet-mail features — unlike its fellow standards, SMTP and POP3.

**SMTP and POP3: Aiming Low.** These standards are so bare-bones it's embarrassing. You want a reliable return receipt, to know when someone read your mail? Sorry. You want to unsend a message you thought better of? Forget it. Would you like your message encrypted while it's sent over the wire or stored on a server? Think again. Most of the e-mail features invented in the past ten years have been left out of POP3 and SMTP. However, like a seasoned two-by-four, these standards do have their uses. Where MIME fails in its aspirations, these two succeed by their lack of them. The evidence shows that SMTP and POP3 can be implemented well enough by a variety of programs to get basic text-only mail through most of the time. Hurrah for standards.

**A Serviceable Example.** The failings of these protocols and of their implementations in Internet mail in general have been cruelly apparent on the commercial online services, which so many users approach because they're seeking a smoother, easier on-ramp to the Information Superhighway. Since America Online, CompuServe, and Prodigy all provide gateways for sending and delivering standards-based Internet mail, it should be a piece of cake to send a message with an enclosed file from one to another. But if you haven't tried it yet, don't waste your time; the Internet-mail gateways of these online services are not quite compatible with one another, even though every one of these companies views connectivity to the Internet as being at the core of its future business.

**Inherent Limitations**

Net boosters insist that the problems lie not with our standards but with our programmers. If all those Internet-software creators would just follow the standards better, everyone could communicate with everyone else without a hitch. This is utopian hooey.

You want to know what really makes Internet messaging standards work — to the degree they do — in the Mac community? Mac programmers attend Internet Engineering Task Force meetings — where the standards are supposed to be hammered out — and then afterward, they have coffee or joiit together, swap notes, and iron out the details. The reason you can send e-mail with an attachment from Qualcomm's Eudora to Claris Emailler has more to do with these efforts than with Internet-mail standards making anything easy. The developers of Macintosh Internet software have even formalized this informal exchange by banding together to form MIDAS (Macintosh Internet Developers Association), a group whose goal is to ensure compatibility among their standards-based programs.

These folks all know that the published Internet-mail standards have never been enough to keep all the Mac programs communicating, so anything that works today most likely relies on the personal cooperation and good will of these programmers. This reality makes a mockery of the supposed superiority of open standards.

Internet mail is alleged to be better than a collection of proprietary LAN-mail systems because new mail systems need only implement the right standards and protocols to work with any other standards-based mail server or client software. But when vendors have to trade tips and tricks to help each other read one another's messages, the standards aren't doing their job. If the same effort were expended getting a group of proprietary LAN-mail systems talking to one another, the results would prove to be just as good, if not better. Consequently, we would get to keep our return receipts and company-wide address books, since each vendor has protocols that accommodate these features.

**But Wait, There's Hope**

So if Internet-mail standards and the processes that produce them offer little hope of our regaining lost ground in e-mail features, are we just plain out of luck?

Not necessarily. Perversely enough, the same force that allowed Internet mail to trample the world of LAN mail — the power of numbers — may be the force that finally makes Internet-mail standards work. If a company with an impossible-to-ignore number of customers creates an Internet-mail client program that dominates the market, that company can create a de facto set of standards others must follow. Netscape and Microsoft, because they have both added mail capabilities to their extremely popular Web browsers, are each in a position to set that messaging benchmark.

At first glance, these two Internet titans may seem the worst possible candidates for the position of e-mail trendsetter. Based on their
Lowered Expectations / LAN-mail features you will and won’t find in Internet mail

The Internet community is never at a loss for new standards that add features to e-mail. However, some of the features we take for granted today in LAN-mail systems are still not mainstream for Internet mail, and some will probably never be possible except within a specific vendor’s system.

Today’s Standard Internet-Mail Capabilities
- Send text message to server
- Pick up text message from server
- Translate enclosures
- Include multimedia data types

Stay Tuned — Still Not Mainstream Abilities
- Synchronize address books
- Use forms
- Search text

Don’t Hold Your Breath ...
- Send return receipts
- Unsend messages
- Sound alert when mail arrives at server
- Route messages sequentially in workflow
- Allow direct dial-in to server
- Allow local control of mail rules or filters on server

efforts to date, it seems that neither possesses any innate talent for this sort of thing. Netscape’s original attempts at putting e-mail features into Navigator were clodish at best, and Microsoft — in spite of all the resources it devoted to Microsoft Mail — hasn’t had a successful e-mail strategy in its entire history.

But both companies are ambitious, powerful, and experienced at making Internet standards happen. Just as their browsers helped define many Web features, so too might the mail functions built into Netscape Navigator or Microsoft’s Internet Explorer become the bludgeon that pounds out some of the chaos of Internet-mail standards. The situation clearly calls for forceful measures. And if one program or the other becomes the touchstone of messaging software, our view of Internet-mail compatibility will change drastically. Compatibility will be judged not by degrees of compliance with an academic standard but by the ability to trade MIME-encoded messages with that dominant client software.

More than being just another standards war, this is a transition that provides the only hope that Internet mail will break free of its inherent confusion and limitations. Once leadership in the implementation of standards has been established, most of the advanced niceties of LAN-based mail can and will reemerge on the Internet. The customary grind of Internet standards is not going to be strong enough to smooth out these rough spots until the market applies some elbow grease.

The reverse of the traditional trickling down of standards will happen: As Netscape and Microsoft add features to their mail client software, their implementations will flow back into the standards-definition process for belated ratification. (This de facto standard setting is already happening with Web client and server software.)

The Verdict

The feature-rich e-mail we’ve known in the LAN-based versions of programs such as QuickMail is, if not actually dead, in an extremely deep coma. In gaining a straightforward connection to the sea of Internet users, we’re losing many of the nuances and conveniences we’ve grown accustomed to within our companies’ e-mail systems. But despite the obstacles posed by the Internet standards-setting process, all is not lost. The bludgeon of majority rule can work for good as well as for evil, and if a firm such as Netscape or Microsoft can wield it effectively for e-mail standards, we may yet keep our favorite LAN-mail features from ending up in the dead-letter office.

The feature-rich LAN e-mail we’ve known is, if not actually dead, in an extremely deep coma.

MacWEEK Executive Editor Stephen Howard is striving to uphold the banner of LAN-mail standards on the Internet; send a MIME enclosure to stephen@macweek.com, and he’ll send you a return receipt.
Low-Cost Color Scanners:

THESE DAYS THERE'S more reason than ever to turn hard-copy pictures into electronic bits — for publishing on the Web as well as on paper. Luckily, prices for a key group of devices needed for this process — color flatbed scanners — have reached a new level of affordability. In the past, choosing the lower-priced models required you to make major compromises in quality, but no longer. MacUser Labs tested 17 color flatbed scanners — 11 with a street price of $500 to $1,000 each and 6 costing less than $500 each — for image quality, ease of use, and helpfulness of software tools. Our verdict: Whether you're a DTP pro looking for a sub-$1,000 bargain or a home user with a $500 budget, you'll find scanners in your price range that produce high-quality output.

Scanning the Results

To test each scanner's image-output quality, we scanned a 5-x-7-inch color photo from the Graphic Arts Technical Foundation (Pittsburgh, Pennsylvania; 412-621-6941).

The GATF image challenges a scanner's prowess in several ways: It includes a wide range of color, skin, and other natural tones; a gray-gradient background; varying degrees of highlight and shadow; and some fine detail. We printed the images on a Tektronix Phaser 480X dye-sublimation printer and asked a jury of imaging experts to evaluate the output quality.

Our jury was able to separate the scanners into three distinct categories: Outstanding, Good, and Fair. Scanners that produced outstanding images required little tweaking and produced accurate colors with good detail. Scanners that did well in some areas but poorly in others were in the Good category. With these scanners, we found that the problems — which included color inaccuracy,
loss of detail in highlight and shadowed areas, and variance in saturation and sharpness — could be fixed by moderate editing in the prescan. The last group of scanners required substantial tweaking to produce acceptable scans; we categorized these as Fair.

The overall best-looking scans were those of the Linotype-Hell Jade, which produced an image that came very close to an accurate reproduction of the original photograph. The Jade was able to maintain the natural look of skin and other neutral tones, and it preserved fine details in the highlighted as well as the shadowed areas and produced balanced color saturation. The Jade was also the only device we tested that reproduced the gray background in our image correctly — every other scanner created a magenta cast.

The Nikon ScanTouch 110 and ScanTouch 210 were close behind the Jade in image quality. Both produced nice-looking, sharp images, but the colors were less saturated than the Jade’s. Both also produced a magenta cast in the background, although the natural tones looked good.

The biggest bargain in the Outstanding group was the Agfa SnapScan. The amount of detail it preserved in highlighted areas was consistent across the image, although detail in the shadowed areas was somewhat uneven. Overall, image details were discernible but not crisp. But the under-$400 SnapScan produced images that gave some of the more expensive scanners a run for their money.

Bit by Bit

Although price and image quality are major considerations, other features — in the areas of bit depth, resolution, software tools, maximum scan area, and add-on extras — also differentiate the products.

Bit Depth. Each scanner we tested has a specified bit depth — the sum of the number of bits of data per color (red, green, and blue) it can capture for each pixel. For example, a 24-bit scanner captures 8 bits of data per color for each pixel whereas a 30-bit scanner captures 10 bits per color for each pixel.

If you’re wondering whether to go for 24-bit, 30-bit, or higher (the 33-bit Linotype-Hell Jade and UMAX Vista-S12 or the 36-bit Pacific Image ScanAce III), bear in mind that scanners with a bit depth higher than 24 bits don’t actually provide any more colors than 24-bit scanners nor do they necessarily provide better scans. A scanned image can contain a maximum of 24 bits of color information per pixel, so scanners that have a bit depth higher than 24 bits just end up discarding the extra information during the final scan. The extra bits are used only during prescan adjustments such as darkening, lightening, or sharpening portions of the image — operations you perform with the tools provided in the software that drives the scanner.

Resolution. Resolution is a measure of the fineness of detail the scanner is able to provide — the more dots (pixels) per inch, the finer the detail. Manufacturers provide two resolution specifications for each scanner they make: optical resolution, or the actual number of pixels the scanner collects data for per inch (given as two numbers, vertical and horizontal), and maximum interpolated resolution, which is an artificially enhanced resolution the scanner can provide by guessing at the colors between each set of adjacent pixels from the original scan, using mathematical algorithms (this number is the same vertically and horizontally).

The method you should use for determining what resolution you need from your scanner depends on what device you’ll be using to output images. If you’re scanning images for use on the Web or for viewing on a monitor, but not for printing, you’ll want to scan at the same resolution as your monitor (typically 72 dpi). If you plan to print the scanned images, you’ll need to consider what type of printer you’re printing to.

For laser printers and imagesetters, start with your printer’s line-screen frequency (generally provided in the printer’s manual). If your printer’s line-screen frequency is below 133 lpi (lines per inch), multiply it by 1.5. If it’s more than 133 lpi, multiply it by 2. For example, if you’re printing to an Apple Color LaserWriter 12/660 PS, which has a line-screen frequency of 200 lpi, your scanning resolution should be at least 400 dpi.

For inkjet printers, which don’t have a set line-screen frequency, you’ll generally need to do a little experimenting to find the best scanning resolution. Of course, experimenting is difficult to do before you buy a scanner, so here’s a general guideline: We’ve found that a scanning resolution of 125 to 200 dpi is...
usually adequate for an inkjet printer.

Finally, if you plan to enlarge or reduce your scanned images, multiply the scanning resolution by the percentage (as a decimal number) that represents the relationship of the enlarged or reduced image's size to the original size. Continuing with the example of printing to an Apple LaserWriter 12/660 PS, if you want to make your images 1.5 times (or 150 percent) as big as the original, you'll need a scanning resolution of 600 (400 x 1.5) dpi.

Generally, you should look for a scanner that offers vertical and horizontal optical-resolution numbers greater than or equal to your desired scanning resolution. If, however, you plan to enlarge images or perform operations such as smoothing jagged edges on line art, you may be able to use an interpolated resolution to make up some of the difference between the optical-resolution numbers and your desired resolution.

Software Tools. Since your scanner's scanning software allows you to make adjustments during scanning, you'll want it to provide plenty of tools for tweaking scans before any extra bits of color information (beyond 24 bits) are discarded. In particular, look for curve controls, highlight- and shadow-adjustment tools, balance controls, and sharpness options. Agfa, Microtek, Nikon, and UMAX provide software that combine an easy-to-use interface with a full set of image-editing tools. The LinoColor Easy bundle, which comes with the Linotype-Hell Jade scanner, also provides ample tools, but they're designed for more-experienced users who need to perform prepress-oriented operations such as scanning in the CMYK color space (rather than in RGB).

If you don't want to fiddle with tone curves or learn how to read a densitometer or a histogram in order to evaluate color accuracy, look for a scanner that has software that offers printer profiles and automatic controls. Agfa's FotoSnap software (included with the three Agfa scanners we tested for this report) uses preset generic color profiles based on an assortment of output devices. All you need to do before performing a scan is configure a couple of settings.

Finally, if you want to operate the scanner from within a particular application, make sure your scanner's driver software will allow you to. If the driver software is a Photoshop plug-in, you can operate the scanner from within any application that supports drivers.

FROM PICTURES TO PIXELS / how flatbed scanners work

THE BASIC PRINCIPLE of how a scanner operates is pretty simple: Light reflected off an image (or slide through it, if the image is on a transparency) is directed by way of mirrors and a lens onto a set of photosensors that register electrical charges based on the intensity of the light. These electrical charges are then converted into digital values representing color measurements.

Where things get a bit more complex with color scanners is in the actual mechanics of how the light moves across the image and passes through red, green, and blue filters in order to produce the three sets of data necessary for a color picture. In a three-pass scanner, the scan head makes three passes down the length of the image — once using each color filter. A single-pass scanner generally uses three arrays of photosensors, each one coated to filter a particular color (red, green, or blue), so that only one pass needs to be made and the scan can occur more quickly. Single-pass scanners were at one time considered inferior to three-pass scanners in terms of image quality, but they have improved to the point where their speed now generally gives them an advantage over three-pass scanners. //KAREN JOHSON

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The Linotype-Hell Jade produced the best-looking output of the scanners we tested — an image that comes very close to matching the original photograph. The color accuracy is the best we’ve seen from a scanner costing under $1,000.

Photoshop plug-ins. If it complies with the TWAIN specification, you can operate the scanner from within any application that supports TWAIN drivers (for example, Adobe PageMaker). If the driver software is a stand-alone application specific to the scanner, see if it can link to an image editor, to provide you with a bit more flexibility.

**Maximum Scan Area.** All the scanners we reviewed can scan a letter-sized image, and some have a larger maximum scan area. The area you choose should be dictated by the size of the images you want to scan. The dimensions most scanner manufacturers provide for their maximum scanning area are for reflective scans — scans of nontransparent media. If you want to scan transparencies or slides, note that the maximum scan area for these media may be smaller than the area for reflective media — and factor in the extra cost of transparency adapters.

**Extras.** If you want to scan anything other than single pages of art and text (all the scanners we tested come with OCR software) on reflective (nontransparent) media, you’ll need to pay extra. With one exception, all the scanners we tested have transparency adapters and automatic sheet feeders, at extra cost. A transparency adapter is an alternative scanner lid with a transparent area and an extra scan head that shines light through a transparent image during scanning. A sheet feeder lets the scanner automatically scan a multipage document. The exception is the Jade, which does not have an automatic sheet-feeder option because it is aimed at the prepress market.

As a further extra, many vendors offer expanded software packages, such as a full version of Photoshop, at additional cost.

### The Bottom Line

The Linotype-Hell Jade produced the best scans we’ve seen from a scanner priced under $1,000 — an attractive price for a prepress scanner. Its LinColor Easy software is a stripped-down version of the same software the company bundles with its more expensive scanners, but it still has the tools most prepress and imaging experts need for tweaking images.

If you want a bargain, check out the Agfa SnapScan. Its image quality was the fourth-best, yet it sports one of the lowest prices — and the lowest prices for a transparency adapter and an automatic sheet feeder. Plus, its included FotoSnap software makes the SnapScan a snap to use.

Roman Loyola is a MacUser associate editor. Associate Project Leader Martin Wong managed the testing for this report.

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The SuperScan Mc 21 gives you the sharpest image money can buy (0.22 mm horizontal dot pitch, 0.16 mm vertical). It also displays 40% more pixels than competing aperture grill monitors for crisper graphics and improved readability of small text. Plus it's flatter than other displays so you get a more accurate image with consistent brightness and precise focus even in the corners.

<table>
<thead>
<tr>
<th>CRT size</th>
<th>Viewable Image</th>
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<th>ClubMac price</th>
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</thead>
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<tr>
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<td>21 inch</td>
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More Consistent Color
"Color calibration is an area that
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With a Splash Server, calibrating
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SPLASH prep for sales and marketing,
as well as proofs before going to film.
Some proofs have been so improved
with the quality of the SPLASH proofs
that they will run their proofs to us."

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which our designers give us the
accurate
screen-to-print color matching and the
ability to simulate the process of a
press/offset with standard press/ink
(SWOP/ Euroscale, Town, SWAP, Splish)
is the first server to enable the color
repose to be utilized in designing
proofing and short-run environments.
Splish-Ambro RFP color correction
provides the answer to the oldest
depth color printing problems - making
taking printing as printable, regardless
of the type or rendering.

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"Color calibration is an area that
is
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twice
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day. SPLASH
holds its calibration curve very
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With a Splash Server, calibrating
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So you think you've finally got the basics of HTML? These tips will help take your page to the next level.

Polishing Your Page

As MANY MODEM-TOTING Mac users have found, making a basic Web page isn't all that difficult. Making a page that stands out from the pack, however, can pose a challenge.

After you conquer the basics of HyperText Markup Language, or HTML, you may discover that your next battle is design. Whether you've gotten graphics onto a page but can't seem to control where they land or your colored text is unreadable, the answer to common Web design problems often lies not with more tools but with a little knowledge and cleverness.

This article will walk you through four ways to take your page to the next level simply by making the most out of HTML. WYSIWYG programs, such as Adobe PageMill and Claris Home Page, can make some design techniques easy as pie, but they aren't perfect. Chances are you'll still find yourself tweaking code. They also don't protect you from some cross-platform pitfalls, as Tip #2 outlines, using the example of colors.

If you have more questions, check out the online version of this article, at http://www.zdnet.com/polish.html, for links to articles about getting started with HTML.

Tip #1: Turn Tables into a Design Tool

Designing for the Web is trickier than designing for print. For starters, text and graphics won't stay put — you can't even place images and text right where you want them, as you would on a printed page. What you can do, however, is use tables as grids to hold your elements in place. On the Web, tables can be a designer's best friend.

The anatomy of a basic table might look like this: `<TABLE WIDTH=100%> <TR> <TD WIDTH=50%>Cell 1</TD> <TD WIDTH=50%>Cell 2</TD> </TR> </TABLE>.

The opening tag, `<TABLE>`, starts the table. Each table row, or line of cells, begins with `<TR>` and ends with `</TR>. In between, you indicate cells, or table data, with the tag pair `<TD>` and `</TD.> You finish the table with the closing tag `</TABLE>`.

Notice that I added WIDTH commands (technically known as attributes) inside the tags to modify the table's basic behavior. `<TABLE WIDTH=100%>` tells browsers to make the table as wide as the browser window, regardless of what size the window is on the viewer's screen. I also included a WIDTH attribute with each cell, `<TD WIDTH=50%>`, making each span half the table's width. See figure 1 for the results.

To create a clear border around each of my table cells, I could have included a BORDER attribute (for example, `<TABLE WIDTH=100% BORDER=1>`). Instead, I wanted this table to be an uncluttered transparent grid. (In a WYSIWYG program, you may need to turn automatic bordering off. Look for a table option, and set borders to 0.)

Once you think of a table as a grid for your page elements instead of as just a mechanism for arranging numbers, you can experiment by adding text and graphics to the cells. Don't
worry about being boxed in by inflexible arrays of rows and columns. By manipulating the row and column span, you can make an element run across an entire row or column (much as you merge cells in a spreadsheet application). This means that you can stretch a graphic through the middle of your table or even place a navigation bar across the bottom row.

In figure 2, the Fixed Rate Mortgages row spans eight columns. To accomplish this, the page's designer added a column-span attribute to the TD tag: \texttt{<TD COLSPAN=8>}. 

To make cells span multiple rows, you add a row-span attribute to the TD tag: \texttt{<TD ROWSPAN=3>}. 

If you find that COLSPAN and ROWSPAN attributes are straining your brain, you can try another technique — creating a table within a table. A basic example of a table cell that holds another table might look like this: \texttt{<TD><TABLE><TR><TD>a table within a table!\</TD></TR></TABLE></TD>}. 

Most newer WYSIWYG HTML editors let you edit your tables visually, although to create COLSPAN or ROWSPAN effects, you may need to go through a dialog box. In a few programs, you can drag and drop cell borders to create COLSPAN and ROWSPAN effects. You should also be able to insert a table within a table cell. Just place your cursor in a cell and use the same commands you used in order to make your original table.

**Tip #2: Add Color Correctly**

The Web has donned a rainbow-hued coat, and you too can easily add color to your pages. This is a simple way of jazzing up Web pages that adds virtually no downloading time for surfers accessing your pages over the Internet. To get colors to look good, however, can require some finesse.

The trick is to avoid dithering. Not all monitors can see all colors — some see millions, some see thousands, some see only 256. Worst of all, Mac and Windows machines don’t even see the same set. If you use a color another monitor can’t see, that monitor tries to fudge the color by combining colored pixels that look similar to your color when viewed as a group. Unfortunately, the effort doesn’t always work. Dithering can be a big problem for background colors, because it creates dot patterns that make text difficult to read. This isn’t as much of an issue for Mac users as it is for users of older PCs.

To prevent dithering, you need to stick to colors commonly referred to as “the Netscape 216 palette.” First specified by Netscape Navigator, this palette is supported by all popular browsers, and its colors display well on Macs and Windows machines.

Using the Netscape palette takes a little extra work, and your first obstacle could be your HTML editor itself. When you pick a color within an editor, you usually use the RGB color wheel (the RGB system indicates colors by giving values for red, green, and blue). Not only does the color wheel span a spectrum far beyond that of the meager Netscape palette but HTML doesn’t even use the RGB system; instead, it indicates colors with different numeric values, hexadecimal. This situation gives you two opportunities to accidentally pick colors that are guaranteed to dither.

To use the color wheel effectively, you must stick with the few RGB values the Netscape palette supports: 0, 51, 102, 153, 204, and 255.

Most HTML editors automatically convert those RGB values into hexadecimal. If the program you’re using doesn’t do colors, you’ll have to type in the hex values yourself. Figure 3 shows some basic colors that won’t dither, along with their RGB and hex values.

Once you’ve gotten a handle on what colors you can use, it’s easy to add them to your page. If you want a page to have a teal background color, with an RGB value of 102,204,153, the final \texttt{BODY} tag would look like this after your program converted the RGB values to hexadecimal and created the tag: \texttt{<BODY BGCOLOR="#66CC99">}.

If you aren’t concerned about older browsers being able to display your colors, you can also use common color names in place of the hex values. For instance, Internet Explorer 2.1 and Navigator 3.0 both understand that \texttt{<BODY BGCOLOR="#LIME">} indicates a bright-green background. Other color names you can use include black, red, blue, purple, yellow, and navy.

You can also color the different types of text on your page. Be careful when you change the text color, however, since colored text is often difficult to read for long periods of time. To make a page with a dark-blue background and white text, you would add this \texttt{BODY} tag: \texttt{<BODY BGCOLOR="#06014C" TEXT="#FFFFFF">}.

If coloring all text on a page isn’t your style, use the \texttt{FONT} tag pair to enclose text you want colored. For instance, to turn “a few words” purple, your tag would look like this: \texttt{<FONT COLOR="#PURPLE"><a few words</FONT>"}.

![Figure 2](image-url) This site is a straightforward example of how you can use a COLSPAN attribute to make one table row span multiple columns. Don’t be fooled by the apparent simplicity of this technique. A table with borders turned off that uses COLSPAN or ROWSPAN attributes can offer the most-powerful layout flexibility possible with HTML.

![Figure 3](image-url) This illustration shows a sampling of nondithering colors you might want to use, along with their RGB and hex values. If you type in HTML code for a color, use the hex value. If you use an HTML editor, chances are the program will convert the RGB to hex for you.
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Tip #3: Widen Your White Space
A cramped and cluttered screen does not invite the eye. Most print designers know the value of white space, but incorporating this basic design technique into a Web page can prove a tricky task. Back in the days before tables, Web designers created white space by convoluted and at times unsuccessful uses of PRE, BR, or P tags (which set preformatted text, make line breaks, and indicate paragraphs, respectively). Today you can pick from a few more alternatives.

If you use a table to hold page elements in place, CELLPADDING and CELLSspacing hold the keys to white space. When table borders are set to 0, these attributes are functionally the same as each other, but with borders on, CELLSspacing widens the space between cells whereas CELLPADDING widens the gap between cell text and cell edges. For example, the table on the left in figure 4 has no special spacing but the one on the right uses the Tag <TABLE CELLSspacing=4 CELLPADDING=6> to create 4-pixel borders and 6-pixel cell margins.

Those seeking the ultimate in control can use transparent graphics to nudge elements into place. Simply create a transparent GIF that's the size you want your white space to be. You can slip the graphic into a table cell or place it directly on your page. Transparent GIFs do have drawbacks. Surfers who browse to your page with graphics turned off will see the outlines of these graphics. Also, different people will open their browsers to different widths, and some widths may have unexpected effects on your layout.

For more-intrepid Web designers, there's a new Netscape addition to HTML, the SPACER tag. Supported only by Netscape Navigator 3.0 at press time, SPACER gives more-consistent control over white space than other alternatives. Additional browsers are likely to support this tag in the future, but you should consider your audience carefully before planning a page around this tag.

SPACER opens up white space vertically and horizontally. Its effect depends on the TYPE attribute, which can be set to HORIZONTAL, VERTICAL, or BLOCK. For example, to indent the first line of a paragraph, you could use the tag this way: <SPACER TYPE=HORIZONTAL SIZE=24>. To create a slice of extra vertical space between two paragraphs, this tag would do the job: <SPACER TYPE=VERTICAL SIZE=36>. The TYPE=BLOCK attribute lets you use the SPACER tag to push text and graphics around on the page, much as you can with an invisible graphic. For instance, to create a left-aligned, one-inch-square patch of nothing, try <SPACER TYPE=BLock ALIGN=LEFT SIZE=72 WIDTH=72>. Figure 5 shows The Line Up, a page that uses horizontal spacers to push text in from the left margin.

If you use a WYSIWYG program, chances are good that it won't yet support SPACER, so be prepared to type SPACER tags by hand in the text view and don't expect your results to show until you view the page in a browser that supports SPACER.

Tip #4: Learn When to Give Up Control
A Web page is not a printed page. When you post something online, there's no telling what type of operating system, monitor, or browser the person on the other end will use to see it. Text may appear in a different font or size than the one you've set as a default in your own browser. If the page is going to be viewed on a black-and-white monitor, well, your rainbow page won't look like a rainbow anymore.

By designing your pages with flexibility in mind, you'll take advantage of one of the Web's great strengths: person-to-person, two-way interaction. When a reader's browser interprets your HTML, you and the reader are in effect collaborating on how the page appears.

Sure, you want your pages to look great, but remember that the more you struggle to gain control, the more likely you are to create a mess for some readers. For instance, using transparent graphics to create white space or controlling line widths by way of a table set to a specific pixel width can cause a jumble of page elements for people with smaller monitors or different screen resolutions. Even overuse of the SPACER tag makes for a goofy-looking page if people don't resize their windows the way you want them to. For instance, figure 6 shows the Boston Computer Society home page, which looks great at standard browser width; shrinking the window slightly causes the logo to shift off center.

In the final analysis, your principal goal is communication. You'll want to aim for a visually appealing and unique-looking Web page, but don't get so hung up on looks that you forget that what you see on your screen is unlikely to be exactly what your readers see on their own.

Tonya Engst wrote the HTML chapter in Internet Starter Kit for Macintosh, Fourth Edition. You can find her on the Web at http://www.tidbits.com/tonya/.

Figure 4 / Compare the table on the left, which has standard border widths and cell margins, with that on the right, which has thickened borders and increased cell margins because of the CELLSspacing and CELLPADDING commands. By manipulating these two table attributes, you can widen your white space in subtle ways.

Figure 5 / The Line Up's use of the SPACER tag to indent singers' names creates a striking layout. This layout will also look just fine in browsers that don't support SPACER — the names will align neatly to the left. This is a good example of a creative design still flexible enough to look good when displayed in different ways.

Figure 6 / The use of the SPACER tag here causes the logo to shift to the right when the window isn't opened to a standard width.
Robert Dietz
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Look to Adobe Photoshop 3.0’s layers for an antidote to overexposure angst.

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Whether you’re a seasoned image-processing professional or a weekend photographer, you’ve probably come across a blown-out image or two.

Chances are that you’ve also run into trouble as soon as you attempted to fix the image by using Adobe Photoshop 3.0’s general color-correction tools. Levels, Curves, and Variations all have three fundamental shortcomings. They suffer from the limitation of having only one level of undo. Each of the tools also takes quite a bit of time to do its magic, especially if you’re working with large files. And they all affect images globally, unless you make selections or use masks— a process that is fraught with opportunity for mistakes.

The way to get around all these problems lies with layers. Instead of slowly tweaking pixels with Levels or Curves, you can use layers to build up density and tone by laying copies of the image on top of one another. Where better to find the detail you lost in blown-out highlights than in the photo itself?

The other advantage of layers is the layer mask. By adding a layer mask to the mix, you can also adjust not only how much density and darkness you apply to your image but also precisely where you apply them. All of Photoshop’s drawing and painting tools, from gradients to the pencil, can assist you in controlling where the density buildup is going to be located.

Here we employ layers in order to salvage our image’s tone, color, and contrast. Try some experimentation with your new layers’ opacity and transfer modes to get exactly the effect you have in mind. Remember, if you happen to mess up, the unaltered image is still sitting safely in the original Background layer, which is only a click away. (Image courtesy of the PhotoDisc stock library, at http://www.photodisc.com/).

David Biedny is a founding editor of MacUser and the coauthor (with Bert Monroy) of Adobe Photoshop — A Visual Guide (Addison-Wesley). Nathan Moody is a multimedia artist and freelance illustrator.

STEP BY STEP

1. LOOK FOR TROUBLE AREAS. Examine your image carefully for particular problems. Our image has a lot of small detailed areas, such as the ornate stairway, but the brighter areas lack contrast, making that detail quite difficult to see. Most important, if you look closely, you’ll notice that the picture is generally much lighter along the bottom half than it is along the top. We need to enhance the contrast, color saturation, and darker tones more in the lower region.

2. BEGIN TO BUILD DENSITY BY DUPLICATING THE BACKGROUND. Open the Layers palette (Window: Palettes: Show Layers), and duplicate the background layer by selecting Duplicate Layer from the pop-up menu on the palette’s right. Click on the new layer, now called “Background copy,” to select it, and then darken the image by setting the layer’s transfer mode to Multiply. Depending on how light your image is, you may want to repeat this step a few times. We duplicated our background twice.
1. Look for trouble areas.

- Image is lighter along the bottom half.

- Brighter areas lack detail.

2. Begin to build density by duplicating the background.

3. Adjust the opacity of your new layers.

4. Control where you apply density, by creating a layer mask.

3. Adjust the opacity of your new layers. By duplicating the background and setting the transfer mode to Multiply, you will increase your image's overall density of tone and color. In some instances, however, you'll also notice that the image becomes much too dark. If you have to deal with this problem, you can adjust the opacity of each of the new layers by adjusting the position of the slider on the Layers palette. We set our new layers' opacity at 50 percent.

4. Control where you apply density, by creating a layer mask.

Regions of your image may still be too dark. To control exactly where you apply density, create a layer mask. Select the new layer, and choose Add Layer Mask from the pop-up menu. You can then use a variety of Photoshop tools to create an appropriate mask. Since our image was dark at the top and light at the bottom, we created a black-to-white horizontal linear gradient to shield the top from the density the last layer added.
The A, Be, Cs of Prepress

Can the graphic arts migrate to the promised land?

As we write this, Apple is in the throes of the moral equivalent of war. Should it go with the BeOS, abandoning the Copland path forever? Or shouldn’t it? Rumors and online postings are flying left and right, the trade press (including the magazine you're reading) is filled with pro and con articles, and no clear resolution is in sight.

We assume that by the time this article is printed, the issue may have been resolved. Just for the sake of argument, we’re going to guess that Apple went with the BeOS and you’re sitting there reading this in January, saying, "How prescient these guys were!" The alternative — having you read this and say, "What a pair of idiots!" — is less attractive. There’s a third choice, where you say, "What does prescient mean?" but we’ll leave that alone for now.

We’re not going to talk about what the BeOS is or what its salient characteristics are; you’ll find that discussion in the January ’97 issue (page 64). The big concern for us is, So what? Why do we in the graphic arts care? In a (somewhat) random sample of graphic-arts users we polled last November, most had not even heard of the BeOS nor very much cared to explore its ramifications for the Mac.

And that’s as it should be. The minute we as users begin to focus on the technical details of the operating system, we’ve lost sight of the real goal: getting productive work done with our computers. Who cares whether the system is multiprocessing, or multifaceted, or multidimensional? Knowing that doesn’t help us get that QuarkXPress layout ready — it just makes great cocktail-party talk. Or maybe it doesn’t . . . . We haven’t been invited to too many events since we talked about the origins of protected memory.

The point is, we shouldn’t have to be experts on the guts of the OS; that’s one of the things that distinguishes Mac users from the Blue crowd. On the other hand, we’d all welcome a more crash-resistant OS and one that didn’t come to a screeching halt when you held the mouse button down. And I/O speed (both network and drive)? We’ve been complaining about that for years. So if that Be checklist (or mantra) of "preemptive multitasking, symmetrical multiprocessing, multitreading, protected memory, and object-oriented API" will help fix those problems, then we’re for it.

Be Ware

But on the minus side, what about those technologies that are wired into the Mac OS and may not survive a transition to Be-ville? What if ColorSync, which is just beginning to really work after several false starts over the years, gets dumped? How about little things such as the PostScript printing architecture (not that this is in great shape on the Mac today, but at least it’s usable)? And what about AppleScript, Frontier, and the whole Open Scripting Architecture, which production people are using to build automation tools that save time and money every day?

The rumors we’ve heard are that Apple is going to sacrifice some compatibility in order to use Be technologies. And Monsieur Gassée himself proclaims that the BeOS is built for "next decade’s applications, rather than legacy software." Is QuarkXPress a legacy? What about Adobe Illustrator? In its rush to adopt a multimedia-savvy OS that can show half a dozen QuickTime movies simultaneously, would Apple be abandoning the lion’s share of its current market in pursuit of a Hollywood grail?

When Gassée unveiled the BeBox in October 1995, the story was that it was aimed at "the fast-growing AV market . . . as well as technology enthusiasts and hobbyists." Well, fine, we thought. Another NeXT. Very cool architecture, no application software, and a superniche market. Yes, portions of the Be scenario are appealing, but let’s face it: Most people don’t produce QuickTime movies! Far more people are using the Mac for its original revolutionary purpose: authoring and the production of high-quality printed products.

The BeOS is what those in the theater (a close relative of the graphic arts, since both deal with imagery) call a deus ex machina — literally, a god from the machine. Everything’s hopeless, the battle is all but lost, when suddenly — shazzam! A heretofore unknown solution appears out of thin air and saves the day. It’s an old Greek dramatic trick, most commonly used these days in Star Trek.

We hope something like that is in the wings for Apple, especially if the alternative is to wait four more years for a Copland successor (would this be called Bernstein?). We hope that by embracing the BeOS, Apple can have a fast, robust, magazine-reviewer-checklist-savvy operating system again. But we bought our Macs because (once upon a time, anyway) you could turn them on and they worked. And they got the job done. Please, let’s not sacrifice ease of use, which is in short supply these days, on the altar of a quick fix. Good luck, Apple — but remember to Be yourself!
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Choosing Your Internet Partner

YOU MAY HAVE GOTTEN your first taste of the Internet from a crusty, traditional online service such as AOL (America Online) or CompuServe. Like many online veterans, you may feel you've outgrown clunky browsers and limited software choices. You may also be looking to save a few bucks. If surfing the Net is your main reason for going online, it's time to look for an ISP (Internet service provider), which does nothing but connect people to the Internet.

You'll face lots of decisions and trade-offs, but getting inexpensive Net access and being able to use the software of your choice is usually worth the work. To help you search for the perfect ISP, we surveyed 20 national and local companies, looking for inexpensive, Mac-savvy options. With the information we obtained and some common-sense advice, you'll be a smart shopper in the maze of Internet-access choices.

AOL and CompuServe aren't all bad. Both offer a great way to learn Net basics, especially if you're a longtime user of their proprietary features and services. But these traditional services are often poky, particularly when you're dealing with the sometimes sluggish Web, made even slower by the online services' enormous base of customers, all competing for access. The bandwidth just gets sucked up. Online services also limit your choice of Internet software. Although CompuServe lets you use a Web browser other than its default (and AOL soon will), using a third-party newsreader, for example, is impossible.

Choices, Choices

Unlike online services, ISPs are many and varied, from small businesses that serve a single city or town to nationwide megaproviders. Chances are good you'll have several companies to choose from when you begin shopping for Internet access. And shop you should, since there are so many variables to consider. Among the major factors you'll weigh are price, services, Mac savviness, and the availability of high-speed access.

For many people, the first issue to tackle is the kind of company they're comfortable with. As we've said, some ISPs are small outfits that focus on your city, state, or region. Others, much like online services, boast nationwide networks, professional-looking documentation, and software bundles on CD-ROM. Local providers often provide better one-on-one service: They have fewer customers to deal with and can therefore respond faster than providers that serve the entire country. Local providers are generally also more familiar with the idiosyncrasies of local phone companies, which can help when tech-support issues crop up. On the other hand, national ISPs usually offer better documentation: Written tutorials or "getting started" guides are hard to find among small providers. More often than not, local ISPs simply e-mail you the electronic equivalent of a spec sheet, filled with technical jargon and confusing or incomplete instructions on getting set up.

Where you live may help narrow your choice of providers. National companies have lots of local access points (called POPs, or Points of Presence, in Net jargon) in metropolitan areas, but rural coverage is spotty. You may be able to find a regional provider that offers service to small towns in close proximity to its home city, or you may be stuck paying long-distance charges for every Net connection you make. Some national providers offer 800-number access, but you may pay an extra per-hour fee for it. Finally, for mobile users, choosing between a local ISP and a national one is a no-brainer: If you're the kind of person who simply has to have a Net
ISP Shoot-out / prices, services, and extras

INTERNET SERVICE PROVIDERS whose reach extends the length and breadth of the nation compete fiercely on price and with bundles of Mac software. Most offer complete configuration help and documentation and speak fluent Macintosh. Your hometown ISP may not be in the list of local ISPs, but chances are the rates and services these 14 companies offer are pretty good indicators of what you’ll find. Prices vary widely, as do features and software options.

<table>
<thead>
<tr>
<th>Service Name</th>
<th>Account-Setup Fee</th>
<th>Monthly Charge</th>
<th>Bundles (Software/Documentation)</th>
<th>ISDN Support</th>
<th>ISDN-Account Charges</th>
<th>Region (Area Codes Served)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NATIONAL ISPs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delphi</td>
<td>none</td>
<td>$23.95 (unlimited)</td>
<td>Delphi Guide, $9.95; software package, $24.95</td>
<td>no</td>
<td>NA</td>
<td>nationwide</td>
</tr>
<tr>
<td>Earthlink Network</td>
<td>$25</td>
<td>$19.95 (unlimited)</td>
<td>Netscape Navigator</td>
<td>yes</td>
<td>setup, $94.95; $45/month for 30 hours</td>
<td>nationwide</td>
</tr>
<tr>
<td>MindSpring (formerly PSInet)</td>
<td>$35</td>
<td>$19.95 (unlimited) or $26.95 (premium)</td>
<td>Netscape Navigator</td>
<td>yes</td>
<td>setup, $35 (with premium account)</td>
<td>nationwide</td>
</tr>
<tr>
<td>Netcom</td>
<td>none</td>
<td>$19.95 (unlimited)</td>
<td>NetComplete startup kit</td>
<td>yes</td>
<td>$10/month extra</td>
<td>nationwide</td>
</tr>
<tr>
<td>UUNET</td>
<td>$25</td>
<td>$30 for 25 hours; each additional hour, $2</td>
<td>none</td>
<td>yes</td>
<td>setup, $50; $50/month</td>
<td>nationwide</td>
</tr>
<tr>
<td>Whole Earth Networks</td>
<td>none</td>
<td>$25</td>
<td>Netscape Navigator</td>
<td>yes</td>
<td>$10/month extra</td>
<td>nationwide</td>
</tr>
<tr>
<td>LOCAL ISPs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-Online</td>
<td>$25</td>
<td>$25 (14.4 kbps), $30 (28.8 kbps)</td>
<td>Netscape Navigator, Internet Explorer</td>
<td>no</td>
<td>NA</td>
<td>Alaska (907)</td>
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<tr>
<td>AASP</td>
<td>none</td>
<td>$18</td>
<td>Netscape Navigator PE, configuration sheet</td>
<td>no</td>
<td>NA</td>
<td>Boston (508, 617)</td>
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<td>AMUG</td>
<td>$19.95</td>
<td>$19.95 (unlimited)</td>
<td>Eudora, Netscape Navigator</td>
<td>yes</td>
<td>$35/month</td>
<td>Phoenix (602)</td>
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<tr>
<td>CoastalNet</td>
<td>$0 – $25</td>
<td>$17.95 – $19.95</td>
<td>none</td>
<td>no</td>
<td>NA</td>
<td>North Carolina (910, 919)</td>
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<tr>
<td>Community Internet Systems</td>
<td>none</td>
<td>$15 – $20</td>
<td>none</td>
<td>no</td>
<td>NA</td>
<td>Nebraska (308, 402)</td>
</tr>
<tr>
<td>CyberConnect</td>
<td>none</td>
<td>$25 (unlimited)</td>
<td>Eudora, Internet Explorer</td>
<td>no</td>
<td>NA</td>
<td>Midwest (317, 708, 815, 847)</td>
</tr>
<tr>
<td>Denver Internet Access</td>
<td>$20</td>
<td>$12 – $20</td>
<td>none</td>
<td>yes</td>
<td>none</td>
<td>Colorado (303)</td>
</tr>
<tr>
<td>Eurek Networks</td>
<td>none</td>
<td>$19.95 (unlimited)</td>
<td>tutorial</td>
<td>no</td>
<td>NA</td>
<td>Ohio, West Virginia (304, 614)</td>
</tr>
<tr>
<td>FlashNet Communications</td>
<td>$25</td>
<td>$14.95 (unlimited) or $399/year</td>
<td>none</td>
<td>yes</td>
<td>$29.95 (unlimited) or $174/year</td>
<td>Texas (210, 214, 405, 501, 505, 512, 526, 713, 817)</td>
</tr>
<tr>
<td>HOI (Hawaii Online)</td>
<td>none</td>
<td>$19.95 (unlimited)</td>
<td>configuration sheet</td>
<td>yes</td>
<td>$36.99/month</td>
<td>Hawaiian Islands (808)</td>
</tr>
<tr>
<td>Internet Now</td>
<td>none</td>
<td>$26.99 (unlimited)</td>
<td>none</td>
<td>yes</td>
<td>$35/month</td>
<td>South (404, 706, 770)</td>
</tr>
<tr>
<td>ISOMEDIA.COM</td>
<td>none</td>
<td>$19.95 (unlimited)</td>
<td>shareware starter pack</td>
<td>yes</td>
<td>$35/month</td>
<td>Seattle (206)</td>
</tr>
<tr>
<td>ScruzNet</td>
<td>none</td>
<td>$12.50; custom</td>
<td>none</td>
<td>yes</td>
<td>none</td>
<td>San Francisco Bay Area (408, 415)</td>
</tr>
<tr>
<td>TunaNet/InfoHouse</td>
<td>none</td>
<td>$20 (unlimited)</td>
<td>Eudora, Netscape Navigator</td>
<td>yes</td>
<td>setup, $75; $40 – $75/month</td>
<td>New York (212, 718)</td>
</tr>
</tbody>
</table>

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connection while traveling, only a national ISP can provide local access numbers wherever you and your PowerBook may roam.

Whether personal service, customer support, and access to lots of local access points matter to you or not, there are a few issues every potential ISP customer needs to weigh. To help you decide which ISPs offer the best combination of price and service, MacUser conducted an unscientific, semirandom survey of ISPs. We asked each company about price, Mac knowledge, customer support, and ISDN availability. We contacted 6 national ISPs and 14 regional providers serving all geographic regions of the 50 states. The information we got will help you compare these companies with any you're considering (see the "ISP Shoot-out" table).

What Will It Cost?
The most important aspect of choosing an ISP is the price you pay, both to set up an account and to keep yourself connected. Generally speaking, you'll find two approaches: flat-rate and tiered services. Just like the flat tax touted by some politicians, flat-rate Internet pricing is seductive. It's simple and to the point: You pay a flat monthly rate for unlimited dial-up access. Rates vary but hover around $19.95 throughout the nation. The best deal we found was from Dallas-based FlashNet Communications, which offers unlimited access for $14.95 per month, or $99 a year, if you pay up front. On the high side, the San Francisco Bay Area's Scruz.Net charges $50 for unlimited access. As you can see, it pays to shop around.

In most cases, a flat rate for unlimited use is a good deal for anyone who spends a lot of time online. Occasional users or those who can find a sub-$20 account may prefer tiered pricing. Some services offer basic rates for 20, 50, or 100 hours; others (using the online services' model) give you a certain number of "free" hours for a monthly fee and charge a dollar or two for each additional hour. Still others charge differently depending on whether you're using a modem or ISDN to connect to your account. All these complex pricing arrangements mean that you may lose money by under- or overestimating the amount of time you actually spend online, especially if you're required to lock yourself into a particular pricing plan when you sign up with an ISP. If you're an online-service customer, use the average number of hours you currently spend online as a guideline when calculating your best ISP pricing deal. If you're not currently online and don't know how much time you'll spend on the Internet, look for an ISP that will let you move from one pricing plan to another, based on your actual service usage.

More and more ISPs (about half, in our survey) have done away with the account-setup fees that were commonplace a year or two ago. We found that providers that do charge a fee ask $20 to $35 to activate an account. Eureka Networks, a West Virginia-based ISP, charges a fee only if you want its software bundle.

Mac Supporters
We don't have to tell you that Macs and Windows machines have basic configuration differences. Despite the disproportionate percentage of Macs connected to the Internet compared to their share in the marketplace, some ISPs are unaccountably clueless about Macs. One indication of a provider's Mac savvy is the documentation and software you receive when you open an account. Ask about bundled Mac software and books. Some ISPs, including MindSpring and Netcom, produce their own manuals, whereas others bundle third-party books in lieu of their own documentation. Some accounts come with a browser and other Internet client software (FTP, newsreader, and so on). MindSpring and Netcom supply by far the best Macintosh software/documentation bundle of the national ISPs we examined. Each package includes the usual Internet-access software, along with a configuration utility that walks you through account setup. Many local ISPs offer no fancy bundles or books or don't volunteer them unless you tell them you're a Mac user. If the bundle is generic or Windows-specific, you can probably expect the service to follow suit.

Another way to scope out an ISP's Mac savvy is to ask some basic Mac configuration questions. Does a question about configuring MacTCP or Open Transport leave ISP representatives stumped or stammering? Are they aware of the different PPP software available for the Mac? If not, you can probably assume they're not for you.

A few — a very few — ISPs specialize in Mac-based Internet access. The best we encountered was AMUG (Arizona Macintosh Users Group). This Mac institution started as a user group and now offers reasonably priced Internet access to any Mac user lucky enough to live in the 602 area code.

As we went to press, the first nationwide Mac-only ISP, MacConnect, was readying its dial-up lines for service. At $19.95 per month for unlimited access, MacConnect (800-923-2638 or 516-754-3020; http://www.macconnect.com) is right in line with other ISPs and promises Mac-savvy support and a choice of Web browser.

How Fast Can I Go?
If you have an ISDN line at home, chances are you skipped the online services and went straight to an ISP for your Internet access. If you don't have ISDN and aren't planning to install it until you can figure out just what a B channel is good for, choosing a provider that supports digital phone service may not seem particularly important. But as ISDN becomes cheaper and easier to obtain throughout the U.S., more ISPs and their customers are jumping on the bandwagon. If you plan to move up to ISDN or even if you think you might do so in the next couple of years, consider a provider that has ISDN lines available. That way, you won't have to change providers (and e-mail addresses) when the itch to ditch your 28.8-kbps modem strikes.

ISDN accounts are almost always more expensive than dial-up accounts (plus you must pay the phone company additional fees and startup costs). ISDN accounts are also more likely to come with valuable hardware bundles (ISDN modems or routers). In fact, some ISPs require you to buy preconfigured ISDN equipment through them. Just make sure that the equipment offered works with your Mac. ISDN support is still spotty among national as well as local providers. Once again, MindSpring and Netcom offer the best ISDN deals. MindSpring's premium account includes ISDN access and costs just $7 per month more than the standard, unlimited-access account. With Netcom, ISDN costs a total of $29.95 per month, including an unlimited-access account. Many providers, both local and national, don't yet support ISDN.

Ready-Made Access
For $49, you can take the expressway to ISP selection. Apple's Internet Connection Kit offers a simple way to avoid many of the hassles usually associated with establishing a PPP dial-up account. Just like an online service, the kit walks you through every step of the process. You simply run the installer, which loads Netscape Navigator, Fetch (FTP), Claris Emailler Light, and NewsWatcher, as well as
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CIRCLE 130 ON READER SERVICE CARD

Gregory Wasson is a MacUser contributing editor.
Even with a pager, there's that deep down fear of missing "the big call." Don't sweat, get YoYo. YoYo works with your Mac to automatically page you with incoming calls. Your computer doesn't even need to be on and, best of all, you never have to give your pager number out. YoYo has dozens of other cool functions for your phone and your Mac including call logging and Caller ID. Don't let that big call keep you leashed to your desk... get YoYo. Call 1-800-788-7751 or visit us at www.big-island.com

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![A page from www.macuser.com created using BBEdit.](image)

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CIRCLE 76 ON READER SERVICE CARD
This Old Net
Who needs Bob Villa when you’ve got a do-it-yourselfer’s treasure trove on the Net?

You’ve heard the claim that the popularity of the television show Home Improvement means we’re all rebuilding our transmissions and regrouting our tile, as part of a happening’ new ’90s do-it-yourself craze? Hmm. By this logic, shouldn’t the even greater worldwide popularity of Baywatch have us all applying for lifeguard jobs?

Nevertheless, the practice of doing for yourself what you would otherwise pay some licensed and bonded bandit to do for you seems to be on the rise. Doing it yourself can save you money and be a lot of fun, and the Internet can be a DIYer’s best friend.

Some caveats: If you’re tackling a really complex project, you should forget the Net and get professional help (I didn’t mean that the way it sounded). And for some projects, such as fixing a flat tire, you probably won’t be near a computer when the DIY need comes upon you. But for minor car- or home-repair tasks, and a host of other DIY projects, the Net is a boon. You don’t need to leave home to get the information you need, it’s often free, and you don’t have to tell anyone you looked it up.

Home Alone. Whether you’re building, maintaining, or landscaping your home, the Net can help. Check out the home-improvement links at http://www.nerdworld.com/nw1008.html. Here are some more-specific Net resources, some free and some describing low-cost brochures or manuals you can order. The PBS do-it-yourselfer program HomeTime has a Web site at http://www.pbs.org/hometime/, where the producers expand on the information presented in the show with floor plans, details, and options for projects. This site has good, clear advice and nice diagrams and pictures for projects ranging from remodeling your kitchen to building a home theater.


Don’t overlook Usenet newsgroups for advice on specific how-to issues, and don’t be afraid to post a question to an appropriate newsgroup. You may find useful car-repair tips, for example, within the rec.autos.* newsgroup hierarchy. The emphasis is on specifics, though, such as how to set the spark-plug gap for a particular car (rec.auto.makers.ford) or how to splice a videotape (rec.video). Keep your eyes open for lists of frequently asked questions (FAQs) in your area of interest.

Automate Your Life. If you’ve actually watched Home Improvement, you know that the Tim Allen character is a throwback to the 1950s. So is regrouting your tile. The really trendy do-it-yourselfers of the ’90s are the home automators. If you dream of making your toast pop up when Morning Edition comes on, your lights dim and brighten while you’re away on vacation, and your sprinklers take the day off when it rains, start your research at the Home Automation Newsletter page: http://www.automator.com/.

That Dogsled You’ve Always Wanted. You can find advice on the Net on how to do just about anything yourself. Home brewers can learn all about cask conditioning at http://sun1.bham.ac.uk/GraftonG/real_ale.htm, and if you’ve ever wanted to build your own seismograph or dogsled, be sure to check out http://cea-ftp.cea.berkeley.edu/Education/lessons/indiv/davis/h/n/Seisograph.html and http://www.rt66.com/~srlee/JOINUR/GARAGE/k12sled.html, respectively.

How about DIY car-care sites? Need you ask? They range from the fanatical to the frivolous. Committed driveway mechanics may want to visit the very serious fuel-injection list at http://www.cpsc.ucalgary.ca/~fridman/diy_efi/diy_efi.html. But even if you don’t have a car, you should visit the truly hilarious (and helpful) home of the brothers Click and Clack, at http://cartalk.com/.

Don’t Know a GUI from DIY? MacUser maintains a list of FAQs about the Internet, MacUser itself, and this column specifically. Send mail to faq@macuser.com. MacUser’s address on the World Wide Web is http://www.macuser.com/. You can reach me at traveler@macuser.com.

FEBRUARY 1997 / MacUser 123
Unbelievable Price - $7,999!

<table>
<thead>
<tr>
<th>Standard Features</th>
<th>QMS® ColorScript 460</th>
<th>QMS® ColorScript 480</th>
<th>Tektronix® Phaser 460K</th>
<th>Kodak® Desktop Color Proofer 5200</th>
<th>SP® Invention Rainbow Model 2715</th>
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</thead>
<tbody>
<tr>
<td><strong>PRICE</strong></td>
<td>$7,999</td>
<td>$9,999</td>
<td>$14,995</td>
<td>$17,095</td>
<td>$19,995</td>
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<td>Processor Speed</td>
<td>24 MHz</td>
<td>33 MHz</td>
<td>26 MHz</td>
<td>133 MHz</td>
<td>Host Based**</td>
</tr>
<tr>
<td>Interpreter</td>
<td>Printer Based</td>
<td>Printer Based</td>
<td>Printer Based</td>
<td>Printer Based</td>
<td>Host Based</td>
</tr>
<tr>
<td>Max Image Area</td>
<td>11.95&quot; x 17.4&quot;</td>
<td>12.17&quot; x 17.53&quot;</td>
<td>11.9&quot; x 17.2&quot;</td>
<td>12.16&quot; x 18&quot;</td>
<td>Host Based</td>
</tr>
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<td>Ethernet Option</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes†</td>
<td>Yes†</td>
<td>No</td>
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<td>Resolution</td>
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<td>300 x 600</td>
<td>300 x 300</td>
<td>300 x 300</td>
<td>300 x 200</td>
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<td>Internal Hard Drive</td>
<td>256 MB</td>
<td>540 MB</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Std/Max RAM</td>
<td>24 MB/24 MB</td>
<td>24 MB/136 MB</td>
<td>32 MB/112 MB</td>
<td>48 MB/112 MB</td>
<td>Host Based</td>
</tr>
<tr>
<td>Photoshop Plug In</td>
<td>No</td>
<td>Yes</td>
<td>Yes/Max Only</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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CIRCLE 140 ON READER SERVICE CARD
Neither rain nor snow nor finicky software shall keep your e-mail attachments from their destination — if you know the right tricks.

By Gregory Wasson

Foolproof File Enclosures

**Having Trouble** with e-mail attachments can be so frustrating you may feel forced to call a courier rather than risk e-mailing important files. Using a courier can easily become a regular, expensive habit, since there are so many ways for e-mail attachments to go wrong between your mailbox and someone else's.

If you don't know all the requirements of your software and those of your correspondents', a graphic may show up mangled, a spreadsheet may turn into weird code, or an attachment may not show up at all. Things get even trickier when you want to send a file cross-platform, because you have to know non-Mac e-mail protocols, such as those for Windows.

No matter whom you correspond with and no matter what software your correspondents use, you can help ensure the safe arrival of your e-mail attachments by following the steps in our "Successful File Attachments" table. They detail the special requirements of the most common e-mail software for the Mac (such as America Online and Claris Emailler) and for Windows (such as Microsoft Exchange and Internet Explorer). In addition, have a look at the rest of this article for general tips that can help get stranded e-mail on its merry electronic way no matter what software you're using.

**Agree to Agree**
Discuss with your correspondents before you exchange a file what file types (such as Word document or TIFF), compression formats (SIT or ZIP), and encoding types (uuencode or binhex) you want to use. Agreeing to specifics beforehand can save you such inconveniences as having to resend the file.

**Group and Compress Files**
Multiple files have the best chance of arriving at their destination safe, sound, and readable if you compress them into a single archive before sending them. You can choose your compression weapon, be it Stufflt Deluxe or a ZIP utility. Even a single file can benefit from being slipped into an archive before being e-mailed. If you have trouble sending a single file and don't know why, try archiving it.

**When to Zip It**
Sometimes using any old compression scheme isn't enough to make an attachment readable for your recipients. If you're sending an attachment to PC users (or don't know what platforms the recipients have), your best bet is to choose the ZIP format. Stufflt's SIT archives are prevalent on the Mac platform but even though there's a Windows version of Stufflt Expander, the SIT format is virtually unknown outside Mac circles. Stufflt Deluxe can decode ZIP files, but to create one, you'll need a ZIP utility such as ZipIt, from Tommy Brown.

**Can't Beat 'Em? Join 'Em**
Even the way you name a file can hinder the e-mail process. Specifically in the case of sending files cross-platform, it's safest to use the 8+3 DOS naming convention (filename.doc). Otherwise your file may be renamed or processed in a way that will make the contents unusable.

**Work Around Big Files**
Large file attachments, say 500K and up, tend to run into problems. They may get corrupted by the time they reach their destination or may simply be kept out of some e-mail systems. The best way to deal with such hefty attachments is to try to reduce their size.

If you have a graphics file, you could make
Successful File Attachments / all the right steps

IT CAN BE SIMPLE to send e-mail attachments, but only if you know how the procedure can vary from software package to software package. The variations depend not only on what e-mail software you use but also on what e-mail software your correspondents use. To help you avoid problems you're likely to run into when exchanging attachments, we list the steps necessary for e-mail success. To see a more extensive chart that includes steps for a wider range of sender software as well as steps on exchanging attachments with UNIX users, visit MacUser's Web site (http://www.zdnet.com/macuser/0297.htm).

RECIPIENTS

SENDERS
America Online
General Procedure: To attach a file, click on the Attach button in the AOL Compose Mail dialog box and select the file.

Claris Emailer (Internet)*
General Procedure: Turn off compression in Emailer's Attachment window if sending a file to a non-Mac user.

Eudora Pro or Eudora Light
General Procedure: In Eudora for Mac, set encoding to AppleDouble in Eudora for Windows, set encoding to MIME.

Netscape Navigator 3.0
General Procedure: When you attach a file, make sure you select the As Is option in the Attach dialog box.

The CM recipient sees the attachment as code at the bottom of a message. In CM, choose the Save a Copy (Text) command, then decode the file with Mpack or YA-Base64.

In Emailer, set encoding to Base64 or uuencode. Download with usual AOL procedure.

Emailer handles the attachment automatically. The recipient can find the detached file in the user-specified folder.

Emailer handles the attachment automatically. The recipient can find the detached file in the user-specified folder.

Emailer handles the attachment automatically. The recipient can find the detached file in the user-specified folder.

*Claris Emailer provides unique opportunities for confusion, because of its many encoding and compression options and because it can send mail in a variety of ways, such as through America Online, CompuServe, and the Internet. This table assumes that Emailer is sending mail through an Internet account. To minimize problems, always use your America Online or CompuServe software to send messages that have file attachments through these two services.

**See the "E-Mailer's Best Friends" sidebar for more information about this software.

**Pre-3.0 versions of Navigator add some confusion to exchanging attachments by renaming those you send. The recipients will see a generic name such as ATT0001.ATL, but it's the same file you sent and should be handled like any other attachment. To open the file, simply use the application the file was created in, such as Word or Photoshop.

it smaller by reducing the graphic's color depth or size — for example, the original file may have millions of colors, but if the recipients need it for Web use, 256 will suffice.

If the file is a page-layout document and the recipients need only to be able to view and print the file (not edit it), there's another technique you can use to squeeze the file. First, save the document to a PostScript file, using a program that lets you, such as PageMaker, QuarkXPress, or FrameMaker. Then compress the PostScript file. Since PostScript is a text-only format, you can compress a PostScript file to a much smaller size than that of the original. If it's crucial that you save your formatting, you can still get a tightly compressed page-layout document if you use Adobe Distiller. Distiller boasts powerful compression algorithms and options for dealing with graphics that make its compression highly efficient.

No matter what type the file is — graphic, page layout, or something else — you can get it safely to its destination by using yet another method for shrinking a file — segmentation.

The E-Mail Alternative / help with sending large files

SENDING LARGE FILES as e-mail attachments can be unreliable or even impossible. Another option often overlooked is to use FTP (file-transfer protocol). America Online subscribers and most people connecting to the Internet through an ISP (Internet service provider) have some space reserved on the server where they can leave large files for other users to download. Downloading files requires FTP client software, such as Fetch or AOL's built-in FTP software.

Here are some steps to follow for using FTP to exchange files with others, using AOL and ISP servers:

FTPping with AOL. Every AOL subscriber has 2.5 MB of space available for Web pages or files. To go to this space, use myplace as a keyword. Click on the Go To My Place button. The My Place window contains buttons for uploading files, creating directories, and accessing online help. Create a directory called incoming (it must be this name), and upload files for others there. Tell your recipients to go to ftp://ftp.ispname.com/screenname/incoming/. Their FTP software will let them download any files they find there.

AOL users can access this area simply by using FTP as a keyword, clicking on the Go To FTP button, clicking on Other Site, typing the full pathname given above, and then clicking on Connect. They can highlight a file and click on Download to transfer the file to their hard disk.

FTPing with an ISP. Most Internet service providers provide their subscribers with generous amounts of space for Web pages or files. Ask your ISP for details and for the pathname to your area. The pathname will look something like ftp://ispname.com/users/username!. You should be able to create directories there so that recipients can easily find the files you leave for them. Fetch or some other FTP client software will allow you to manage directories and files in this area.

AOL users can access the area by using FTP as a keyword, clicking on the Go To FTP button, clicking on Other Site, typing the first pathname given earlier, and then clicking on Connect. Note: You may have to set the read/write privileges of the directories, using the FTP site command (sent via your FTP client software) SITE chmod 777 directoryname.
To do so, first agree with your recipients on a compression method (ZIP or StuffIt, for example); then compress the large file across several segmented archives (see your compression software's documentation for instructions). Once you've created several small archives, send each one in a separate e-mail message. The recipients reconstruct the file by joining the segmented archives together.

Despite all the options you have for reducing file size, you may have a file you don't want to alter in any way. If that's the case, the next-best method is to use a more complicated procedure — FTP (file-transfer protocol) — instead of e-mail (see the "E-Mail Alternative" sidebar for details on using FTP).

**Send Help**

It's a nice touch of netiquette to add a reminder about an attachment's file and compression type as well as special instructions for handling the attachment. For instance, it's helpful to tell your recipients if they need to use a particular utility, such as the shareware StuffIt Expander with DropStuff, to decode and extract your file.

**Get the Message**

At the end of the day, it's money you'll save and frustration you'll avoid if you can manage to make e-mail function reliably. Not only may you kick the habit of using a courier by following our tips but you may also be able to ride to the rescue of frustrated others in your life who can't get their attachments to behave properly.

---

**An E-Mailer's Best Friends / essential utilities**

**BESIDES BECOMING MORE SAVVY about sending attachments, you'll also need to arm yourself with special software to make sure you and your correspondents can read everything you exchange. The following files, mentioned in the "Successful File Attachments" table, will help you do just that. They're available through major online services and from various Internet sites. You can also retrieve them from the MacUser Web site by going to http://www.zdnet.com/macuser/software/.) You can also find them in the MacUser areas on CompuServe (GO ZMC:MACUSER) and America Online (keyword MACUSER).**

**Gregory Wasson, a MacUser contributing editor and former NetCarte Webmaster, has been furiously flinging file attachments through electronic passageways for years.**

You can find the shareware and freeware programs that are referenced in this article at MacUser's Software Central (http://www.zdnet.com/macuser/software/). You can also find them in the MacUser areas on CompuServe (GO ZMC:MACUSER) and America Online (keyword MACUSER).
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Color My World

Q. I'm moving up from my tired old Performa 200 (a.k.a. Classic II) to a Power Computing PowerBase 180. But since the new Mac clone will be my first color system, I really need a crash course in computing about right here? Bob —

CHRIS: Gee, we've got nothing better to do. How about right here? Bob —

BOB: Yeah?

CHRIS: No, not you, Bob. The other Bob.

BOB: Oh.

CHRIS: Bob, as a couple of crusty Mac veterans, we've made the jump from the teensy-screened, black-and-white world of compact Macs to the glorious world of full-color, just-slightly-smaller-than-a-dormitory-fridge monitors and have lived to tell the tale. You will find the jump remarkably easy to make. Bob?

BOB: Ahem! BOB?

CHRIS: Bob, as a couple of crusty Mac veterans, we've made the jump from the teensy-screened, black-and-white world of compact Macs to the glorious world of full-color, just-slightly-smaller-than-a-dormitory-fridge monitors and have lived to tell the tale. You will find the jump remarkably easy to make. Bob?

BOB: Oh. Sorry, thought you were addressing the other Bob. Gee, this is confusing. Let's clear this Bob thing up once and for all.

Mr. Woolley, once you've set up your new computer, open the Control Panels folder and hunt around for Monitors & Sound. This is where you'll change your color and resolution settings. Because you're working with a PowerBase 180, which carries 2 MB of VRAM, you'll see several color options: for example, 256, thousands, and millions. The range of color will depend on the monitor you have and the resolution you set it to.

CHRIS: Different monitors support different resolutions — with resolution hereby and forever after defined as the number of pixels jammed on the monitor's screen. For example, my 17-inch multisync monitor supports resolutions of 640 x 480 (meaning 640 pixels across and 480 down) and 832 x 624. I have enough VRAM to display thousands of colors (32,768, to be exact) at 640 x 480 pixels. When I increase the pixel count, by switching to a higher resolution setting (which eats up more VRAM), I can display only 256 colors. When I change resolutions, my monitor blinks off for a second while making a bewweeek kind of sound and then jumps back to life with the new resolution.

Because Mr. LeVitus is among the World's Great Power Users, he's got enough VRAM to display millions of colors (16.7 million) on multisync monitors ranging up to 21 inches in size. Heck, he's probably got enough to run the DiamondVision scoreboard at 3Com/ Candlestick Park. With the PowerBase 180, you'll be a bit more limited. You'll be able to view millions of colors on a 17-inch monitor set to 832 x 624 but only 256 colors on a 21-inch monitor running at 1,280 x 1,024.

BOP: Don't forget, the PowerBase has PCI slots. If the onboard VRAM doesn't satisfy your colorful desires, you can plug in a graphics card that not only gives you more colors but also speeds up screen redraws.

Bypass Startup Items?

Q. Is there a key combination that will prevent items in the Startup Items folder from loading when I boot my Mac?

Ken Jordan
via the Internet

BOB: I'm glad you asked. I was wondering that...
It's Hands On Software, lets you control startup-item launches. 

CHRIS: And we came up with three ways you can keep those startup items from starting up. The first is not only the cheapest solution but is also recommended by Apple and needs no extra tools or software. Simply mash down the Shift key just after your last extension or control panel loads but before the Finder appears.

BOB: Unfortunately, after intense testing on a variety of keyboards, neither of us was able to get this trick to work reliably every time. The best we can figure is that this is related to the precise timing of the Shift-key mashing and the phase of the moon, although our totally unscientific research revealed that it works more often with Apple keyboards than with third-party ones.

CHRIS: Solution 2: What Help Folder column would be complete without a plug for Casady & Greene’s Conflict Catcher? As its competitor, Now Startup Manager, you can create startup sets that include or exclude as many startup items as you like. If you occasionally need to apply the ax to your startup items, create a set excluding them, assign the set a hot key, and mash down said hot key at the next startup.

BOB: Perhaps the most excellent and elegant solution, though, is to use a little $8 shareware application called Delayed Startup Items (see figure 1). It waits a user-determined amount of time before beginning to launch the items in the Delayed Startup Items folder that it creates for you, and it launches them only when your Mac is idle, meaning when you're not moving the mouse or using the keyboard. Plus, it offers the option of launching all the items immediately or not launching them at all. It's way cool.

**Browser Errors**

**Q.** I'm plagued by Type 11 errors in Web browsers. I've tried Netscape Navigator and Microsoft Internet Explorer. I've rebuilt the desktop, trashed preferences, and zapped the PRAM, but these errors always come back. Can you help me?

**Corey Fox**

via the Internet

**BOB:** OK, Corey, but let's get one thing straight before we start: Browsers — and I'm trying to put this as delicately as humanly possible — are more fragile than most programs.

**CHRIS:** Granted, some of this fragility can be blamed on earlier versions of system-software components such as MacTCP and Open Transport, but let's face it, people have more system errors with browsers than with most other apps.

**BOB:** Keeping that in mind, here are a few things you can do to try to stabilize your browser. The most important is to make sure you have the latest version of the Mac OS and that none of its components are damaged in any way. The best way to do this — at least at this writing — is to perform a clean install of System 7.5.3 and then apply the 7.5.5 update and Open Transport 1.1.1. It's probably not a bad idea to run Disk First Aid or Norton Utilities first, to discover any hidden damage to your hard disk's directory structures.

**CHRIS:** The plumbing for Internet connections has gotten better with each update, so if you've been running System 7.5.5 or earlier, you should see significant reliability improvements with 7.5.5.

**BOB:** You may have to rebuild the desktop, trash preferences, and zap the PRAM again, but ultimately you'll have more-reliable TCP/IP connections with the latest system's stuff.

The next thing is to make sure you have the latest version of each browser. Once again, each successive version has been a little more reliable than the one before.

**CHRIS:** Take that last recommendation with a few grains of salt. With browsers being updated and upgraded several times a year — for example, new versions of Netscape Navigator (3.0) and Microsoft Internet Explorer (2.1) came out around the time this column was being written — it's hard to say if it will still be good advice by the time you read it.

**BOB:** But one thing's for sure — for gosh sakes, be sure you're not using a beta copy of a browser. Ever since the browser wars began, Microsoft and Netscape have been offering naive and innocent users the opportunity to test buggy, prerelease software for free. Just say no — unless you're willing to really be a tester, which means you won't whine about system errors and will write detailed bug reports about them.

**CHRIS:** Here's one last thing that may make your browsing more reliable, especially if you use a lot of third-party extensions or control panels: Create a minimal startup set with Extensions Manager, Now Startup Manager, or Conflict Catcher, and enable only the extensions you need in order to connect with the Internet (usually any extension with the letters “PPP” in it, the TCP/IP control panel, and all the extensions with “Open Tpi” or “Open Transport” in their names, plus the Internet Config extension if you have it).

**The Perils of PostScript**

**Q.** I need to transfer formatted documents and graphs from my home Mac to a UNIX system at work. PostScript is the preferred format, and I can't use the LaserWriter driver's "print to file" option, because I don't have a LaserWriter at home. Is there a straightforward way to produce PostScript versions of my documents?

**Rodney Jee**

via the Internet

**CHRIS:** I can understand your consternation — particularly if you've tried working around this problem with earlier versions of the LaserWriter 8 extension. Fortunately, Apple and Adobe have recently made living with PostScript easier.

Before presenting the answer, I feel it's our duty to explain the standard procedure for creating and downloading PostScript files. And by our duty, I really mean Bob's duty, because I suffer from a debilitating malady that causes me to drop into slumber and drool copiously when the subject of PostScript code is brought up in general conversation.

**BOB:** Gee, thanks.

Here's how it works: When you send a document to a PostScript printer for output...!

**CHRIS:** [zzzzz...]

**BOB:** ...the document is translated into commands the printer understands — namely, PostScript code. Those who have PostScript printers may know there's an alternative to printing the file to paper — you can save the raw PostScript code as a text document. Simply select LaserWriter (or whichever PostScript printer you have) in the Chooser. In the Print dialog box of your host application, click on the File (as opposed to the Printer) option under Destination. Up pops a Save dialog box. Name your file, and save it as ASCII text.
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The best scanner is the human eye, and the best color correction device is the human brain. Think about it. You just look at something and there's the color. That's exactly how LinoColor™ Visualab™ software works, too.

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CIRCLE 11 ON READER SERVICE CARD

Linotype-Hell
Once you've saved your file, you can do as our friend Rodney wishes and send it along to a UNIX system as a text file, or if you want to print it at a later time, you can download it to a PostScript printer, using a utility such as Apple Printer Utility or Hewlett-Packard's HP LaserJet Utility 3.0.

CHRIS: [snick! yawn ...] Tell 'em why you'd want to download the file rather than print it from its native application. I'd help you out, but ... [zzzzz ...]

BOB: [sigh ...] Saving the file as PostScript has these advantages: If you take it to a service bureau for printing, you don't need to worry about whether the facility has the application necessary to print it. And if your document contains lots of different elements — let's say a couple of graphics, fonts, and text blocks — you don't have to bring all the pieces down to the service bureau with you. The single PostScript file has all the information necessary to print the document.

WARNING: This file can be huge — much larger than the original file was when it was saved in its native format. Be prepared to deliver the file on SyQuest or Zip cartridges.

Now if we can just get Chris stirred up so he'll finish the answer, HEY, YOU'RE A CONTRIBUTING EDITOR, SO CONTRIBUTE! CHRIS: Wha ...? Oh. OK, I'll try.

As I hinted at before my little snooze, early versions of the LaserWriter 8 extension made it impossible to print or save a PostScript file without actually being linked to a PostScript printer. You could select the printer in the Chooser, but heavens to betsy, the Print command produced only a dialog box indicating — in technical terms, of course — that you were hosed.

Thankfully, Apple released the LaserWriter 8.4 software package, which has a printer driver that doesn't give a good gosh darn whether you have a printer connected or not. Just glom on to the software (you can find it in Apple's software libraries on the Web, Compuserve, and AOL), run the installer, restart, and select LaserWriter in the Chooser.

When you choose Print, select File from the Destination pull-down menu and then choose Save as File from the unnamed pull-down menu at the left of the dialog box (see figure 2). When you choose Save as File, you'll have the option of saving your file as a PostScript job (in ASCII or binary) or as an EPS file. With either option, you can select PostScript Level 1 or PostScript Level 2 compatibility. Unless you're positive that the printer is compatible with PostScript Level 2 — the newest PostScript printers are — save it as Level 1.

You will also want to determine whether to include PostScript descriptions of the fonts in your document. Another pull-down menu allows you to decide whether to include all, none, or some of the fonts. If you suspect that the printer you'll eventually use doesn't have access to your fonts, include them.

Guessed Address

Q. I would like to find the e-mail address of a friend who I know is online. Is there a way to track him down?

Masahiro Knittel via the Internet

CHRIS: Ah, this one will be a cinch compared to that painfully dull PostScript matter.

Masahiro, given that you're a MacUser reader, you're obviously a person of matchless taste who gathers like-minded individuals to his bosom. Why recommend an online-search service when we know full well that each and every one of your friends is a MacUser subscriber reading these words right now? Undoubtedly, one or two of your pals — perhaps due to a carelessly misplaced address book or the mastications of an undisciplined canine — have lost contact with you. Surely they will see your name and drop us a line here at Help Folder, reading: "The only Masahiro Knittel I know owes me money! Please forward my e-mail address to him pronto!"

And we'd do it too!

BOB: As much as I admire Chris' willingness to help you personally, an Internet-search service is more likely to provide the results you're after.

I would start by checking Four11 (http://www.four11.com/) and WhoWhere? (http://www.whowhere.com/). You can search out a person's e-mail address as well as home address and phone number with both of these services. To track someone down, enter the person's name and such relevant data as the city and state where they live.

While checking out this answer, I found that some of my e-mail addresses were listed, but a search for my partner brought up only a guy in the U.K. and another who works for Silicon Graphics in Massachusetts. How come I didn't see you in there? Paranoid?

CHRIS: Hardly, I've been far too busy gathering evidence that definitely links Elvis to the Kennedy assassination to bother registering my address.

Oh, how we kid ... Truth be told, I conduct most of my e-mail business via Compuserve and AOL. Because both of these outfits consider your user information an asset to be sold to advertisers, they don't pass user names along to companies such as Four11 and WhoWhere? Also, I don't post to newsgroups. If I did, my e-mail address would appear in MIT's UseNet Addresses service (http://usenet-addresses.mit.edu) — a service you should check out, Masahiro, if your buddy is the chatty type.

For those of you who are worried that any yabbo with a computer and a modem can get ahold of your address and phone number within seconds, both Four11 and WhoWhere? allow you to have your name removed from their lists. Additionally, both companies claim that your personal information is not provided to other companies. Forms are laid out in such a way as to make it difficult to gather a bevy of names at one sitting.

One WhoWhere? option does bother me, however. Unlike Four11, WhoWhere? lets you track people by their phone numbers alone — just enter the number, and WhoWhere? spits out a name and address if a person is listed in one of the major U.S. phone books. If you're concerned about your privacy, this may be a compelling argument for blocking your phone number.

BOB: Since Chris brought up Compuserve and
You’ve got powerful ideas. And finally, there’s a tool that can bring them to life. Introducing the Epson PowerLite 5000 SVGA projector. With the perfect combination of portability, brightness and versatility, you can now deliver dazzling presentations anytime, anywhere.

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AOL, I should mention that you can search these commercial services for your friend's address if you're a member. If you're an AOL subscriber, he may have filled out a Member Profile, with vital stats such as his user name and the city in which he lives. But since profiles aren't required of AOL users, it's quite possible that your friend has an account but can't be tracked down with a profile search. CompuServe's directory is more complete.

**A Walk Around the Blocks**

**Q.** I've noticed slight file-size differences when a file is copied from the hard disk to another disk (floppy, SyQuest, and the like). Why these differences?

**Joel Scharf**

via the Internet

**CHRIS:** Joel, before we answer, I'd like to get a little something off my chest. This will only take a sec. Although we get some remarkably supportive mail, the occasional sourpuss slithers in complaining that he'd (yes, it's always a man) like the information without having to wade through our witty repartee.

**BOB:** Perhaps these people could read *Byte* instead.

**CHRIS:** Now, now. It's important that we address the needs of *all* our readers — even those lacking the humor gene. For this reason we will now provide the answer without any unnecessary embellishment. Hit it, Bob.

**BOB:** Hard disks are made up of tracks and sectors — these are physical divisions. Hard disks are also divided into logical units called allocation blocks — a block can be as small as one sector or contain more than one sector. These allocation blocks vary in size depending on the size of the disk you format. A high-capacity disk has larger allocation blocks than a low-capacity disk.

**CHRIS:** An allocation block can hold only one file. Even if the block is not completely full, no two files — or portions of files — can be written to a single allocation block. This can lead to wasted space. For example, a 1-GB disk's allocation blocks are 16K (they're 8K on a 512-MB disk). If you save a 7K file to the gig drive, it will still take up the entire 16K block — wasting 9K of storage space. If you copy that file to a smaller-capacity disk, with the disk's smaller allocation blocks, you waste less space and the file size shrinks. If you saved a 7K file to the 512-MB disk, you'd waste only 1K. Files stored on 1-GB-plus disks may require another K or two in overhead.

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**Tips / Sound Off!**

**No Startup Chime**

If you have AppleScript installed, here's an easy way to keep your Mac's startup chime from waking the family whenever you get an idea in the middle of the night:

1. Create the following script in Script Editor, save it as an application, and place it in the Shutdown Items folder in your System Folder:
   ```plaintext
   on run
     tell application "Finder"
       set volume 0
     end tell
   end run
   ``

The next time your Mac starts up, it will play a barely audible startup chime. To automatically bring your Mac back to full volume, make a copy of the script, set the volume within the script to your usual level (7, for example), save it as an application, and place it in the Startup Items folder.

**Lou Flemal**

Islandia, NY

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**No Monitor Beeping**

I use the Energy Saver control panel to put my monitor to sleep after 15 minutes of inactivity, but I hate the annoying beeping that occurs when the monitor wakes up. Armed with a copy of ResEdit, I decided to do something about it.

Using ResEdit, open a copy of Energy Saver. Locate the snd resources item, and open it. Once it is open, you'll spy the -4041 resource (it's the only one there). Open this resource, press Command-A (Select All), and press the Delete key. Save your changes, install the updated Energy Saver in your Control Panels folder (keep a copy of the old Energy Saver in case you want the beep back), and restart.

Your Mac will awaken silently.

**George Craig**

Dalton, GA

---

**Your Own Bad Dog**

Have you ever wanted to scold After Dark's Bad Dog yourself? It's easy:

1. Use a sound-recording utility to record the command you'd like Bad Dog to hear — I recommend recording at 11 kHz to keep the resource small. Make a copy of the Bad Dog After Dark module, and open it with ResEdit. Open the Bad Dog snd resource inside the Bad Dog module, and delete it.

Now use ResEdit to open the sound you recorded, open its snd resource, press Command-A to select all, copy, and paste its contents into the Bad Dog snd resource. Save Bad Dog, install it in the After Dark Files folder (found inside the Control Panels folder), and restart.

The next time Bad Dog starts misbehaving, that will be you doing the barking.

**Mark Brethen**

via the Internet

---

**BOB:** This explains why it's a good idea to partition large disks if you want to reduce wasted space. Partitions act like lower-capacity disks and carry smaller allocation blocks.

**CHRIS:** Here's the formula for determining how large your allocation blocks are: Add 512 bytes (.5K) for every 32 MB of storage. Put another way, the formula is

\[(\text{Disk Size \times 0.5}) = \text{Allocation Block Size}\]

<table>
<thead>
<tr>
<th>Disk Size</th>
<th>Allocation Block Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 MB</td>
<td>.5K</td>
</tr>
<tr>
<td>64 MB</td>
<td>1K</td>
</tr>
<tr>
<td>128 MB</td>
<td>2K</td>
</tr>
<tr>
<td>256 MB</td>
<td>4K</td>
</tr>
<tr>
<td>384 MB</td>
<td>6K</td>
</tr>
<tr>
<td>1 GB</td>
<td>16K</td>
</tr>
</tbody>
</table>

...and so on.

**The Last Word on Key-Ing It Clean**

**BOB:** Several readers responded to our advice to Malcolm Reid regarding the malfunctioning Power key on his keyboard (Help Folder, November '96, page 140). Although we provided Malcolm with some good advice, we overlooked another likely culprit — a dead or dying internal Mac battery.

Macs use a small battery to maintain things such as PRAM (parameter RAM) settings when the power to your Mac is turned off. This same battery activates the circuitry that senses the Power key on your keyboard. If said battery is dead or dying, the Power key may not work or may take several presses to generate enough voltage to activate the power-supply relay.

**CHRIS:** Another indication that your battery is dead or dying is when settings stored in PRAM — such as monitor, sound, time, and date, and Chooser-device settings — are forgotten when you shut down.

If you suspect that your battery is the problem — and they do tend to wear out after a few years of service — check with your Apple dealer about replacing it. This is an inexpensive fix on most Mac models.

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Bob LeVitus is the author of 20 computer books and is a columnist for the Houston Chronicle. Christopher Breen recently caught the Macintosh Bible Bug guide to Games, published by Peachpit Press.

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 areas on CompuServe (GO ZMC:MACUSER) and America Online (keyword MACUSER).
From the sources you trust:

PC Magazine
PC Week
PC Computing
Computer Shopper
Windows Sources
MacUser
MacWEEK
Inter@ctive Week
Computer Life
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It’s made for game developers, but it’s Mac game players who really benefit from Apple’s newest game technology.

Game Gears

When Apple finally admitted that the Macintosh was a great game machine, it backed up its words with action by releasing Game Sprockets. Sprockets is a set of APIs (application-programming interfaces) game developers can use to simplify the creation of particular Mac game operations. Here’s a rundown on how sprockets work and a preview of some cutting-edge games that use them (see this month’s Game Room for mouse-rated reviews of some sprockets-based games).

DrawSprocket
Perhaps the best way to understand what the DrawSprocket does is to look at how it works in the new game Tempest 2000, from MacPlay (800-462-2752 or 714-553-3521). In this remake of the Atari arcade hit of the early ’80s, you’re a futuristic creature traveling through a series of geometric planes, eliminating other creatures that attack you. It’s a chaotic game that requires graphics to be drawn rapidly. That’s where the advantage of the DrawSprocket comes in. It makes animations smooth by using multiple buffering — a method of creating and storing more than one image at a time to send to your Mac’s screen. Without multiple buffering, the Mac creates and stores only one image at a time, which can make animations choppy.

InputSprocket
This sprocket contains programming that users and developers have needed for a long time. The InputSprocket is a hardware driver that lets Mac games work with any Mac joystick, steering wheel, or other input device. By press time, we’d found no games that used the InputSprocket.

NetSprocket
The NetSprocket makes playing networked games easier for users and makes creating them easier for developers. It’s easier for users because a game that uses the NetSprocket is not restricted to the use of one network protocol — one player can use TCP/IP, one person can log in remotely via a 28.8-kbps modem, and another can use a TokenTalk connection. Even better, they can all participate in the same game without experiencing much speed degradation.

For developers, the NetSprocket reduces the amount of time it takes to make a game networkable. LucasArts (800-985-8227 or 415-472-3400), for example, figures that because it used the NetSprocket, it saved about a month’s worth of work while developing Outlaws, a first-person shooter set in a Sergio Leone-type Western (available in late January 1997).

Because of the NetSprocket, the number of network games available should soon be vast. The experience of the developers of MacPlay’s Virtual Pool will likely be the common case. This game was originally made for a single player, but when the developers found how easy it was to implement the NetSprocket, they tacked on network capability.

QuickDraw 3D RAVE
If a game uses this sprocket, you don’t have to worry about compatibility between the game and your 3-D-graphics accelerator, assuming you have one. This means that even if you have a game with its own proprietary rendering engine — in other words, one that doesn’t use QuickDraw 3D — the game can still be accelerated with any 3-D-accelerated-graphics card.

When Bungie Software (800-295-0060 or 312-563-6200) releases Weekend Warrior (shown below) later this year, it will be the first game developed from the ground up to take advantage of many sprockets, including the RAVE (Rendering Acceleration Virtual Engine) sprocket.

Weekend Warrior is a combo adventure and fighting game that takes place in a twisted 3-D game show world. Playing one of several characters, you complete missions for cash and fabulous prizes. You...
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can even personalize a character by mapping the image of your own face onto its head. This is a powerhouse of a game that shows off how impressive QuickDraw III and 3D-graphics acceleration can be. It gives you a realistic sense of being in a 3-D world, featuring 3-D zooms that give you a perspective from anywhere in the game's space. Since it's designed for 3-D-graphics acceleration hardware, the game requires a card to work properly and works only on PowerPC machines. You can get a copy of Weekend Warrior only by buying certain 3-D-graphics accelerators or a Mac with 3-D-graphics-acceleration hardware built into the motherboard — it isn't a stand-alone product.

**SoundSprocket**

The most exciting aspect of the SoundSprocket is its unusual stereo sound effects — it creates 3-D sound that seems to come from various points in space, such as the upper-right corner of your screen. You can take advantage of the sound experience only if you have two speakers or headphones.

To better illustrate 3-D sound, let's look at a game that uses the SoundSprocket — *WarCraft II: Tides of Darkness*, from Blizzard Entertainment (800-953-7669 or 714-955-1380). In this game of discovering and colonizing new lands, your main screen shows only a small portion of a larger map. So, it's possible to have events occur off-screen. Now suppose your home base is located in the lower-left part of the map but one of your armadas is under attack in the upper-right corner. Without 3-D sound, the noises of the battle — the explosions, the cries of “We're being attacked!” — would sound distant (because they would be faint), but you couldn't ascertain their direction. With 3-D sound, not only do the noises sound distant but also they sound as though they're coming from the upper-right corner. That's because the SoundSprocket lowers the volume and plays sounds only out of the right speaker.

Other sound effects, such as the Doppler effect, can also be simulated by 3-D sound. By varying each speaker's volume level, a developer can create the effect of an object, such as a car, passing at high speed. If you were wearing headphones, the sound would literally zoom through your head.

**SpeechSprocket**

This sprocket brings speech recognition to games. It's based on Apple's PlainTalk technology, so you must have PlainTalk installed to use it. What's cool about PlainTalk is that it's robust. First of all, it's speaker-independent, meaning that you don't need to train the speech-recognition software by sitting in front of your Mac and reciting a list of words. It also lets you speak in natural, multiword phrases rather than single words separated by exaggerated pauses.

*Nascar Racing*, from Sierra On-Line (800-757-7707 or 206-644-4343), uses speech recognition to make playing the game not only more enjoyable but also more realistic. Just as in a real Nascar race, you, as the driver, must send instructions, such as which tires to change, to the pit crew before you pull into the pit. Rather than take your hands off the steering wheel, you simply speak commands.

**The Gears Keep Turning**

What's next for Game Sprockets? Plenty. Although you can't do it now, you'll be able to use the SpeechSprocket in the future for directional commands — “turn right, turn left.” The SoundSprocket does an excellent job of simulating 3-D sound coming from in front and from the side, but it can't replicate sounds that come from behind your head. In the future, you should be able to hear an opponent firing a missile as you zoom through your head.

These will be big improvements, but what would you think if I said that Apple is creating a “GoggleSprocket”? If you're thinking of virtual-reality goggles, you've got the right idea. But what if a game also employed the SoundSprocket for 3-D sound, the InputSprocket for a control “glove,” the SpeechSprocket for vocal input, and the DrawSprocket for faster animation, and all of this was implemented in a game situated in a full-color 3-D world that used the QuickDraw III tools? You'd have a virtual reality that didn't require a high-powered workstation. A cool game, indeed.

MacUser Associate Editor Roman Loyola is the keeper of The Game Room. Special thanks to Ben Calica, formerly of Apple Computer, for his help with this story.

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**The Two Dads**

BY RIK MYSELEWSKI AND JIM SHATZ-AKIN

CAREY MYSELEWSKI (11 years old): My dad's name is Rik. He writes about kids' software.

ROXANNE MYSELEWSKI (9 years old): It's our turn to talk about what software we like.

BAILEY SHATZ-AKIN (19 months old): Puter! Push buttons!

CAREY: Yeah, right . . . . I don't like most educational software, because it's waaaaaay too boring. I sometimes like to shoot at people and ships in *Dark Forces* and *Rebel Assault II*.

ROX: I play *Diamonds and More Diamonds* a lot. It's hard but fun. There's some educational games I like, like *Math Workshop*.

CAREY: *Virtual Pool* is sort of educational, about angles and stuff.

ROX: *3-D Ultra Pinball* is cool. You don't have to go to an arcade, and it doesn't cost quarters.

CAREY: Dad gets everything free.

ROX: That's really, really, really cool. I like he has all the Living Books.

*Arthur's Teacher Troubles* is my favorite.

BAILEY: Arthur. Aardvark!

CAREY: It's dumb.

ROX: A little. The best stories are *Freddi Fish and the Case of the Missing Kelp Seeds* and *Putt-Putt Saves the Zoo*.


CAREY: Oh, Rox, those aren't Living Books.

ROX: Who cares? They're better.

CAREY: If I could pick only one game to take to a desert island, I'd take *You Don't Know Jack XXL*.

BAILEY: Bippiffff!

**Arthur's Teacher Troubles**


**Dark Forces**


**Diamonds and More Diamonds**


**Freddi Fish and the Case of the Missing Kelp Seeds**


**Math Workshop**


**Putt-Putt Saves the Zoo**


**Rebel Assault II**


**3-D Ultra Pinball**

Price: $44.95 (list). Company: Sierra On-Line; 800-757-7707 or 206-644-4343. Reader Service: Circle #430.

**Virtual Pool**

Price: $49.95 (list). Company: MacPlay; 800-462-2752 or 714-553-3521. Reader Service: Circle #431.

**You Don't Know Jack XXL**

The Game Room

BY ROMAN LOYOLA

EIGHT BALL, CORNER POCKET — I've made that call during a game of eight ball a million times, only to scratch on the shot. Can Virtual Pool improve my game? If not, I can always resort to conquering the New World or blasting my way through the final stage in the Marathon series.

This is a diverse group of games, but they have at least one feature in common—they're among the first to use Apple Game Sprockets. To read how this technology will change gaming, see "Game Gears," in this issue.

Conquest of the New World

With the success of Warcraft, vendors have realized that there's a huge demand for real-time strategy games for the Macintosh. The latest is Conquest of the New World. Conquest isn't as fast-paced as the Warcraft series, nor does it have the variety of characters and managed strategy, but it definitely satisfies. Conquest takes place in the time period of exploration of the New World. You control a group of explorers from several Old World countries (England, France, Spain) or a tribe of Native Americans. You start off with a ship, a crew, and a blank screen. Landscape appears as you explore new land. You'll find tribes, rivers, mountains, lakes, and other landmarks you can claim for your motherland. Details about your exploration are sent back to the rulers of your native land, which puts extra pressure on you—if you progress too slowly, the rulers will get angry and withdraw the expedition.

What's unique and refreshing about Conquest is the way battles are enacted. Instead of having the troops fight on the large map that you see on your screen during most of the game, you get a close-up of the battle on a large grid (shown above). The troops line up at opposite ends of the grid. From that position, you must strategically plan your attack. To make the battle a bit trickier, as well as realistic, the weapons don't have a true aim, just like the weapons of that era—you may hit one of your own people even though you're aiming at an opponent.

Marathon Infinity

So you're probably thinking, yet another Marathon game? Although Infinity has enough new stuff to make it a must-have for your game collection. This is the last installment in the Marathon series (unless Bungie decides to put out a map collection), and the series ends with a satisfying bang. Infinity has 20 more levels, a bunch of new network levels, and two editors—a level editor called Forge and a shapes tool called Anvil. It's not the levels, though, that make Infinity stand out, because the game play is just more of the same old game. What's best about Infinity is what you see when you're on the

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Olympus D-200 ....................... 699
Olympus D-800 ....................... 999
Olympus E-200 ....................... 999
Olympus E-3 35mm .................... 999

**Memory**

30 PIN SIMMS
1/2MB Module ......................... 11/35
1/4MB SIMM .................. 39/179
POWERBOOK 5300/190
16MB Module ......................... 179
24MB Module ......................... 259
32MB Module ......................... 329
48MB Module ......................... 489
POWERBOOK 600 SERIES
16MB Module ......................... 169
32MB Module ......................... 279
167MHz 603e Upgrade .............. 659

**Specials**

Umax 150Mhz Processor Card .... 399
MacPicasso 320 Nubus 24bit ...... 349
MCI 24bit LC/PDS .................. 249
10BaseT Transceiver ................. 29
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Epcon Stylus Color Pro .......... 479
Newton 130 ......................... 689
IMS MP2/2MB VRAM ................. 159
PhotoShop v4.0 ..................... 589

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Epcon Stylus Color Pro .......... 479
Newton 130 ......................... 689
IMS MP2/2MB VRAM ................. 159
PhotoShop v4.0 ..................... 589
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**A complete family — from entry level to top-of-the-line Mac-compatibles!**

#### PowerBase Series Computers

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>Memory</th>
<th>Hard Drive</th>
<th>CD-ROM</th>
<th>Price</th>
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<td>#83734 603c</td>
<td>180MHz, 16/1GB, 8X CD-Drive</td>
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#### PowerCenter Series Computers

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#### PowerTower Series Computers

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#### PowerTower Pro Series Computers

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<td>$6214.00</td>
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**The SuperMac Series**

Featuring the absolute lowest price for a new Mac-compatible!

<table>
<thead>
<tr>
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<th>CD-ROM</th>
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<td>#91532 603c</td>
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<tr>
<td>#91533 603c</td>
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### MOTOROLA

**Motorola StarMax Series**

Stable, reliable performance from the creators of the PowerPC™ chip

<table>
<thead>
<tr>
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<th>Processor</th>
<th>Memory</th>
<th>Hard Drive</th>
<th>CD-ROM</th>
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<td>$4595.00</td>
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150 MacUser  /  FEBRUARY 1997

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2GB is too little, 4GB is too much. The new APS Q 3200 is priced lower than some 2GB SCSI drives, yet it delivers a perfect 3000MB of reliable storage. This drive uses MR heads and an advanced PRML read channel to fit its 3GB into a 3.5" low profile Ultra SCSI drive.

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- Works on SCSI-2 and Ultra SCSI buses

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- Great for home and office CD-ROM use

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A radical new concept in drive mechanism climate control, APS exclusive ICE system uses digital technology to sense heat build-up around the drive mechanism. Applying that information, ICE controls a high-performance, super-efficient ball bearing fan subsystem to maintain mechanism temperature comfortably within the manufacturer's specified operating range. Should the mechanism exceed the specified operating temperature range, the intelligent ICE circuitry provides a clear indication that a thermal problem exists. This approach drastically reduces cooling noise at low ambient temperatures, and improves both fun and drive mechanism life.

APS QIC & DAT BACKUP SYSTEMS

<table>
<thead>
<tr>
<th>Model</th>
<th>Capacity/Awards</th>
<th>Internal</th>
<th>SR2000</th>
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<td>APS HyperQIC™</td>
<td>6GB</td>
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<td>APS ProDAT® 4GB</td>
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<td>649.95</td>
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<td>APS HyperDAT® Pro68a DDS-2 High Speed Mech.</td>
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APS MO DRIVES

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<td>Up to 217MB</td>
<td>$299.95</td>
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APS REMOVABLE DRIVES

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<td>N/A</td>
<td>599.95</td>
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</table>

Xclaim 3D Graphics Accelerator Card

- Resolution up to 1280 x 1024
- Supports QuickDraw 3D RAVE
- Up to 5x faster than a Power Mac 9500 using QuickDraw 3D
- Real-time rendering – no waiting

Xclaim 3D CD-ROM DRIVES

<table>
<thead>
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<th>Model</th>
<th>External</th>
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<td>APS CD Changed 8X 4 Disc CD changer</td>
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Processor
- PowerPC 603e (3000 Series) or 604e (4000 Series) processor
- Integrated floating-point unit
- 32KB (603e) 64KB (604e) internal cache
- 256KB Level 2 cache

Memory
- 16MB standard (desktop models) or 32MB standard (mini-tower models)

Drives
- 1.2GB IDE (desktop) or 2.4GB (mini-tower) hard drive
- 8x ATAPI CD-ROM drive

Modem
- (3000 Series only)
- 28.8K bps Motorola Lifestyle external

Expansion
- Three (desktop) or five (mini-tower) PCI expansion slots

Sound
- 16-bit stereo sound
- Built-in speaker
- Rear headphone jack

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- ADB extended keyboard
- ADB mouse

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**SOMETHING FOR EVERY**

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- PowerPC 603e (3000 Series) or 604e (4000 Series) processor
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- 28.8K bps Motorola Lifestyle external

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- ADB extended keyboard
- ADB mouse

MODEL | CPU | RAM | Hard drive | CD-ROM | Modem | VRAM | Price CDW |
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PowerMac 9500/200 32MB/2GB/8xCD $3999 $112
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Are you in the market for a Hi-End graphic system and are tired of not knowing what to get? Digital GraphiX has done the work for you and has designed the Ultimate Graphics system. You get everything you need to meet your demanding design deadlines.

Look at everything you get!!!!

Specifications
- PowerPC 600/200MHZ
- Internal CD ROM
- 272MB RAM
- 4GB internal Stripped Disk Array
- Adaptec Disk Array Controller
- Radiuss Precisionview 21 Trinitron Monitor 1600x1200
- Epson Stylus Color Pro XL 11x17 wide color printer, E-Net, PSRip
- IO Mega JAZ 1GB with 1 cartridge
- Microtek ScanMaker 111 with Transparency
- GCC XL 808 800dpi
- E-Net, Cables/Connections
- 12x12 Graphics Tablet

Features
- This system can handle all of your in-house publishing chores, printing 11x17 in both BW and color, scanning, and back up of your files onto a JAZ cartridge. We even give you all of the ethernet cables and connectors for high performance printing. The IMS 8MB Video card provides the fastest accelerated display of your high-resolution images. With a built-in Fast & Wide 4GB Array, the Ultimate Graphics SuperStation is the fastest system available today for a low monthly payment of:

Only $449
per Month

Ultimate Realtime Digital Video Capture SuperStation

Are you in the market for a Hi-End video capture system and are tired of not knowing what to get? Digital GraphiX has done the work for you and has designed the Ultimate Video Capture system. You get everything you need to meet your demanding realtime video capture needs.

Look at everything you get!!!!

Specifications
- PowerPC 600/200MHZ
- Internal CD ROM
- 272MB RAM
- 8GB External Stripped Disk Array
- 2x Adaptec Disk Array Controller/Remus LE SW
- ATI 2MB PCI Video Card
- Sony 20SF II and Viewsonic 17EA
- Yamaha 4x4x4 CDR with Toast Software and Director
- 90x 74mineute CDR Media
- IO Mega JAZ 1GB with 1 cartridge
- TrueVision Targa 2000 PCI Video Capture
- Adobe Premiere 4.2 Video Capture Software
- Sony SDT-5000 DAT tape Backup

Features
- This system can handle all of your in-house video capture chores. View video on one monitor and execute your premiere on the other. Capture video at 60 frames per second (Never miss a frame) on your dual channel Fast/Wide SCSI Raid Level 0 24MB per second Array. Store all of your video on your 650MB 74min CDRs, transfer your files with a JAZ cartridge, and backup all your work with a 8GB Sony SDT-5000 DAT tape drive. We even provide you with Macromedia Director and Adobe Premiere Software. This System is the best video system available today for a low monthly payment of:

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### Graphix Systems

**7600/132 ENTRY LEVEL SYSTEM**
- PowerMac 7600/132
- Internal CD ROM
- 40MB RAM
- 1.2GB hard drive
- Extended keyboard
- Viewsonic 17EA AV Monitor
- VRAM Upgrade
- ScanView 17EVA Monitor
- TrueVision Targa 1000 PCI Digital Card
- 4GB SCSI-3 Fast & Wide disk array
- 3GB-3 Fast & Wide RAID disk controller with RAID SW
- Sony 8GB DAT tape drive
- 10Giga Zip 100 with 1 cartridge
- Omni Page Professional V5.5 with bonus $450 Value
- **FREE!** Quark With Every Graphix System
- 2xGiga RAM System Memory
- $650 Value
- **FREE!** Adobe PageMaker with Every Graphix System
- $485 Value

**8500/180 MID RANGE DTP SYSTEM**
- PowerMac 8500/180
- Internal CD ROM
- 80MB RAM
- 4GB hard drive
- Extended keyboard
- Sony 205Fi Monitor
- ATI XClaim 4MB PCI Video Card
- TrueVision Bravado 1000 PCI Digital Card
- 8GB SCSI-3 Fast & Wide disk array
- 3GB-3 Fast & Wide RAID disk controller with RAID SW
- Sony 8GB DAT tape drive

**9500/200 HI END SUPER STATION**
- PowerPC 9500/200MHz
- Internal CD ROM
- 144MB RAM
- 4GB internal hard drive
- Radius PrecisionView
- 21 Monitor
- AT&T 4MB PCI Video Card
- TrueVision Targa 2000 PCI Digital Card
- 6GB SCSI-3 Fast & Wide disk array
- Yamaha 4x/4x CDR with Toast Software
- 10Giga Zip 100 with 1 cartridge
- **FREE!** Quark With Every Graphix System
- 2xGiga RAM System Memory
- $720 Value

### Digital & Multimedia Systems

**7600/132 STARTER SYSTEM**
- PowerPC 7600/132MHz
- Internal CD ROM
- 40MB RAM
- 1.2GB hard drive
- Extended keyboard
- ViewSonic 17EA AV Monitor
- TrueVision Targa 1000 PCI Digital Card
- 4GB SCSI-3 Fast & Wide disk array
- SCS1-3 Fast & Wide RAID disk controller with RAID SW
- Sony 8GB DAT tape drive
- 10Giga Zip 100 with 1 cartridge
- Adobe PageMaker with Every Graphix System
- $485 Value

**8500/180 MID RANGE POWER SYSTEM**
- PowerPC 8500/180MHz
- Internal CD ROM
- 80MB RAM
- 4GB hard drive
- Extended keyboard
- Sony 205Fi Monitor
- ATI XClaim 4MB PCI Video Card
- TrueVision Bravado 1000 PCI Digital Card
- 8GB SCSI-3 Fast & Wide disk array
- 3GB-3 Fast & Wide RAID disk controller with RAID SW
- Sony 8GB DAT tape drive

**9500/200 DIGITAL VIDEO WORKSTATION**
- PowerPC 9500/200MHz
- Internal CD ROM
- 144MB RAM
- 4GB internal hard drive
- Radius PrecisionView
- 21 Monitor
- AT&T 4MB PCI Video Card
- TrueVision Targa 2000 PCI Digital Card
- 6GB SCSI-3 Fast & Wide disk array
- Yamaha 4x/4x CDR with Toast Software
- 10Giga Zip 100 with 1 cartridge

### Photo Systems

**8500/180 ENTRY LEVEL**
- PowerMac 8500/180MHz
- Internal CD ROM
- 80MB RAM
- 2GB hard drive
- Extended keyboard
- ViewSonic 17EA AV Monitor
- Polaroid Sprintscan 35mm
- Kodak DC-40 digital camera
- Jaz 1GB with 1 cartridge
- Microsoft Office with Every Graphix System
- $439 Value

**9500/200 HIGH END PHOTO STATION**
- PowerPC 9500/200 MHz
- Internal CD ROM
- 144MB RAM
- 4GB hard drive
- Extended keyboard
- ATI XClaim 4MB PCI Video Card
- Sony 205Fi Monitor
- Yamaha 4x/4x CDR with Toast Software
- Kodak DC50 digital camera
- Polaroid Sprintscan 35mm

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- CPU/Extended Key Mode: Memory/CARD
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### Disk Arrays

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### Graphics Tablets

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### Disk Arrays

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<tr>
<td>USRobotics Sportster 28.8 v.34</td>
<td>$189</td>
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<tr>
<td>USRobotics Sportster Voice</td>
<td>$199</td>
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### Digital Cameras

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<tr>
<td>Kodak DC20 Camera</td>
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<td>Kodak DC25 Camera</td>
<td>$489</td>
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<td>Kodak DC40 Camera</td>
<td>$589</td>
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<td>Kodak DC50 Zoom Camera</td>
<td>$869</td>
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<tr>
<td>Epson PhotoPC for Mac</td>
<td>$389</td>
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<tr>
<td>Epson PhotoPC 500 for Mac</td>
<td>$489</td>
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### Digital GraphixX Best Price Specials

<table>
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<tr>
<th>Product</th>
<th>Price</th>
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<tbody>
<tr>
<td>Syquest 88MB Cartridges 5 pack Only</td>
<td>$199</td>
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<tr>
<td>IOMega Jaz 1GB Cartridges Only</td>
<td>$89</td>
</tr>
<tr>
<td>230MB Optical Cartridges Only</td>
<td>$11.99</td>
</tr>
</tbody>
</table>

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- Sony 17 200SF $799
- Sony 205SF II $1599
- Radius PressView 17SR $1979
- Radius 21 PrecisionView $2329
- Radius PressView 21SR $3249

**Laser Printers**

- HP 6MP, 8.5x11 $889
- Okidata 600e/ps, 8.5x11 $739
- Epson Stylus Color Pro XL, 11x17 $1729
- Epson Stylus Color Pro, 8.5x11 $369
- GCC XL 600, 600dpi, 11x17 $2339
- GCC XL 808, 800dpi, 11x17 $2989
- GCC XL 1208, 1200dpi, 11x17 $4169

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- RasterOps OptiColor 128 8MB $1199
- Radius ThunderColor 30/1152 (PCI) $1599
- Radius ThunderColor 30/1600 (PCI) $1985

**Hard Drives**

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<td>Quantum 1.2GB</td>
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<td>HP 2GB or IBM 2GB</td>
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<td>Quantum 3GB</td>
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<td>Quantum 4GB</td>
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<td>Fujitsu 4GB</td>
<td>$899</td>
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<td>Seagate 4GB Baracuda 4</td>
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<tr>
<td>Seagate 9GB</td>
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**Software Specials**

- Adobe Photoshop v4.0 CD $549
- Adobe PageMaker v6.0 CD $539
- Adobe Illustrator V6.0 CD & 3.5 $369
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- **PRINTERS**

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<td>604e/200MHz...$1,499</td>
</tr>
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</table>

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<tr>
<td>IBM</td>
<td>20b SCSI 2.5</td>
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<td>ATLAS 4.0G</td>
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<td>1/SPAC St 9/12G</td>
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<td>JAZ</td>
<td>9G in 1 CARTRIDGE</td>
<td>$999</td>
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<th>Model</th>
<th>Ram</th>
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<td>4/80</td>
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<td>Duo Floppy Adapter</td>
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<td>Duo Battery Recharger</td>
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<td>PB 14.4 Express Modem</td>
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**PRINTERS**

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<td>LaserWriter IIINT</td>
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**MONITORS**

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<td>Apple 20” MultiScan</td>
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<td>*Perfora Plus Display</td>
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<td>Apple Two Page Mono</td>
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**OTHERS**

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<td>Mac IIgs NuBus Adapter</td>
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<td>Apple OneScanner</td>
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<td>Apple Ext. 1.4MB Floppy</td>
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<td>Apple PowerCD Drive</td>
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<td>Apple Ext. II Keyboard</td>
<td>$75.00</td>
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<thead>
<tr>
<th>Total Hardware, Media &amp; Software System Value</th>
<th>Annual Premium</th>
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<tbody>
<tr>
<td>Up to $2,000</td>
<td>$49</td>
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<td>2,001 - 5,000</td>
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AS I DROVE to the big BCS Garage Sale, I saw two hawks circling above the reservoir near Route 128. That's a pretty rare sight: Most of the prey along Boston-area waterways has about the same heavy-metal content as a PowerBook battery. Of course, it was neat to see those proud hunters of the air, who scan the landscape with an unfailling and unsympathetic eye and all that sort of doggerel the PBS narrator goes on and on about before showing us a duck getting it right in the neck. But I'm a columnist, and as such, I'm always on the lookout for lame analogies I can start a column with, so I sort of wish they'd been buzzards. For I was driving to the Boston Computer Society's offices not as a hunter but as a scavenger.

The BCS, the country's oldest user group, is no more. I learned of its demise first thing in the morning, as I goggily collected the past seven hours' worth of e-mail and found one press release from the BCS, announcing the board of directors' decision to disband, and about 18 forwards of that same release courtesy of fellow Former Activists. The name deserves capitalization. We really should have had T-shirts printed up for all the people who, like me, had been Activists (active volunteers) in the organization but had eventually declined even to renew their basic memberships. The comments the FAs added to the press release featured lots of cackling, particularly about the statement that the BCS was folding its tent because it had "achieved its goal of making computers easier to understand." Rumor had it that at the final meeting, the lead agenda item was to discuss whether the remainder of the BCS' operating funds should be used to fund a last-ditch effort to attract more members or to buy Chinese food for the meeting.

The BCS made big contributions to my personal and professional life. I became an Activist shortly after Rensselaer Polytechnic and I parted ways over a little disagreement regarding the importance of third-semester physics in a computer-science curriculum. The BCS, oddly enough, gave me what I had sought and failed to find at RPI: the opport

nity to study computers and hardware. The Mac Group's Somerville office was a clubhouse for me and dozens of other Activists. It was simply the place to be. If you went there, you'd find something new to learn, and if you stood still for four minutes, someone would find some interesting BCS-Mac work for you to do. I gave seminars; repaired hardware; wrote for The Active Window, the group's newsletter; designed T-shirts... you name it. I helped run the monthly meetings, and one of my presentations there led to my first article in MacUser. I even met my sweetheart through the BCS.

But Camelot can never last; at some point, Robert Goulet shows up in his little mustache and starts singing. The BCS' founder and director resigned to get A Real Job, and most Former Activists would agree that it was the resulting change in the group's personality that ultimately led to the mass exodus. Stubbornly dedicated leadership was replaced by a stubbornly dedicated bureaucracy that infiltrated at all levels. Suddenly, The Active Window had ambitions to become a glossy independent magazine and its editors started acting like... well, like editors. People who volunteered to give seminars were met not with earnest appreciation but with stacks of forms requesting formal proposals and outlines and equipment requisitions. A couple of years ago, feeling guilty about having practically abandoned the group I owed so much to, I agreed to design another Expo T-shirt. I spent three weeks arguing with different levels of the BCS hierarchy about whether the ears on a superhero's costume should be rounded or pointy.

But we Former Activists shouldn't be so smug. The BCS' biggest enemy wasn't itself — it was the direction of the Industry. During its heyday, the BCS gave its members two valuable commodities: information and the opportunity to socialize with fellow Mac-ren. Today, anyone with a Web browser can find any answer or information they need with just a few keywords and users seem content to confine their socializing to the bowling alley, where it belongs.

Buzzards to Roadkill

And so, after years of perceived alienation, it took this to finally get all those Activists back to the BCS' offices: the sale of all of the group's equipment, at pennies on the dollar, in order to satisfy creditors. I came out with about a dozen Macs, including a Mac Portable. I remember borrowing it almost ten years ago, marveling at actually using a Mac on a commuter train. And I captured the flag: the BCS-Mac's big trade-show banner, which now adorns a wall of my den.

Afterward, my pal John and I retired to a nearby Burger King to reflect. His BCS Linux subgroup will hum along just fine without the BCS; indeed, it will probably even flourish, he thinks. These are the sentiments of all the subgroup leaders I talked with. Because in the end, it wasn't the members who lost a user group; it was the other way around.
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